



# CLIMATE ACTION ROADMAP

JUNE 2024



# FOREWORD

“Technological University Dublin’s (TU Dublin) vision is to make the World a better place to live, work and prosper. In our role and working with stakeholders – our students, staff, communities, industry, and governments – we are committed to taking meaningful climate action. As we transform to become one of the World’s most sustainable universities, TU Dublin acts as a leader and a voice for sustainability and climate action, promoting a new way of living and working that protects our planet for future generations.

With the United Nations’ (UN) sustainable development pillars of People, Planet, and Partnership at the core of TU Dublin’s Strategic Intent 2030, we advocate for and drive sustainability through our academic, research, operational, and engagement practice to address societal challenges in collaboration with local, national, and global partners.

TU Dublin’s Climate Action Roadmap outlines our response to reducing our environmental impact, increasing our knowledge and skills, and developing solutions for mitigating and adapting to climate change. Through our work, we address the Public Sector Climate Action Mandate and through our wider sustainability strategy we outline larger ambitions of our University to achieve sustainability targets, educating and informing our students to become responsible and capable citizens as we transform into a carbon-neutral society.”



**“Addressing climate change requires strategic action and collaborative efforts from all levels of society. At TU Dublin, our students and staff work in partnership on the creation of transformative solutions, paving the way to a carbon-neutral future.”**

**Professor John Doran**

TU Dublin Interim President

While European Union (EU) and Irish policy establishes our working regulatory context, the March 2023 'Synthesis' report published in by scientists working internationally on the Intergovernmental Panel for Climate Change (IPCC), warns that human-induced climate change is now widespread, rapid, intensifying, with some areas of impact now irreversible. In describing the report as a 'code red for humanity', the UN Secretary-General spoke of the need to act now to avert climate catastrophe. This message is reflected nationally in Ireland's Climate Action Plan 2023, citing that to achieve the emissions reduction targets required to address climate change, 'the scale of systems and behavioural change required is transformational and "unprecedented"'. TU Dublin acknowledges the increasing urgency and call-to-action for all developed countries to implement significant change and bring forward long-term targets. In aiming for this, TU Dublin has committed to be fully decarbonised by 2040, where with appropriate engagement, training, and investment, we will rapidly reduce our impact within the areas of our organisation boundary.

Through our talented students, academic, research, and professional staff, we will advance policy, promote responsible behaviours, and develop our University environment to reduce our Scope 3 impacts to become Net Zero by 2050.

In response, TU Dublin commits to take urgent climate action to achieve full decarbonisation across its operations, foster societal resilience through an inclusive and inspiring education model, develop open research and innovation, and enhance citizen agency at all levels for positive change.



**“Now is a time for courageous leadership and unprecedented collaboration at all levels to protect the fate of our planet for future generations.”**

**Jennifer Boyer**

Vice President for Sustainability



# CONTENT

<b>1</b>	<b>INTRODUCTION</b>	<b>9</b>
	1.1 TU DUBLIN INTENT	9
	1.2 TU DUBLIN CLIMATE ACTION ROADMAP PROGRESS SUMMARY	10
	ACRONYMS	24
	VERSION CONTROL	26
<b>2</b>	<b>OUR PEOPLE</b>	<b>30</b>
	2.1 LEADERSHIP AND GOVERNANCE FOR CLIMATE ACTION	30
	2.2 ENGAGING & TRAINING STAFF	35
<b>3</b>	<b>OUR TARGETS</b>	<b>36</b>
	3.1 ACHIEVING CARBON EMISSIONS REDUCTION TARGETS	36
	3.2 ACHIEVING THE ENERGY EFFICIENCY TARGET (50% IMPROVEMENT BY 2030)	54
<b>4</b>	<b>OUR WAY OF WORKING</b>	<b>64</b>
	4.1 SUSTAINABILITY ACTIVITIES REPORT	64
	4.2 EMISSIONS ASSOCIATED WITH AIR TRAVEL	65
	4.3 ENERGY & ENVIRONMENTAL MANAGEMENT SYSTEMS & ACCREDITATION	66
	4.4 GREEN PUBLIC PROCUREMENT	66
	4.5 CONSTRUCTION	68
	4.6 FOOD WASTE	68
	4.7 WATER	68
	4.8 PAPER	69
	4.9 SINGLE USE	69
	4.10 OTHER MATERIALS	69
<b>5</b>	<b>OUR BUILDINGS &amp; VEHICLES</b>	<b>70</b>
	5.1 UPDATES & REPORTING	71
<b>6</b>	<b>CONCLUSION</b>	<b>72</b>
	6.1 GAP TO TARGET FOR INVESTMENT & ACTIONS	74
	6.2 CONCLUDING REMARKS	75



# A CALL TO CLIMATE ACTION

“Transformational changes are more likely to succeed where there is trust, where everyone works together to prioritise risk reduction, and where benefits and burdens are shared equitably... We live in a diverse world in which everyone has different responsibilities and different opportunities to bring about change. Some can do a lot while others will need support to help them manage the change.”

**Hoesung Lee**

IPCC Chair

‘Urgent climate action can secure a liveable future for all’ - Press release

## 1

# INTRODUCTION

## 1.1 TU DUBLIN INTENT

This third iteration of TU Dublin’s [Climate Action Roadmap](#), informed by the requirements of the [Public Sector Climate Action Mandate](#), demonstrates our pathway and intent as a large public sector body to protect our planet with a focus on energy management and greenhouse gas (GHG) emissions reduction. In this roadmap, TU Dublin continues to focus most attention on our plans for reducing total energy related emissions and fossil fuel related emissions from our operations in line with the targets in the national Climate Action Plan.

Under the National Climate Action Plan 2024, the Public Sector Climate Action Mandate sets out the targets for public bodies as:

- Reduce GHG emissions by 51% in 2030.
- Improve energy efficiency in the public sector by 50% by 2030.
- Update Climate Action Roadmaps annually in line with updated Public Sector Climate Action Mandate.

In addition to transforming our campus environment and operations to deliver on carbon emissions reductions, TU Dublin recognises the role we play as a university in providing [Quality Education \(UN SDG 4\)](#), where our learners, educators, researchers, and partners share our ambition to be responsible global citizens who transform themselves to take action to address climate change in their daily lives.

## 1.2 TU DUBLIN CLIMATE ACTION ROADMAP PROGRESS SUMMARY

### 1.2a EXECUTIVE SUMMARY

This update to TU Dublin's Climate Action Roadmap for June 2024 sets out progress made against plans as outlined in the second iteration of the Roadmap from September 2023. It assesses our progress against meeting the Public Sector Climate Action Mandate requirements and sets out our aims in terms of the timelines for delivery and achievement of those actions.

A detailed and revised Decarbonisation Roadmap is included in this update which is an analytical information tool developed by TU Dublin which enables us to gain a better understanding of our energy and carbon usage through collection of more granular data on operational usage. This tool also allows TU Dublin to test future energy and carbon scenarios, by inputting modelled project estimates for reductions and prioritise resources. Through this modelling, we anticipate that significant savings in GHG emissions can be achieved through low cost, high impact measures such as improving buildings control and operations and shallow retrofitting measures.

Since publication of the second Climate Action Roadmap our [Tallaght campus has connected to the district heating system provided through the public utility HeatWorks](#), which recovers heat from the adjacent Amazon web services data center in South Dublin. This initiative has provided evidence for implementing district heating systems solutions in our three campus locations as central to achieving our 51% carbon reductions by 2030. For this reason, significant efforts will continue to be directed towards identifying and securing funding to progress and expand the development of sustainable energy through campus-based district heating projects. In 2023, TU Dublin was successful in securing funding from the HEA/SEAI Pathfinder programme to progress work to the design stages for Geothermal District Heating in Grangegorman to decarbonise the heating source for the campus. The same fund has also provided the resources to carry out the design of a Deep Retrofit Pathfinder project for the Aras Fios building on Blanchardstown campus. In parallel, we continue to actively explore

opportunities across a range of renewable energy pathfinder projects on key buildings and to schedule the implementation of those activities in such a way as to minimize disruption to the University's core activities.

Initial measures have been taken to improve the metering of our electricity and natural gas usage to improve our baseline data and understanding of our significant energy users and carbon emitters at a building level. Initial steps are being taken to make that data available as central to driving behavioural change of energy users and managers on campus. Initial engagement has begun with building users to increase the understanding through the public display of building energy certificates (DECs) and through My Green Lab accreditations in conjunction with Campus & Estates and academic faculties.

In December 2023, An Taisce's Green-Campus programme awarded all five TU Dublin University campus locations with the Green Flag, a strategic milestone for the University. TU Dublin is the first multi-campus institution to be awarded the Green Flag under a single application.

To support the University community in adopting and sustaining new practices to support climate action, increased opportunities for students and staff to undertake training and education since September 2023 have continued at pace.



## 1.2b OVERVIEW OF DELIVERY

### 1.2b.i OUR PEOPLE

#### Leadership and Governance

*University Accountability Model to achieve climate and sustainability targets* - Led by the Vice President (VP) for Sustainability, TU Dublin is developing a University accountability model to ensure the implementation of climate and sustainability targets in a manner that is consistent with the timelines set out in this Climate Action Roadmap and our broader Sustainability Strategy. This includes the establishment of annual programmes of work and the allocation of resources and budgets to deliver on those targets. A Sustainability 'Actions Scorecard' will structure and track the deliverables and timelines as set out in our Climate Action Roadmap to ensure their execution. It is expected that this will be included in the Climate Action Roadmap in 2025.

#### Engaging and Training Staff

*Senior Management Climate Leadership Training* - In March 2024, TU Dublin initiated the rollout of a bespoke training programme for all senior staff at Principal Officer/ Senior Lecturer 3 level and above. This initiative provides the national and global context of climate action against the progress and opportunity for TU Dublin to lead by example. Further training will be extended to all APOs and Senior Lecturer 2 levels in 2024 and 2025. The training undertaken between March and June is being leveraged to scale wider training across N-TUTORR partners under the National Recovery and Resilience Plan fund. Together with N-TUTORR, TU Dublin will host a Higher Education Climate Leadership Summit in June 2024 which will bring the nation's leading subject matter experts and best-practice learning and teaching professionals together to support this valuable training at scale.

*Green Public Procurement Training* - In March and April 2023, the TU Dublin Procurement team completed certified Green Public Procurement Training. Training for Senior Managers and purchasers within the University is to be programmed within the staff training requirements for 2024-2025.

*EU Levels Commitments* - In April 2023, TU Dublin signed its organisational commitment 'to taking initial actions to address the environmental impact of construction' under EU Levels. Training was undertaken between June and September 2023 by members of the Campus & Estates, Campus Planning, and Sustainability teams and is being run through the Irish Green Buildings Council. Training includes the areas of; Life Cycle Assessment, Life Cycle Costing, Indoor Air Quality, and Circularity with respect to design, construction, and facilities management.

*Student Orientation* - Faculties and schools are working to embed sustainability within the curriculum to enable and empower students to progressively develop their sustainability knowledge and skills in a manner which is clearly linked and applied to their programme. To support this initiative between 13 - 15 September 2023, all incoming students participated in a programme of introductory sustainability and climate action initiatives. As part of their orientation over 5,400 first-year students participated in 30 individual interactive sustainability workshops and were invited to partake in a survey of their knowledge of the United Nations (UN) Sustainable Development Goals (SDGs).

Partnering with faculties and schools, strategic projects, and local community groups and businessES, the Sustainability Education Team delivered a series of Sustainability and Climate Action Challenges across all five campus locations. Over 300 students completed these activities which were designed to engage them in some of the most challenging sustainability and climate problems facing society including - biodiversity and habitat conservation, emissions reduction, and climate adaptation and resilience.



*Sustainability Training for Researchers* – Since 2019, all new researchers at TU Dublin undertake two modules within their required Professional Development Training Programme for Researchers which train researchers to align research outputs to key policies including the National Development Plan, EU Missions, and the UN SDGs to demonstrate relevance and impact. This programme is run three times annually, with three cohorts per session.

*Employee Induction Training* – Since April 2023, a module in Sustainability covering an introduction to the SDGs and climate change has been delivered to more than 165 staff and is run twice annually as part of all new Employee Induction Training.

*Senior Leaders Development Programme* – In January and May 2023, a module in Sustainability covering an introduction to the SDGs and Climate Change has been delivered to over 80 Senior Managers as part of a Senior Leaders Development programme. This module is in addition to the Climate Action Leadership Training for Senior Managers delivered in 2024.

*The University Executive Team (UET)* have undertaken focused workshops on Climate Action, Energy, Double-Materiality Reporting, and Sustainability Leadership since January 2022. UET members have undertaken additional Climate Action Leadership Training in 2024.

*Climate Fresk* – Climate Fresk is an engaging and interactive three-hour workshop covering the science behind climate change based on Intergovernmental Panel on Climate Change (IPCC) reports and empowering participants to convert this knowledge into action. Over 200 students and staff completed the workshop during the 2023/2024 academic year and 19 staff were trained as Climate Fresk Facilitators.

*Embedding Climate Action and Sustainability in the curriculum* – The Sustainability Team have a range of workshops developed to empower academic staff to incorporate sustainability and address climate action in their disciplines. In 2023 over 560 academic staff completed this training across 34 workshops.

In addition to the professional development workshops outlined above, the TU Dublin Sustainability Education Team have developed and delivered several accredited courses. The team have built a bank of teaching, learning and assessment resources

through the development of the Educating for Sustainability Staff continuous professional development ([CPD](#)). This CPD programme was delivered in a hybrid format and was completed by over 100 staff in the past two years. TU Dublin is also delivering the National Forum's Education for [Sustainability Digital Badge](#) in collaboration with two other Universities. The Digital Badge, which currently has 110 participants, is delivered in six weekly one-hour webinars and is supported through self-directed learning and peer engagement. Over thirty participants are now training to become facilitators which will allow the badge to be rolled out on a national scale.





## 1.2b.ii OUR TARGETS

### Achieving Carbon Emissions Reductions

*Carbon emissions figures* - This update to the Climate Action Roadmap reflects the latest consumption figures for 2023 in TU Dublin's energy data consumption monitoring platform (Energy Elephant), at the time of preparing this update, the Sustainable Energy Authority of Ireland (SEAI) Monitoring and Reporting (M&R) reporting tool continues to report consumption figures from 2022. Energy Elephant reporting indicates that TU Dublin's GHG emissions have reduced from 10,895 (and corrected to 10,947) tCO<sub>2</sub>e in 2022 to 8,901 tCO<sub>2</sub>e in 2023. These carbon reductions have been achieved through a combination of fuel switching for the Tallaght Main Building which is now connected to the decarbonized district heating system and energy management improvements achieved through shallow retrofits and control and operations efficiencies. The carbon baseline has risen from 9,971 to 10,063 tCO<sub>2</sub>e. The baseline figure realignment is as a result of re-evaluation of meters, ownership years and clarifying registration on the SEAI M&R platform. Significant work has been involved since the publication of the first two versions of the Climate Action Roadmap to ensure that buildings and meters reported to the reporting tool reflect the current buildings stock register since the amalgamation of the three separate institutions into the new University structure. The 2021 reported emissions figures did not include the energy usage associated to the two newest buildings on the Grangegorman campus, the Central Quad, and the East Quad. The last reporting period has amended that omission.

### TU Dublin Decarbonisation Roadmap

The Decarbonisation Roadmap Scope 1 & 2 in section 3.1h has been updated to include information on the Building Stock Register as reported to the SEAI M&R reporting tool in January 2024 for the first time.

### Improvement in energy efficiency

The ongoing activities identified in section 3.2 have been initiated and will identify areas of focus and priority to deliver on this target.



## PASSION & PURPOSE CLIMATE ACTION & SUSTAINABILITY

TU Dublin students and staff are passionate about climate action and sustainability. We are committed to serving our students and delivering on the targets in our Climate Action Roadmap.

**“Green-Campus and TU Dublin Students’ Union (TUDSU) are working together to bridge a path for students to engage in sustainability across all campuses. By giving students this important space to participate and collaborate, TU Dublin will become a more inclusive and sustainable university, where creativity meets innovation. We want to reach our targets as laid out in the Climate Action Roadmap, and this will be done by creating and developing student engagement through groups like Green-Campus and TUDSU”**

**Amber Thomas**

Green-Campus Co-Chair (student) and SU PTO Sustainability

## 1.2b.iii OUR WAY OF WORKING

### Sustainability Activities Report

Since its formation in 2021, the Sustainability Office further developed and enhanced an already dynamic and engaging calendar of sustainability and climate action activities. Students, staff and the wider TU Dublin community learn about TU Dublin's vision and progress towards achieving our climate action goals on the [Sustainability section](#) of the TU Dublin website. The website features the Sustainability Office's four key areas of Sustainability Education, Sustainable Campus, Vision & Progress, and Societal Engagement, as well as detail on Strategic Projects. The [Sustainability News and Events section](#) features all sustainability and climate action activity on campus. The opportunities are promoted to students and staff monthly through a University-wide newsletter.

The beginning of each academic year kick-starts sustainability and climate action activities for all students. As part of [Orientation](#) in September 2023, the Sustainability Education Team hosted a range of immersive sustainability and climate action activities, designed to instill passion, purpose, and build capacity and camaraderie among incoming students. All incoming first-year students are invited to take part in a practical and engaging Sustainability and Climate Action Challenge designed to introduce the concepts of the UN SDGs. During this orientation period, over 5,400 first-year students participated in 30 individual interactive workshops in Education for Sustainable Development (ESD), learning about the dimensions of sustainability, the UN SDGs, and how to cope with anxiety related to the climate crisis. A short course on Sustainability and Climate Action was available as part of the Student Success module on our Brightspace Virtual Learning Environment.

As part of the [TU Dublin Sports & Societies Festival](#), which also takes place in September, students and staff are encouraged to join various clubs, societies, volunteer groups, and committees which focus on different approaches towards sustainability or climate activism. These include, but are not limited to: the Sustainability Society, SDG Literacy Community, STAND, the Environmental, Planning and Sustainability (EPS) Society, the Student's Union, Student Volunteering, LGBTQ+ Society, TU Dublin Healthy Campus, the Act Now Collective, and the Green-Campus Committee.

Separate to activity coordinated on campus, students and staff are also made aware of national campaigning organisations such as the National Youth Council of Ireland, An Taisce, Extinction Rebellion, and Fridays for Future.

From January 2024, TU Dublin has hosted [a dynamic series of in-person sustainability and climate action events](#), conferences, and engagement activities to support TU Dublin's objective to stimulate sustainability awareness and action on campus. This academic year TU Dublin celebrated and raised awareness of relevant UN International days, linking our own research and action directly to the global call-to-action outlined in these campaigns. TU Dublin took part in many high impact sustainability and climate action initiatives including [EU Mobility Week](#) in September, [Climate Action Week](#) in October, and [Green Week](#) in March.

In March 2024, TU Dublin celebrated its sixth annual Green Week since the University's formation in 2019. This event brought together more than 635 students and staff from across the five TU Dublin campus locations to collaborate in more than 100 events and activities which focused on taking local and national action for the environment.

Ongoing campaigns include; Smarter Travel for Campuses programme's [Walktober](#), [Ready, Set, Cycle](#), [Bike Week](#) and [Marchathon](#), [Quit Smoking Month](#), [#TUDublinSwitchingOff](#) (Reduce your Use), and national events including [Workplace well-being Week](#), [Equality, Diversity, & Inclusion Week](#), [Planning Week](#), [Fashion Revolution Week](#), and [Biodiversity Week](#).



### **Emissions Associated with Air Travel**

A review of the TU Dublin Travel & Subsistence Policy is underway to incorporate Circular 01/2020: Procedures for Offsetting the Emissions Associated with Official Air Travel. The revised policy is ongoing and envisaged to be in place in 2025. TU Dublin is engaging with our contracted travel suppliers to include green criteria as part of purchase information and to collect relevant data in relation to carbon emissions for reporting on progress. A decision tree to assess travel against strategic outcomes, resource costs, and environmental impacts is in development.

### **Energy and Environmental Management Systems and Accreditation**

*Operational Energy Usage Data* - TU Dublin is making progress towards increasing the granularity and accessibility of our operational energy usage data. The first project to enable that outcome is the installation of submetering of both thermal and electrical energy readings to the buildings level which is due to be completed by 2025. That process will continue to be developed to bring granularity to services, floor, and room level information. We will continue to develop digital construction practices to enable data gathering and evidence-based decision making. TU Dublin is preparing an Energy Data Collection Plan to support the ISO Certification process which will structure the gathering of data. An energy information and data repository is being established to make that data accessible to energy managers and end users and to make the data open to the greatest extent possible for [Living Lab](#) opportunities. The development of a University pilot project funded by the HEA in Smart Infrastructure will advance TU Dublin's building information reporting capability on energy, occupancy, and thermal comfort. This work aims to provide scalable building level solutions to expand across all TU Dublin owned buildings in subsequent years.

*SI426 audits / SEU Audits* - compliant audits are being carried out for buildings representing 85% of our energy use as follows:

- Tallaght Main Building
- Central Quad
- Blanchardstown - Aras Fios
- Bolton Street
- East Quad

These audits are due to be completed by the end of 2024 and the information provided in these audits will feed into the register of energy efficiency opportunities and the Buildings Retrofit Programme which will be included in the next update.

### **ISO50001 accreditation**

ISO reaccreditation was undertaken across each campus location whereby [ISO 50001 certifications](#) by campus have been awarded as of 09 April 2024.

### **My Green Labs accreditation**

My Green Lab accreditation is being sought across a variety of TU Dublin lab spaces and [10 certifications have already been awarded](#). With levels awarded ranging from Silver to Green, eight My Green Lab certifications have been achieved across the four Schools of the Faculty of Sciences & Health, incorporating 26 undergraduate lab spaces in total, and two have been awarded to Research Hubs. These awards recognise the achievements made in reducing the environmental impact of laboratory space and for successfully completing the My Green Lab Certification Programme.



## 1.2b.iv OUR BUILDINGS AND VEHICLES

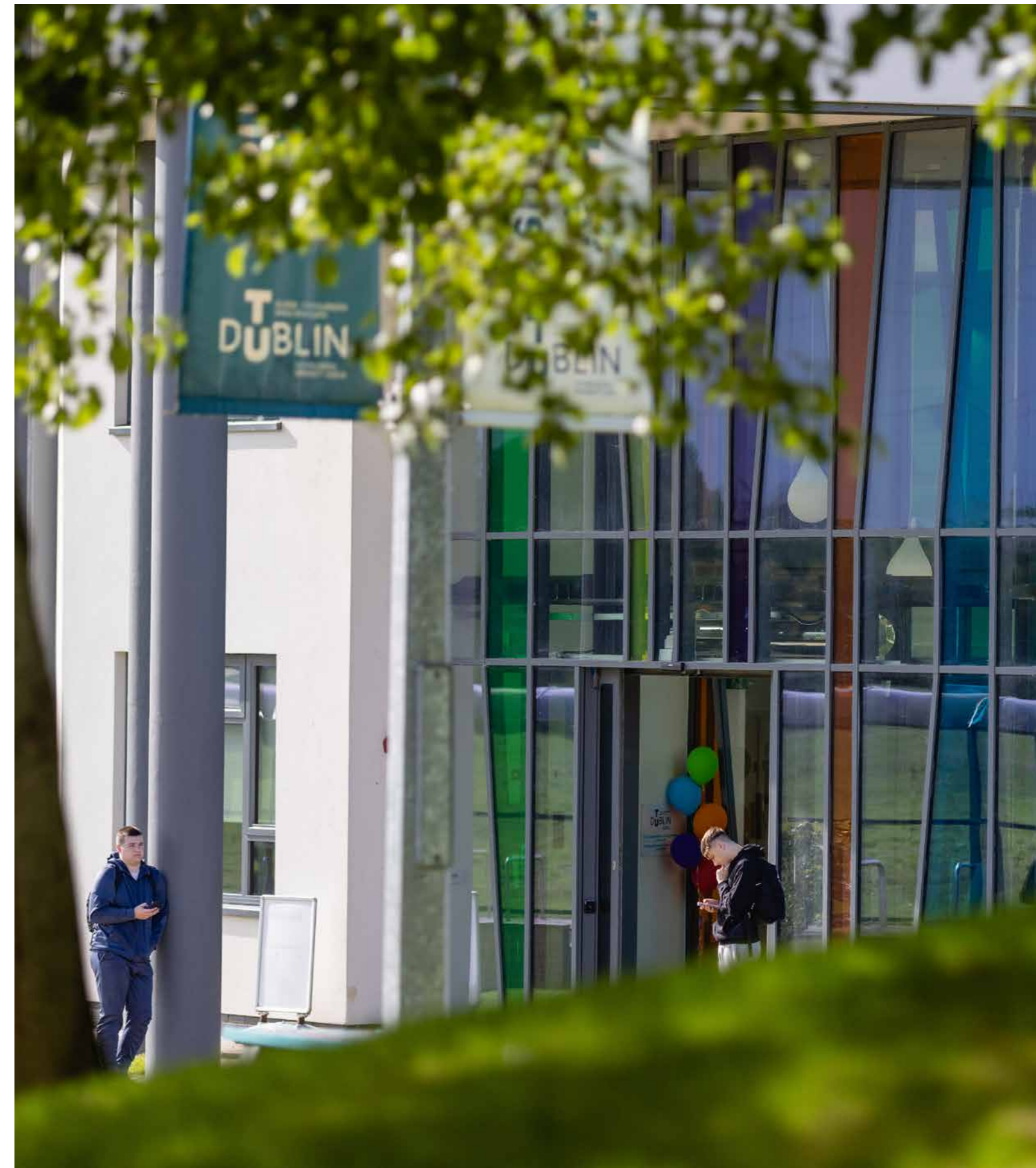
**Promote the use of bicycles and shared mobility options** – TU Dublin is progressing two new bicycle and e-mobility hubs on the Blanchardstown campus, and at the Bolton Street campus due for completion in 2024 with a third hub scheduled for installation on the Tallaght campus in 2025. TU Dublin have applied for further funding to expand the bicycle and e-mobility hubs across all campus locations.

**DECs** - Display Energy Certs have been carried out for 12 of the buildings that represent our significant energy users. These buildings account for 73% of the floor area of our buildings stock and include areas frequently accessed by the public. The remaining buildings are schedule to be audited with completion due for Q4 2024.

**Fossil Fuels after 2023 in heating systems** - The new Sports Science, Health & Recreation building in Tallaght, which opened in September 2023, complies with the requirement for no fossil fuel heating systems. It is connected to the adjacent HeatWorks recovered heat supply. Three buildings on Blanchardstown campus, Aras Aontas, Aras Croi and Linc have been fitted with gas replacement boilers as they were failing and replacements were required for operational continuity. These works did not constitute 'major refurbishment' as defined in the regulations. Broader building stock plans are being developed for all existing buildings together with Energy Strategies per campus which propose decarbonised district heating systems at each.

**Existing Buildings** – TU Dublin has received funding for two pilot projects through the HEA/SEAI Energy Efficiency and Decarbonisation Pathfinder Programme funding stream which supports two proposed projects to progress to design phase, these include the Aras Fios Deep Retrofit Project and the Geothermal District Heating Project for buildings on the Grangegorman campus. TU Dublin is actively working with our SEAI Partnership Support Manager to develop our decarbonisation roadmap and renovation targets.

**Procurement and Fleet Transition** - SI381/2021 Clean Vehicles Directive - TU Dublin's two diesel powered vehicles owned at the time of the last report have been replaced with electric vehicles. In 2023, a diesel van was purchased for use in research. This van has since been returned and the MARL laboratory is now installed in an electric van.



## ACRONYMS

°C	Degrees Celsius
AASHE	Association for the Enhancement of Sustainability in Higher Education
BER	Building Energy Rating
CASH	Centre for Applied Science in Health
CO <sub>2</sub> / CO <sub>2</sub> e	Carbon dioxide / Carbon dioxide equivalent
COVID-19	SARS-CoV-2 / Coronavirus Disease 2019
CPD	Continuous Professional Development
CSO	Central Statistics Office
DECC	Department of the Environment, Climate and Communications
DEFRA	UK Department for Environment, Food and Rural Affairs
DEC	Display Energy Certificate
DCC	Dublin City Council
DH	District Heating
DFHERIS	Department of Further and Higher Education, Research, Innovation and Science
EC	European Commission
EDI	Equality, Diversity, and Inclusion
EMAS	Eco-Management and Audit Scheme
EnPI	Energy Performance Indicator
EMS	Energy Management System
EPA	Environmental Protection Agency
EPS	Environmental, Planning and Sustainability
ESD	Education for Sustainable Development
EPBD	Energy Performance of Buildings Directive
EU	European Union
FCC	Fingal County Council
GDA	Grangegorman Development Agency
GHG	Greenhouse gas
GPP	Green Public Procurement
HEI	Higher Education Institutions
ICT	Information and Communication Technologies
IPCC	Intergovernmental Panel on Climate Change
IUA	Irish University Association
kgCO <sub>2</sub> e/m <sup>2</sup>	Kilograms of carbon dioxide equivalent per square meter
KPI	Key performance indicator
Kt	Kiloton
LED	Light Emitting Diode

LCA	Life Cycle Assessment
kW / kWh / kWe	Kilowatt / Kilowatt-hour / Kilowatt electric
M&R	Monitoring and Reporting
MoU	Memorandum of Understanding
NTA	National Transport Authority
NLP	Natural language processing
OERs	Open Education Resources
OGP	Open Government Procurement
PPP	Public Private Partnership
R&I	Research and Innovation
RAI	The Relative Activity Index
RECs	Renewable Energy Communities
RDI	Research, Development, and Innovation
RKs	Root keywords
SEF	Sustainability Education Framework
SCO <sub>2</sub>	Supercritical carbon dioxide
SDCC	South Dublin County Council
SDG	Sustainable Development Goal
SEAI	Sustainable Energy Authority of Ireland
SECs	Sustainable Energy Communities
SUDS	Sustainable Urban Drainage Systems
STEM	Science Technology Engineering and Maths
tCO <sub>2</sub> / tCO <sub>2</sub> e	Tonnes of carbon dioxide / Tonnes of carbon dioxide equivalent
TF-IDF	Term Frequency - Inverse Document Frequency
TgCO <sub>2</sub>	Teragrams of carbon dioxide
TFI	Transport for Ireland
TU Dublin	Technological University Dublin
TPER	Total Primary Energy Requirement
TFC	Total Final Consumption
UEM	University Education Model
UET	University Executive Team
UN	United Nations
USC	University Sustainability Council
VP	Vice President
WEEE	Waste Electrical and Electronic Equipment
WTE	Whole-Time Equivalent
ZEB	Zero Energy Buildings

## VERSION CONTROL

VERSION NUMBER	VERSION DESCRIPTION / CHANGES MADE	AUTHOR	DATE
CAR V1	Climate Action Roadmap March 2023	Sustainability Team	30/03/2023
CAR V2	Climate Action Roadmap Sept 2023	Sustainability Team	30/09/2023
	2.1b Clarification on EPO role	Sustainability Team	30/09/2023
	3.1 Total estimated carbon emissions moved from 52,112 tCO <sub>2</sub> e in 2021 to 38,216 tCO <sub>2</sub> e in 2022.  Updated area of new and leased building stock.	Sustainability Team	30/09/2023
	3.1a Table 1 emissions figures updated	Sustainability Team	30/09/2023
	3.1b total energy related emissions updated from 7340 to 10,895 tCO <sub>2</sub> e	Sustainability Team	30/09/2023
	3.1f Year on year emissions reductions increased to 576 tCO <sub>2</sub> e / yr	Sustainability Team	30/09/2023
	3.1e Analysis of Significant emitters has been broken down to building level using a methodology of allocating campus level energy readings to buildings per building area.	Sustainability Team	30/09/2023
	3.1f Increase in emissions in 2022 noted	Sustainability Team	30/09/2023
	3.1g Blanchardstown District Heating network proposal added.	Sustainability Team	30/09/2023
	3.2d Building stock updates including areas and numbers of buildings	Sustainability Team	30/09/2023
	3.2d Analysis of significant energy users has been broken down to building level using a methodology of allocating campus level energy readings to buildings per building area.	Sustainability Team	30/09/2023
	3.2e Gap to target updated with 2022 figures added.	Sustainability Team	30/09/2023
	3.2f Demand reduction campaign names added. Progress on space occupation analysis has been added.		30/09/2023
	3.2f My Green Labs certification and progress have been updated.	Sustainability Team	30/09/2023

VERSION NUMBER	VERSION DESCRIPTION / CHANGES MADE	AUTHOR	DATE
	5.0 Progress on Display Energy Certs has been added for 12 of TU Dublin buildings stock representing 73% of floor area of total building stock. Remaining due to be complete for Q1 2024.	Sustainability Team	30/09/2023
	5.0 Date for replacement of Dieeisel vans updated to November 2023	Sustainability Team	30/09/2023
	5.0 Parking review study across all campuses and building locations added.	Sustainability Team	30/09/2023
	6.0 Increased emissions in 2022 are noted in conclusion	Sustainability Team	30/09/2023
	6.0 Clarification on emissions figures updated.	Sustainability Team	30/09/2023
	Version Control added	Sustainability Team	30/09/2023
CARv3	Climate Action Roadmap June 2024	Sustainability Team	28/06/2024
	Forward from Interim President	Sustainability Team	28/06/2024
	Executive summary updated	Sustainability Team	28/06/2024
	Carbon Emissions Reductions figures for 2023 reported	Sustainability Team	28/06/2024
	Sustainability Activities Report updated	Sustainability Team	28/06/2024
	ISO50001 Accreditation awarded	Sustainability Team	28/06/2024
	My Green Labs accreditation progress reported	Sustainability Team	28/06/2024
	Decarbonisation Roadmap Scope 1&2 updated	Sustainability Team	28/06/2024
	Progress on e-Mobility Hubs reported	Sustainability Team	28/06/2024
	Fossil Fuels after 2023 in heating systems updated	Sustainability Team	28/06/2024
	Existing Buildings upgrades Pathfinder Programme Funding updated	Sustainability Team	28/06/2024
	Procurement and Fleet Transition updates	Sustainability Team	28/06/2024
	University Sustainability Council updates	Sustainability Team	28/06/2024

## VERSION CONTROL

VERSION NUMBER	VERSION DESCRIPTION / CHANGES MADE	AUTHOR	DATE
CAR V3	Engaging and training staff updates	Sustainability Team	28/06/2024
	Energy related carbon emissions baseline changes reported	Sustainability Team	28/06/2024
	Total emissions and thermal emissions updated	Sustainability Team	28/06/2024
	Building Register and Building Stock Plan submission reported	Sustainability Team	28/06/2024
	Analysis of significant emitters updated	Sustainability Team	28/06/2024
	Gap to Target updated	Sustainability Team	28/06/2024
	Geothermal Project Pathfinder Funding Reported	Sustainability Team	28/06/2024
	Decarbonisation Roadmap activities over time updated	Sustainability Team	28/06/2024
	Decarbonisation Roadmap Scope 1 & 2 updates as listed:	Sustainability Team	28/06/2024
	Building ID updated – 21 buildings: BRS-BM; H2-HB; GWH-GW; EYS-EY; BST-BL; CS-CP; LHM-LN; BDS-BT; ATC-AV; AS-AU; FCR-FS; TMB-TM; TSC-TS; TSH-TU; TDC-TT; TPH-TP; SG-TG; TAC-TA; TPA-TZ; TSB-TH; BCB-BK.	Sustainability Team	28/06/2024
	Building name changed – 15 buildings: Broombridge Sports-Broombridge Sports Changing; Energy Centre-Energy Centre 1; Field Sports Changing & Estates-Field Sports Changing & Estates 1; Bolton St Main-Bolton Street Main; 81 Capel St-81 Capel Street; E-Block-E Block; Beresford St-Beresford Street; Aungier St-Aungier Street; FOCAS Camden Row-FOCAS; Tallaght Main Building-Tallaght Main; Synergy Global City West-Synergy Global; Tallaght Sports Building-Tallaght Sport, Science & Health; Tallaght North Block-Tallaght North; LINC/Buntus (Block B)-LINC Buntus (Block B); Aras Geal (Block G) – Teaching-Aras Geal (Block G).	Sustainability Team	28/06/2024
	Building floor area updated – 5 buildings: Kirwan House: 0-172; Linenhall: 9,797-9,921; FOCAS: 3,015-3,223; West Quad: 21,700-20,725; Indoor Sport: 6,500-8,145.	Sustainability Team	28/06/2024

VERSION NUMBER	VERSION DESCRIPTION / CHANGES MADE	AUTHOR	DATE
	New building on the list: Broombridge Warehouse (6,200 sqm)	Sustainability Team	28/06/2024
	Old buildings removed from the list: Church of Ireland,	Sustainability Team	28/06/2024
	Linenhall Offices, Tallaght Creche	Sustainability Team	28/06/2024
	Buildings info updated: Aviation Technology Centre: Will be continued after 2030-To be divested 2025; Estates Yard & Store: To be divested 2029-Will be continued after 2030; Printmaking Workshop: To be divested 2029 - Will be continued after 2030.	Sustainability Team	28/06/2024
	Building level carbon emissions refined: since more granular details of building information became available		28/06/2024
	New buildings carbon emissions refined using new methodologies	Sustainability Team	28/06/2024
	Buildings ownership updated: University Accommodation Phase 1 GG: PPP-Owned.	Sustainability Team	28/06/2024
	Carbon Emissions Table 2022 Data: Based on SEAI GTT data of 20230516-Based on SEAI GTT data of 20231023.	Sustainability Team	28/06/2024
	Carbon Emissions Table 2023 Data: Based on TU Dublin Energy Consumption Platform (Energy Elephant).	Sustainability Team	28/06/2024
	Building Stock Inventory updated	Sustainability Team	28/06/2024
	Deep Energy Retrofit Pilot progress updated.	Sustainability Team	28/06/2024
	Section 15(1) Screening update	Sustainability Team	28/06/2024
	All graphs and figures are updated: from 2022 figures to 2023 figures.	Sustainability Team	28/06/2024
	Food waste commitments added	Sustainability Team	28/06/2024
	Water conservation measures commitments added	Sustainability Team	28/06/2024
	Other materials commitments added	Sustainability Team	28/06/2024
	Fleet conversion updates added	Sustainability Team	28/06/2024
	Conclusion updated	Sustainability Team	28/06/2024

2

# OUR PEOPLE

## 2.1 LEADERSHIP AND GOVERNANCE FOR CLIMATE ACTION

### Key Roles in Sustainability

In 2021, TU Dublin appointed a Vice President (VP) for Sustainability to provide leadership, strategic direction, and oversight for the coordination and management of the University’s activities in relation to sustainability, across both professional services and academic domains. The VP for Sustainability is responsible for developing and overseeing the implementation of a cohesive University Sustainability Strategy and establishing TU Dublin as one of the World’s most sustainable universities. Reporting directly to the President of the University, the VP for Sustainability is TU Dublin’s Climate and Sustainability Champion and a nominated member of the [University Executive Team](#) (UET) with responsibility for implementing and reporting on the Public Sector Climate Action Mandate. Other key roles for sustainability leadership in TU Dublin are set out in Figure 1 and show the commitment of the University to climate action.

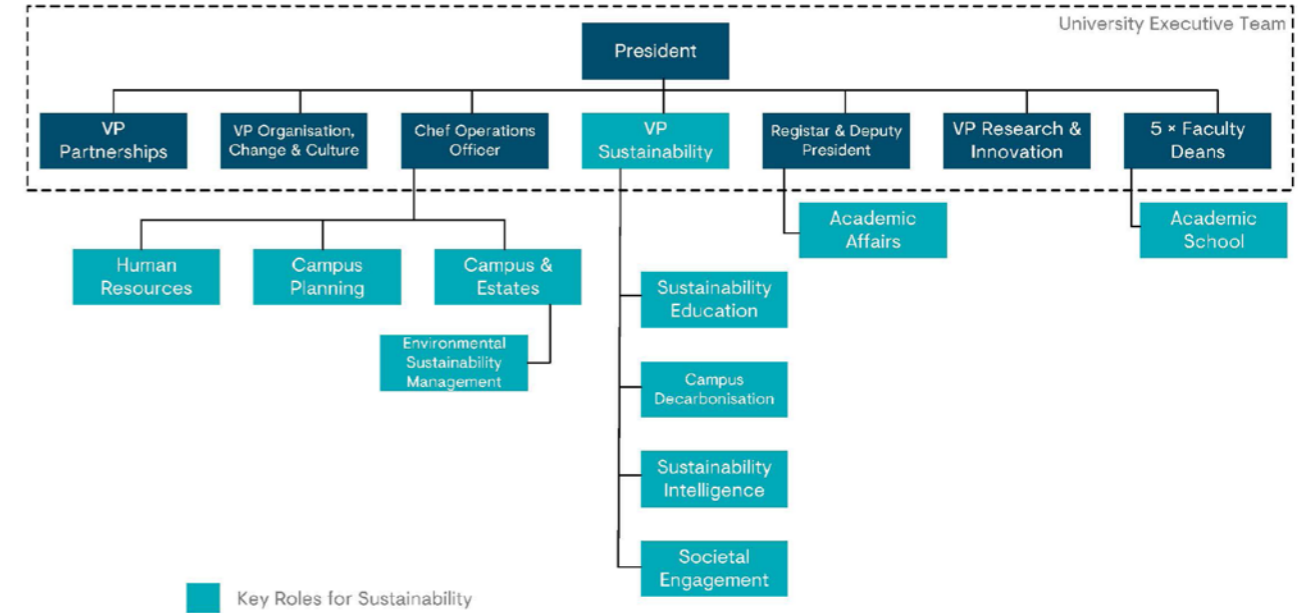


Figure 1: Key roles in TU Dublin for sustainability leadership

**The Sustainability Team is designed to bring expertise, build capacity, and advance impact across several key areas, represented by the four functional pillars:**

- Sustainability Education (capacity building).
- Campus Decarbonisation (campus operations and planning).
- Sustainability Intelligence (performance reporting and technology infrastructures).
- Societal Engagement (embedding sustainability activities with partners and supporting thought leadership).

**Responsibilities of the Team include:**

- Overseeing, coordination and reporting on the implementation of the TU Dublin Climate Action Roadmap and Sustainability Strategy.
- Developing new policies and setting University direction to becoming carbon neutral.
- Developing frameworks to support the development of our students, staff, and communities to be responsible global citizens.
- Enhancing information quality and flow for enhanced organisational performance to deliver our key goals.
- Measuring and communicating our climate and sustainability impacts and achievements.



## 2.1.b CAMPUS & ESTATES

Campus & Estates aims to be at the forefront of demonstrating climate action ensuring the University becomes a ‘Beacon for Sustainability’ and works closely with the VP for Sustainability to achieve this goal. There is a dedicated section within the service focused on environmental sustainability management, acting as a champion for sustainability, as the Energy Performance Officer, and Environmental Policy Implementation Lead. Campus & Estates is responsible for the operational implementation and delivery of the elements of the Climate Action Plan that fall within their remit, implementing environmental policies, energy action plans, and supporting the University in meeting global sustainability standards such as the AASHE STARS programme, and delivering ISO 50001 and 14001 accreditation processes. Campus & Estates has a specific remit in the delivery of energy related projects, managing energy related data and processes and providing support for the planning, regulation, monitoring, development and management of energy and the reduction of the University’s carbon footprint.

## 2.1.c CAMPUS PLANNING

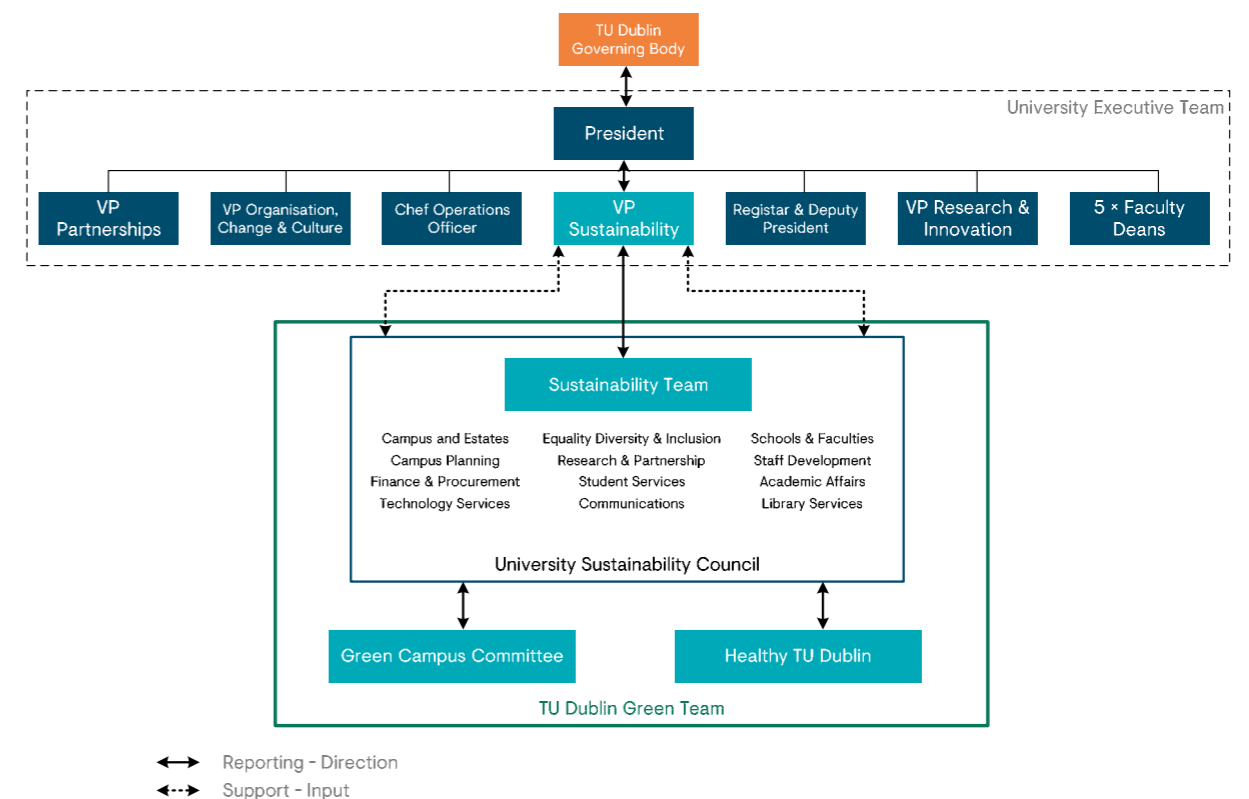
Campus Planning supports the UET in the planning and development of the physical infrastructure of the University. It seeks to ensure that all new University buildings are sustainable and also to identify improvements in the sustainability of existing buildings across all campuses, working closely with the Sustainability Team to decrease the overall University carbon footprint, including the incorporation of requirements and plans for sustainable transport, and commuting. Achieving and exceeding carbon and sustainability targets will require the optimisation of existing infrastructure and the introduction of cutting-edge clean energy technologies such as district heating, deep bore geothermal, digital twins, and advanced solar technologies.

## 2.1.d GRANGEGORMAN DEVELOPMENT AGENCY

The development of TU Dublin’s Grangegorman campus forms part of the overall development of a new Urban Quarter in Grangegorman. The Grangegorman Development Agency (GDA) is a fixed purpose government agency, established in 2006, acting as the contracting authority to develop the Grangegorman site for and on behalf of our stakeholders including; TU Dublin, the Health Service Executive, and the Department of Education. The objective of the GDA is to develop the social and urban renewal of the 30 hectares of the former St. Brendan’s Hospital site in Grangegorman and its surrounding areas, driven by the relocation of TU Dublin and the provision of modern primary and residential healthcare facilities. The GDA has established sustainability as a core objective and continues to develop a Climate Action Roadmap and associated implementation plans in close coordination with stakeholders including TU Dublin.

## 2.1.e GOVERNANCE FOR CLIMATE ACTION

The following diagram sets out the internal governance within the University.



## 2.1.e.1 UNIVERSITY SUSTAINABILITY COUNCIL

To reflect the scale and pace of transformation needed to advance sustainability and deliver on climate action, the establishment of the [TU Dublin University Sustainability Council \(USC\)](#) will be a core enabler for establishing integrated delivery, ownership, and function-level accountability. With membership drawn from across the University, the terms of reference for the USC have been adopted.

## 2.1.e.2 THE TU DUBLIN GREEN TEAM

The [TU Dublin Green Team](#) is an extended group within the University designed to advocate, communicate, and mobilise activities to engage students and staff in the Climate Action Roadmap and [Sustainability Strategy](#) deliverables. Involving membership from the USC, the [Green-Campus Committee](#) and the University's [TU Dublin Healthy Campus workgroup](#), the Green Team will draw on students and staff representatives, priority taskforces, and nominated sustainability champions to grow the network of knowledgeable and committed students, staff, and external partners for climate action priorities.

## 2.1.f ACTIONS PLANNED

The following actions are planned to support sustainability leadership, governance, and implementation in TU Dublin:

- Establish multi-annual programmes of work and allocate resources, including budgeting to deliver on short-, medium-, and long-term targets.
- Align and utilise external funding opportunities to deliver on climate action mandate and sustainability objectives.
- Continue to build whole-of-University capacity and culture by empowering change at every level, through transformational change initiatives.

## 2.2 ENGAGING AND TRAINING STAFF

[TU Dublin Sustainability Education Framework \(SEF\)](#) is being developed to embed sustainability through a whole-of-University approach to deliver on Ireland's national 'Education for Sustainable Development (ESD) to 2030' strategy. It aims to ensure our students and staff acquire the knowledge, skills, attitude, and values necessary to build resilience for climate change and shape a sustainable future. To ensure our graduates can lead the sustainability agenda with passion and purpose, we must empower and build capacity among staff to deliver innovative programmes that address the global challenges set out in the UN SDGs. We will also support all staff so that sustainability education will be delivered in a learning environment where our campus acts as a living lab to develop best practice in sustainability.

The SEF is aligned with government policy on sustainability<sup>1</sup> and with the technical, behavioural and leadership training requirements encompassed in Public Sector Climate Action Mandate. The objectives are set out below:

- To advance sustainability by leveraging collective knowledge, skills, and ambition to empower staff.
- To embed sustainability and the UN SDGs at the heart of the student experience and throughout all academic programmes.
- To provide wider societal capacity building in sustainability through open engagement, open education, and partnership.

By the end of 2024 we will have engaged 91% of all senior management (PO and SL3 and above) in climate leadership training. Since 2021, the UET have engaged in multiple sustainability and climate workshops.

## 3 | OUR TARGETS

Under the National Climate Action Plan 2024, the Public Sector Climate Action Mandate sets out the targets for public bodies as:

- Reduce greenhouse gas (GHG) emissions by 51% in 2030.
- Improve energy efficiency in the public sector by 50% by 2030.
- Update Climate Action Roadmaps annually in line with updated Public Sector Climate Action Mandate.

### 3.1 ACHIEVING THE CARBON EMISSIONS REDUCTION TARGETS (51% REDUCTION BY 2030)

For TU Dublin to accurately report its GHGs emissions and consider how best to address these, it must first define its organisational boundary within Ireland, and a summary of this is provided at this point.

The University operates across five main locations spanning three local authority areas in the Dublin region – Grangegorman, Bolton Street, and Aungier Street (Dublin City Council), Blanchardstown (Fingal County Council), and Tallaght (South Dublin County Council) with a regional catchment area of more than one million people. When considering the needs of the local catchment areas and the distribution of needs, TU Dublin groups its activities under the Tallaght campus, Blanchardstown campus, and Grangegorman, Bolton Street, and Aungier Street campus locations.

Our first Climate Action Roadmap incorrectly reported that the total estimated carbon emissions associated with TU Dublin in 2021 was just over 52,000 tCO<sub>2</sub>e, however this figure was our total baseline emissions from 2018 as shown in the Sustainable Energy Authority Of Ireland (SEAI) Monitoring and Reporting (M&R) reporting history.

The estimated carbon emissions associated with TU Dublin in 2022 was just over 38,268 tCO<sub>2</sub>e as shown in Table 1 from our Climate Action Roadmap publication in September 2023. In this third publication of the Climate Action Roadmap, we report our total estimated carbon emissions associated with TU Dublin in 2023 is now just over 45,650 tCO<sub>2</sub>e, an increase of more than 7,300 tCO<sub>2</sub>e. At this report, while Scope 1 & 2 emissions have decreased by just over 2,200 tCO<sub>2</sub>e, we note in section 1.2b.ii OUR TARGETS that estimated Scope 3 emissions have increased by over 9,600 tCO<sub>2</sub>e in 2023.

All campuses are within a 10 km radius, comprising over 46 buildings (~210,000 m<sup>2</sup>) on 185 acres. As of February 2023, TU Dublin has almost 28,000 students and over 3,000 staff, and up to 450 community, enterprise, industry, academic, and research partners. The total estimated carbon emissions associated with TU Dublin in 2023 is 45,650 tCO<sub>2</sub>e.

TU Dublin directly controls all but two buildings procured through public private partnership and nine leased buildings within its campuses. The exception to this direct operational control is with respect to two new buildings at Grangegorman (52,344 m<sup>2</sup>), whereby the State has procured the construction of the buildings under a 25-year Public Private Partnership (PPP). TU Dublin's East Quad and Central Quad were built on brownfield sites at Grangegorman and we will continue to do so where practical. Additionally, there are nine leased buildings across other locations, covering a total area of 8,656 m<sup>2</sup>.

This Climate Action Roadmap encompasses the entire portfolio of assets and activities of the University and is treated as a live document that is continually expanded and developed through active engagement with buildings planning, operations, and end users. This will be reviewed and updated annually.

### 3.1.a ENERGY RELATED CARBON EMISSIONS BASELINE (AVERAGE 2016-2018 EMISSIONS)

Baseline years for measuring TU Dublin’s sustainable campus environment and operations impact through GHG emissions (Scope 1 and some Scope 2) began in 2018 when the three original institutions of Dublin Institute of Technology, Institute of Technology Blanchardstown, and Institute of Technology Tallaght reported as separate entities. In 2021, the first joint reporting through the SEAI M&R tool was conducted, where all campus locations were reported under one organisational footprint.

TU Dublin’s operational GHG emissions baseline focuses on campus activities such as energy, water, waste, and transport and translates the data from these activities into a carbon equivalent to provide an amalgamated figure. Table 1 identifies the total consumption from the baseline year (average 2016-2018 for energy-related emissions and 2018 approximations for Scope 3 activity). From this, total calculated energy-related emissions (Scope 1 & 2) of 10,064 tCO<sub>2</sub> and Scope 3 emissions of 42,139 tCO<sub>2</sub> bring TU Dublin’s total emissions baseline to 52,203 tCO<sub>2</sub>. It should be noted that baseline emissions have been amalgamated from the three separate campus reporting figures (captured as Dublin City campus, Tallaght campus, and Blanchardstown campus) since the formation of the TU Dublin in 2019.

Fugitive emissions refer to the number of fugitive gases escaping from closed refrigerated systems. These systems include air-conditioning systems used in buildings. Mechanical contractors report any additional gases delivered and injected into systems on campus. A delivery to top-up a system must be recorded; this volume equates to the amount of gas lost. Fugitive emissions from refrigerators, air conditioning units and cold rooms account for less than 1% of TU Dublin’s total CO<sub>2</sub> emissions.

When we estimate Scope 3 emissions as part of the TU Dublin carbon footprint, we find that 19.2% of TU Dublin’s total emissions are attributable to energy-related emissions in Scope 1 & 2, with the remaining 80.8% emissions arising from combined Scope 3 emissions, which include procurement, waste, water, and travel related to student

		From SEAI M&R					From TU Dublin Own Energy Measurement Platform
Baseline - GHG Campus Environment & Operations Inventory		2018 Sector Baseline Year (tCO <sub>2</sub> e)	2019* (tCO <sub>2</sub> e)	2020 (tCO <sub>2</sub> e)	2021 (tCO <sub>2</sub> e)	2022 (tCO <sub>2</sub> e)	2023* (tCO <sub>2</sub> e)
Scope 1	Thermal	4,053	4,519	3,654	5,957	6,031	3,909
	TU Dublin Owned Vehicles/Generator	2	2	1	1	2	2
	Fugitive Emissions	N/A	N/A	38	79	127	55
<b>Sub Total</b>		<b>4,055</b>	<b>4,521</b>	<b>3,693</b>	<b>6,037</b>	<b>6,160</b>	<b>3,966</b>
Scope 2	Purchased Electricity	6,009	4,588	3,317	3,918	4,916	4,992
	<b>Sub Total</b>	<b>6,009</b>	<b>4,588</b>	<b>3,317</b>	<b>3,918</b>	<b>4,916</b>	<b>4,992</b>
<b>Sub Total Scope 1 &amp; 2</b>		<b>10,064</b>	<b>9,109</b>	<b>7,010</b>	<b>9,955</b>	<b>11,076</b>	<b>8,958</b>
Scope 3	Student and Staff Commuting	11,503	11,827	10,949	11,271	10,810	10,175
	Expensed Air Travel	24	27	8	10	14	14
	Business Travel	1,579	1,556	293	27	396	396
	Waste	9	8	7	8	9	9
	Water	22	22	22	19	62	10
	Purchased Goods and Services	29,002	12,933	21,809	22,578	15,901	26,269
<b>Sub total</b>		<b>42,139</b>	<b>26,373</b>	<b>33,086</b>	<b>33,913</b>	<b>27,192</b>	<b>36,873</b>
<b>Total Scope 1, 2 &amp; 3</b>		<b>52,203</b>	<b>35,482</b>	<b>40,096</b>	<b>43,869</b>	<b>38,268</b>	<b>45,830</b>

\*Using previous year's figure due to lack of updated data.

Table 1: TU Dublin baseline emissions campus environment and operations since 2018

and staff activities and commuting. Energy-related emissions are roughly evenly distributed between gas and purchased electricity, with vehicles and fugitive emissions contributing small amounts to the overall total emissions.

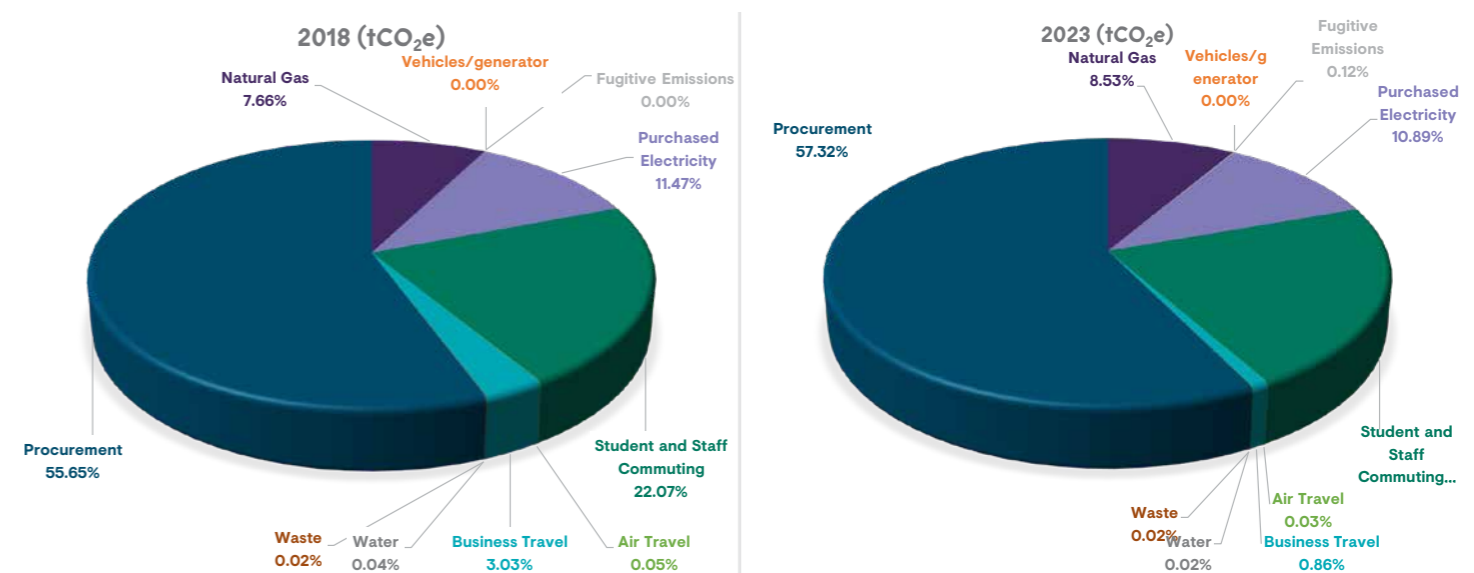


Figure 3: TU Dublin baseline emissions shown as a total across Scope 1, 2, & 3 activities for 2018 and 2023

[National Education for Sustainable Development Policy and Implementation Plan](#), [National Implementation Plan for the SDGs](#), [National Climate Action Plan 2023](#).

### 3.1.b TOTAL EMISSIONS AND THERMAL (HEATING AND TRANSPORT) EMISSIONS

The SEAI M&R reporting tool indicates that the average emissions over the GHG baseline period were 10,063 tCO<sub>2</sub>. This means that the maximum emissions below which TU Dublin must operate in 2030 are 3,343 tCO<sub>2</sub>. The actual total energy-related emissions recorded in 2023 were 8,901 tCO<sub>2</sub>. This does not include for emissions generated from new additional buildings.

### 3.1.c EXPECTED GROWTH IN EMISSIONS

This section provides an overview of planned increased growth in services planned between baseline and target years. It is expected that TU Dublin's planned projects will assist in decreasing operational emissions to reach our 2030 targets more globally and in some cases may qualify for deduction due the nature of activities supported.

There are three new building projects currently underway and six planned for future use to 2030. The new Tallaght Sports Science and Health Building was formally launched in September 2023. Three projects are currently under construction in three campus locations – Áras Gael Block G in Blanchardstown, the Academic Hub in Grangegorman and the Tallaght North, originally named Culinary Arts, Engineering and Teaching Building, in Tallaght.

A buildings register and a building stock plan have been submitted to the SEAI M&R Platform. The buildings information and work programme detailed in this Climate Action Roadmap align with these documents. The building stock plan will continue to be developed as per the reporting timelines outlined by the SEAI.

Three new building projects are planned for the Grangegorman campus and due to commence in 2027. These include the West Quad, the new Research Hub 2 and the Indoor Sport building. These new buildings will facilitate the divestment of older, energy inefficient buildings on the Aungier Street campus and the FOCAS building on Camden Street, both of which currently use fossil fuel based thermal heating systems. These

new buildings will participate in the district heating systems in each location which are planned to move to fully renewable thermal heating sources before 2030. In terms of additionality, the University has plans to renovate a large warehouse structure on the Broombridge site named the Broombridge Design & Construct building as a home for a Design and Construct project (6000 m<sup>2</sup>) to upskill the construction sector in modern methods of construction. It is anticipated that the project will be completed by 2026. University residential accommodation (circa 60,000 m<sup>2</sup>) is provided for in the Grangegorman Masterplan, discussions to develop these residential sites are ongoing. TU Dublin has submitted an application to enable the development of 17,700m<sup>2</sup> of University accommodation in Grangegorman by 2030 and is awaiting a response.



### 3.1.d PLANNED ENERGY RELATED CARBON REDUCTION ACTIVITIES (NEXT TWO-THREE YEARS)

Energy related carbon reduction activities will include, and not be limited to, the following activities:

- Develop a Register of Decarbonisation Opportunities.
- Update the Decarbonisation Pathway in line with TU Dublin's Risk Management Policy and Public Sector Climate Action Mandate.
- Establish Energy Efficiency Decarbonisation (EED) Expert Advisory Group drawn from TU Dublin Academic Researchers and Partners.
- Develop green criteria, evaluation, and prioritisation tools to review all campus development requirements against total emissions reductions impact to inform investment in line with our academic mission and concerning the total cost model (people, € invested, emissions avoided).
- Specify low-carbon construction methods and low-carbon cement material as practicable for directly procured or supported construction projects from 2023.
- Use digital construction practices to enable associated carbon data gathering and facilitate sustainability-based decision making through digital logbooks, materials passports, and environmental product declarations.
- Incorporate Life Cycle Assessment criteria and Whole Life Carbon design into all new buildings and major renovations.



### 3.1.e ANALYSIS OF SIGNIFICANT EMITTERS

In order from buildings with the highest level of emissions down to the least, our significant emitters are the Central Quad, Aungier Street, Tallaght Main, Bolton Street Main, East Quad, Park House, Aras Croi (Block C), Linenhall, Aras Doras (Block D) and Aras Fios (Block F). These ten buildings emit 78.31% of TU Dublin’s carbon emissions. As energy is currently being metered at the campus rather than the building level, energy usage per building has been allocated as an estimate based on building area.

However, the period leading up to the 2022 data highlighted an increase in emissions, attributed to infrastructural expansions and increased operational activities. The strategies and interventions will be further elaborated in the 3.1.h section. Preliminary analysis indicates that with the relevant measures taking place, over the next two to three years, we anticipate we will achieve the target by 2030.

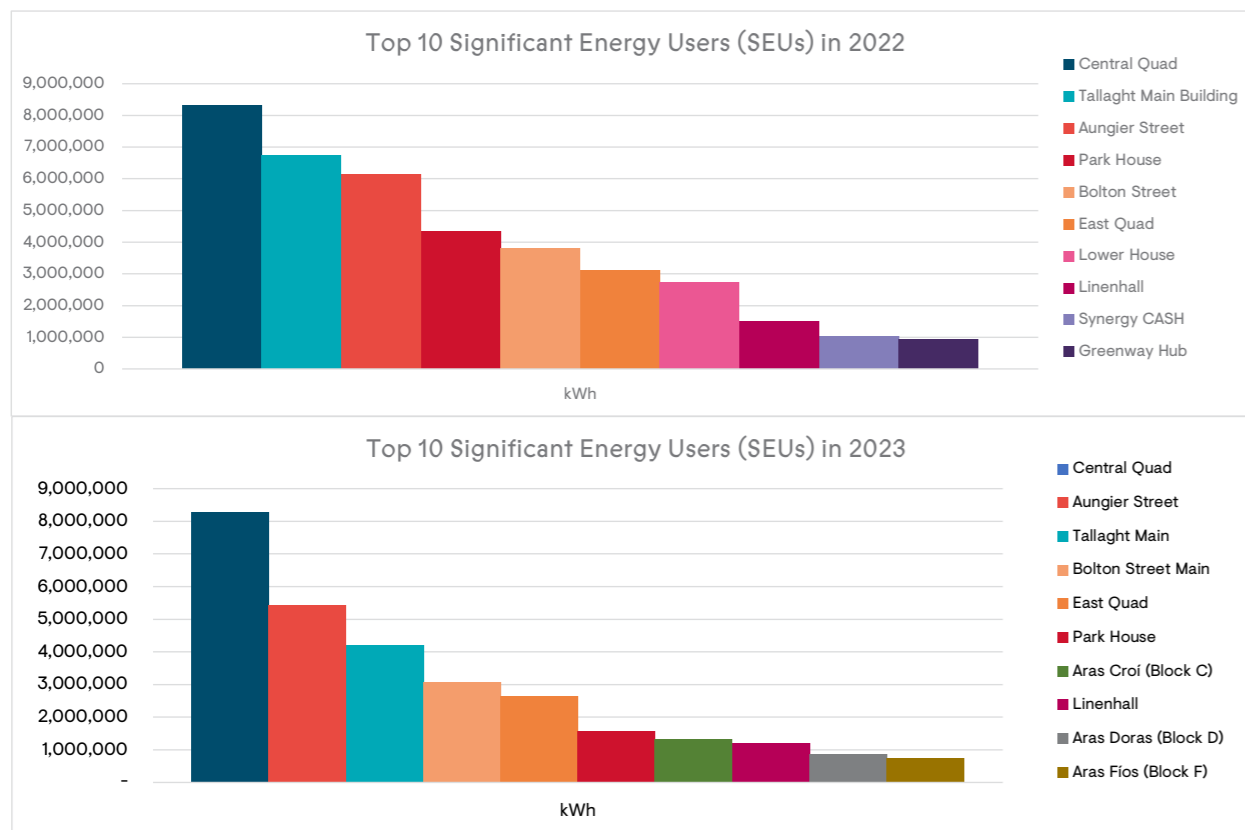


Figure 4: Combined electrical and non-electrical converted CO<sub>2</sub> emissions significant emitters.

### 3.1.f GAP TO TARGET TO BE ADDRESSED (NEXT TWO-TO-THREE YEARS)

The gap between the 2030 total GHG target of 3,343 tCO<sub>2</sub>e and the 2030 non-electricity GHG target of 1,986 tCO<sub>2</sub>e and electricity target is 1,357 tCO<sub>2</sub>e. This figure represents TU Dublin’s target for carbon emissions related to electricity. It takes into account the grid’s proposal to significantly reduce the carbon footprint of its electricity supply.

Based on current baseline figures from 2023, we estimate year-on-year emissions reductions of current building stock and additional emissions from new campus development to require an average reduction of 794 tCO<sub>2</sub>e per year to 2030. Between 2018 and 2023, avoided emissions calculated totaled 1,162 tCO<sub>2</sub>e, which set out year-on-year reduction achievement of 232 tCO<sub>2</sub>e reduction per year during that period.

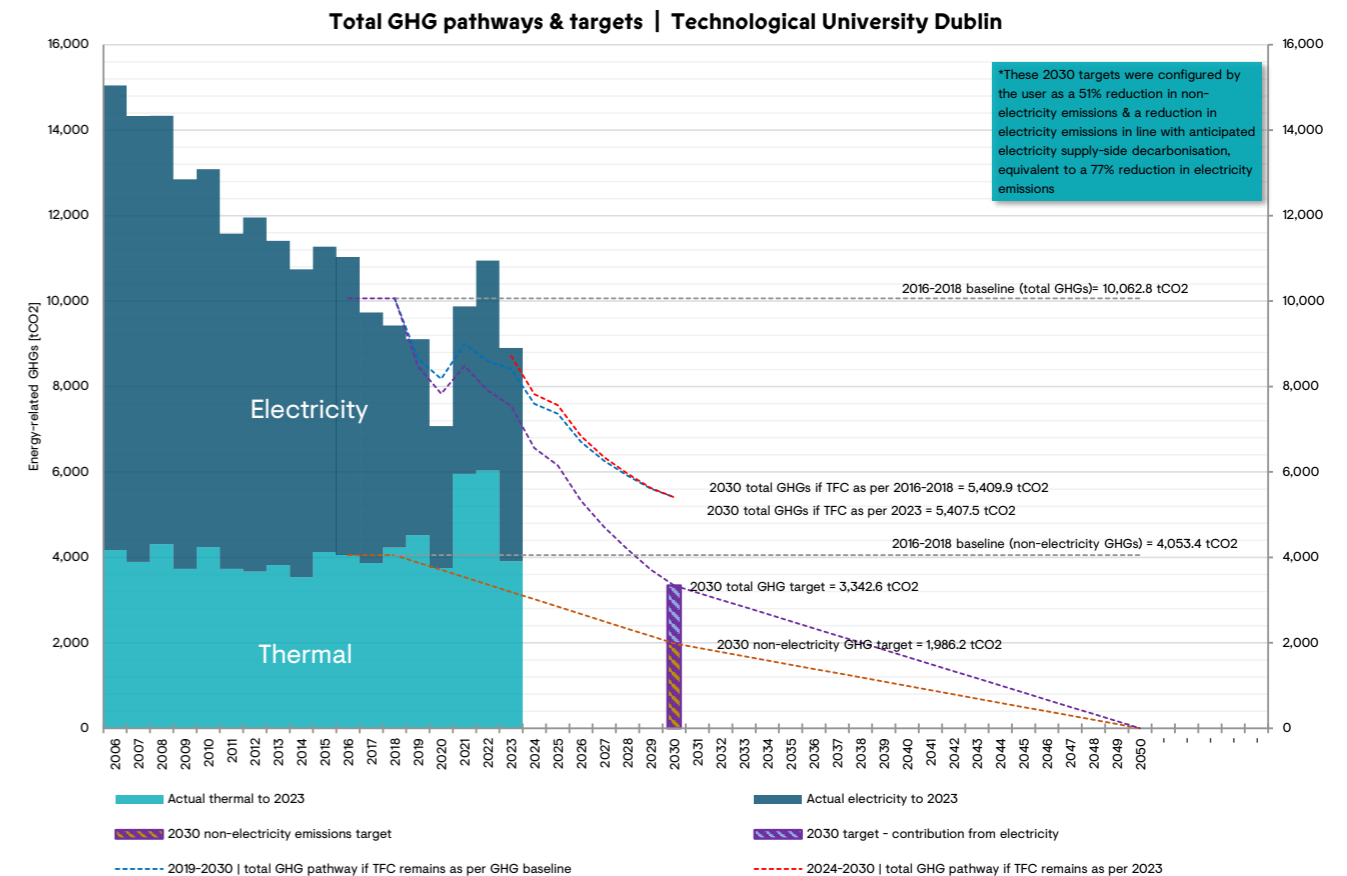


Figure 5: TU Dublin GHG pathways and targets as per SEAI M&R (2023)

### 3.1.g PROPOSED ACTIONS TO ACHIEVE ENERGY RELATED CARBON TARGETS

Natural gas is currently the primary source of space heating for TU Dublin. The challenge to decarbonise thermal energy is immense in terms of both the scale of work and related costs. As all public bodies have been instructed to do, our emissions savings rely on Government targets set out in the National Climate Action Plan to decarbonise the national grid to 77% renewable electricity by 2030 being met.

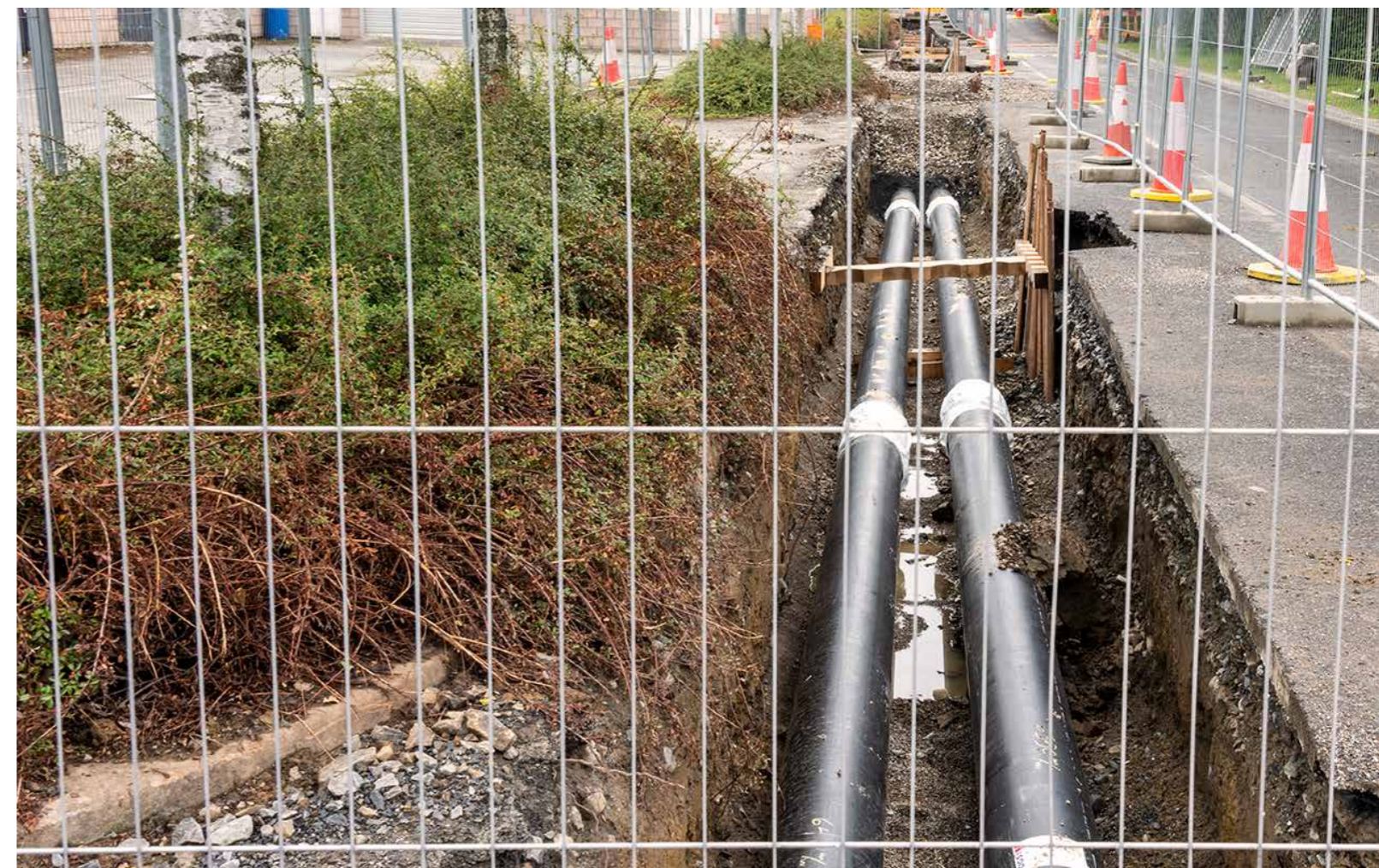
Sectoral risk arises from anticipated increased reliance on the national grid to decarbonise, and therefore, to distribute risk, a portfolio of additional measures to decarbonise our activities must also be developed in parallel. To that end, TU Dublin continues to review opportunities to implement renewable energy initiatives on campus. TU Dublin has developed district heating (DH) network systems on the Grangegorman and Tallaght campuses. These networks give the flexibility to use different, and more sustainable centralised heating sources.

The Tallaght campus is heated by a DH network developed with South Dublin County Council, which uses waste heat recovered from a nearby data centre, currently supplemented by water-source heat pumps. Renewable thermal energy purchased from the Heat Works non-for-profit energy utility accounted for 2,265,960 kWh in 2023. TU Dublin is participating in the development of a DH network modelled on the existing network in Tallaght with Fingal County Council and CODEMA to service the Blanchardstown campus. Learnings from the project on the Tallaght campus are anticipated to accelerate the timeframe for implantation for this project. On the Grangegorman campus, the potential for deep-bore geothermal heating is being explored in partnership with Geological Survey Ireland (GSI), with the assistance of CODEMA and the Grangegorman Development Agency (GDA). An initial trial borehole to 1 km depth showed promising results, with a temperature of 38.5°C at 1 km depth. In partnership, we are actively exploring funding opportunities to develop a full production deep bore geothermal well that would largely decarbonise heat on the local network.

TU Dublin generates renewable energy on site through PV Solar installations on two buildings. Generations from these installations amounted to 55,172 kWh for 2023.

TU Dublin has received funding in 2023 through the HEA/SEAI energy efficiency and decarbonisation [Pathfinder](#) programme to part fund a deep bore geothermal well on the Grangegorman campus to provide renewable heat to the already installed DH network, replacing existing gas-fired boilers. The chosen technology is a deep bore open geothermal doublet, extracting heat at 2.5 km and return water to a depth of approximately 1 km. It is anticipated that a portion of funding will come from an EU Peace+ initiative where TU Dublin work close partnership with GSI, Geological Survey Northern Ireland (GSNI), and CODEMA includes research and innovation, on this live submission. This will be an exemplar public sector project, with the potential to be replicated across other public sector locations, including universities, and large-scale infrastructure.

Through these and related performance enhancing initiatives, and subject to the securing of funding, TU Dublin aims to provide a minimum of 70% renewable space heating on site by 2030 and will engage in opportunities to extend these benefits to local Sustainable Energy Communities (SECs) and Renewable Energy Communities (RECs).





### 3.1.h TU DUBLIN DECARBONISATION ROADMAP

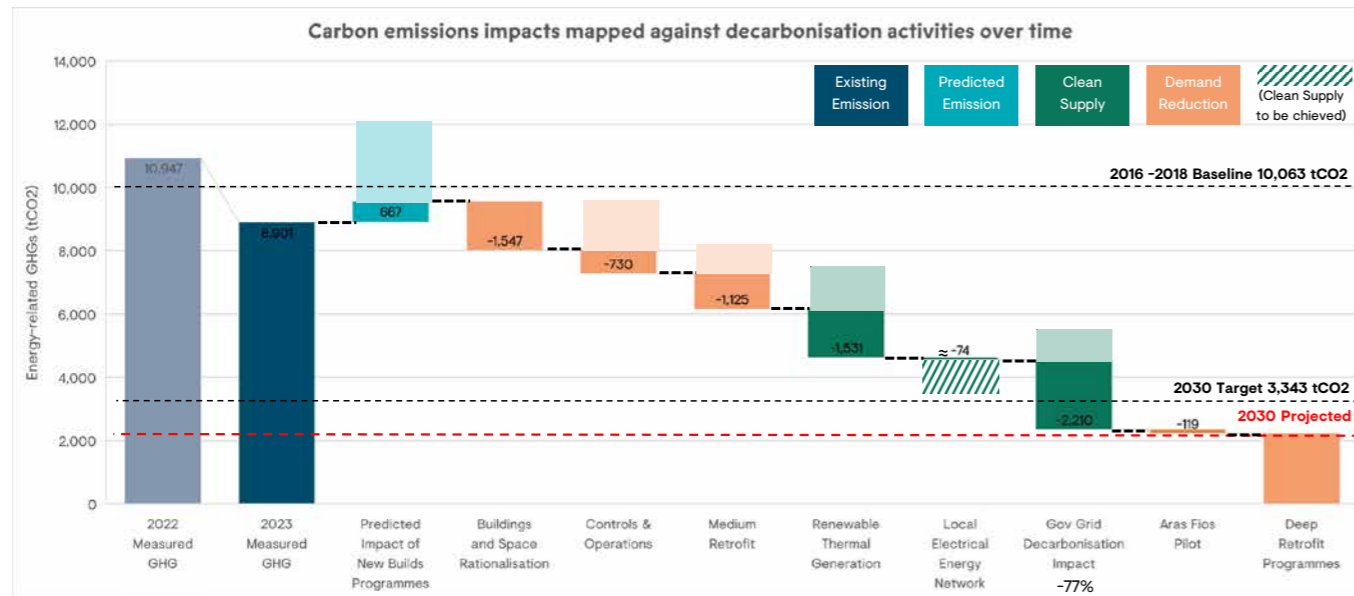


Figure 6 Carbon emissions impacts mapped against decarbonisation activities over time

TU Dublin’s decarbonisation roadmap strategy begins with gaining a better understanding of our operational usage data. To that end, a submetering programme is underway to provide more granular information that allocates carbon usage at the individual building level and will continue to be developed to bring the granularity of that data to the floor and room level. A Buildings and Space Rationalisation Programme is being developed which will contribute to overall carbon savings. It is anticipated that carbon emissions can be reduced by at least 25% through optimising controls and operational efficiencies. A medium retrofit programme to be outlined in our Energy Efficiency Action Plan and accompanying Register of Energy Efficiency Opportunities is expected to achieve an additional 20% of current carbon emissions.

The Renewable Thermal and Electrical Energy Projects sets out our programme of work to achieve the decarbonisation of our energy supplies, both thermal and electrical. The decarbonisation of our thermal heating through the provision of renewable based district heating systems on our campuses as described in section 3.1g above will provide the reductions needed to achieve the 51% carbon reduction goal to 2030. In parallel, we are actively exploring opportunities to increase the production of thermal

electricity on our campuses and sites as well as looking at our ability to manage demand and distribution through local energy networks. This strategy allows TU Dublin sufficient time to develop our deep retrofitting programme in response to learnings gained through several pathfinder projects on key buildings. The waterfall chart in figure 6 sets out the high-level estimated savings per activity which we intend to track over time and refine through understandings gained.

To illustrate TU Dublin’s current and anticipated energy demand relative to an overall decarbonisation pathway to net zero, an overview by campus and buildings is being continually refined to indicate key targets with milestones for reviewing our emissions profile across 2025, 2030, 2040 and 2050 time horizons (figure 7).

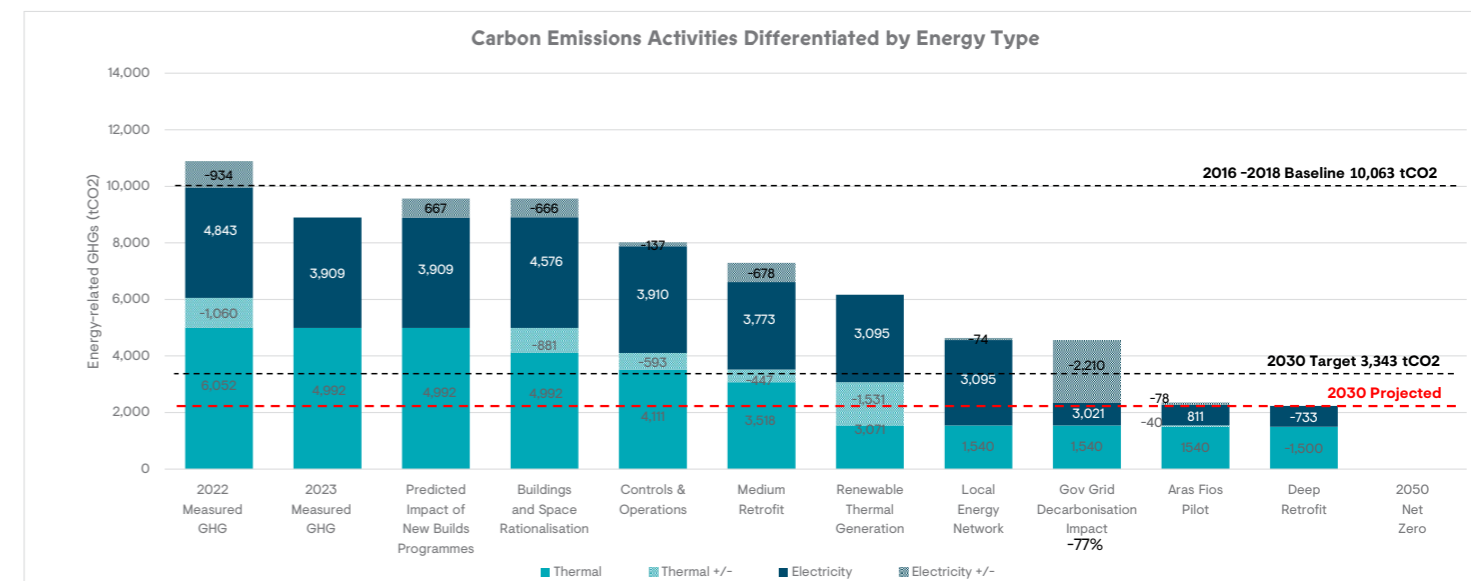


Figure 7 Decarbonisation activities differentiated by energy type and mapped over time

# DECARBONISATION ROADMAP SCOPE 1 & 2

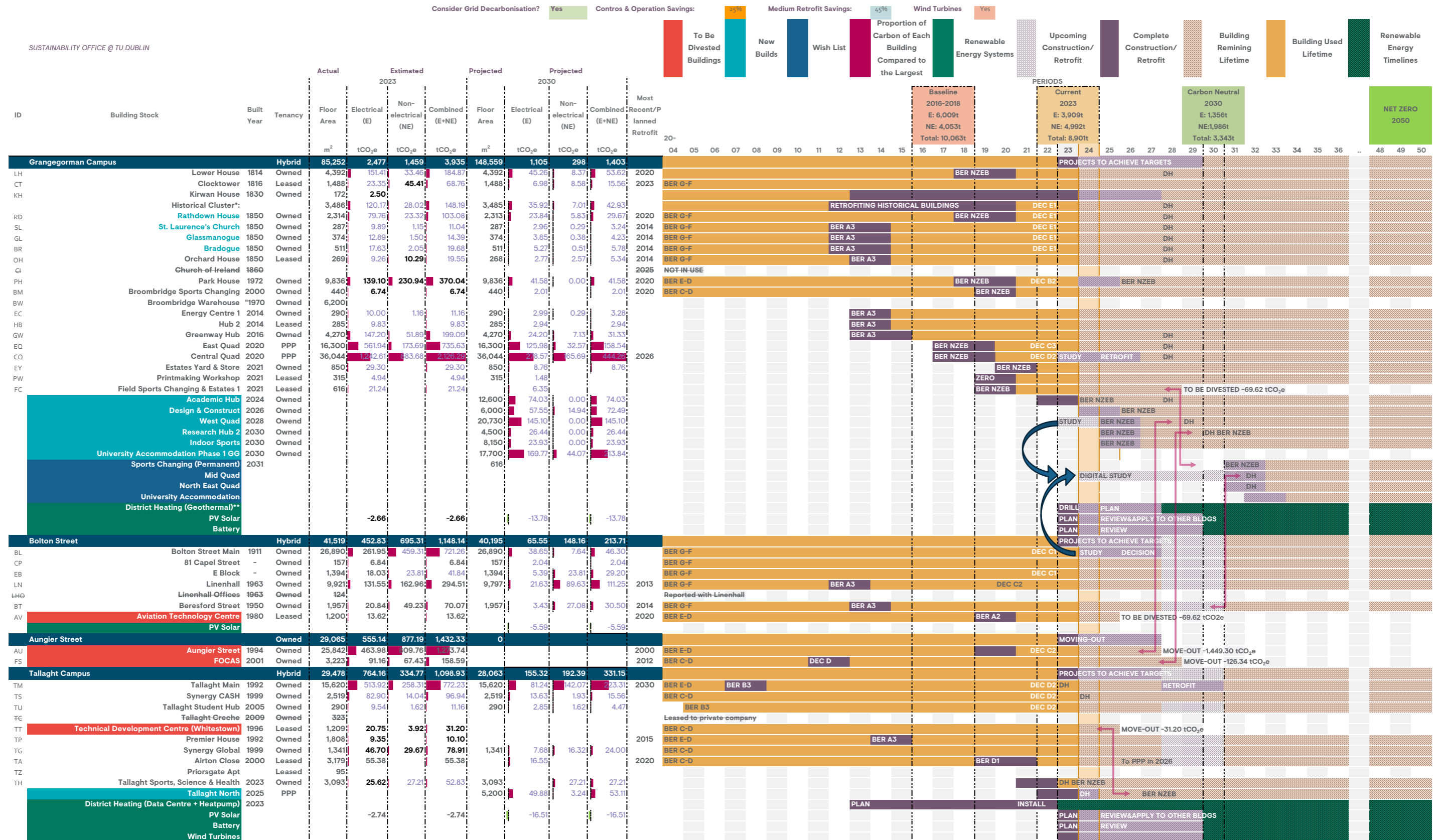


Figure 8: Decarbonisation Roadmap as of September 2023 - continued overleaf



## 3.2 ACHIEVING THE ENERGY EFFICIENCY TARGET (50% IMPROVEMENT BY 2030)

### 3.2.a ENERGY EFFICIENCY BASELINE

Baseline figures for measuring TU Dublin’s energy efficiency improvements constitute an average usage between 2006–2008. During this period, the three original institutions of Dublin Institute of Technology (DIT), Institute of Technology Blanchardstown (ITB), and Institute of Technology Tallaght (ITT) reported as separate entities. In 2021, the first joint reporting through the SEAI M&R tool was conducted, where all campus locations were reported under one organisational footprint.

The top 10 attributable consumers of energy reported during that baseline period are charted in Figures 9 and 10 for electricity and non-electrical energy consumption. With regards to electricity, top significant users include the five buildings on the Tallaght campus reported as one user, DIT Aungier Street, DIT Kevin Street, the entirety of the Blanchardstown campus buildings as one user, DIT Bolton Street Main and DIT Cathal Brugha Street.

With regards to non-electrical energy consumption, significant users at the baseline period include DIT Main Kevin Street, the five buildings on the Tallaght campus reported as one user, six buildings on the Blanchardstown campus reported as one user, DIT Bolton Street Main and DIT Aungier Street.

Of the top five significant energy users from the baseline period, Kevin Street and Cathal Brugha Street have been divested and accommodated in new buildings on the Grangegorman campus. The remaining three significant energy users are the five buildings on the Tallaght campus, the nine buildings on the Blanchardstown campus and the Main Building at Bolton Street. The top user of electrical energy during the baseline years used on average more than 2,350,000 kWh/year with the top five users combined using approximately 11,800,000 kWh/year. The top user of non-electrical energy used on average just under 3,200,000 kWh/year with the top five users

combined using approximately 15,800,000 kWh/year. Total energy consumption of the top five energy users during that period was approximately 27,600,000 kWh/year.

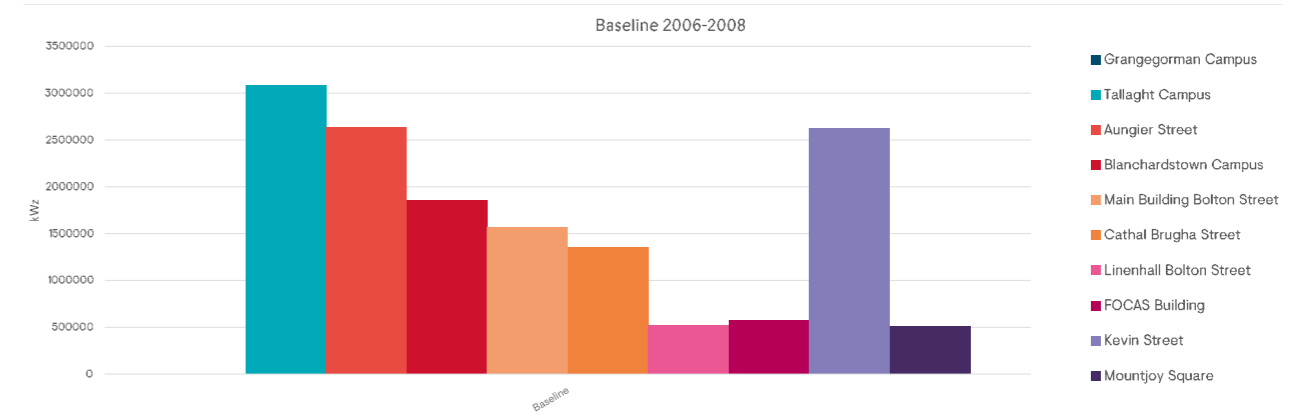


Figure 9: Top 10 MPRNs - Attributable consumption (kWh) baseline (2006-2008) as per SEAI M&R

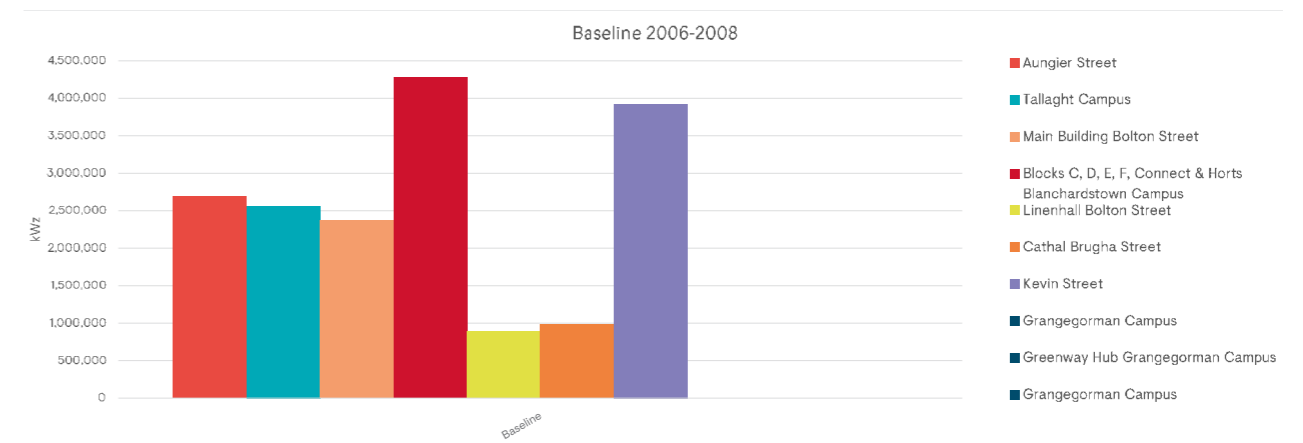


Figure 10: Top 10 GPRNs- Attributable consumption (kWh) baseline (2006-2008) as per SEAI M&R

### 3.2.b ENERGY EFFICIENCY IN TARGET YEAR IF NO NEW PROJECTS IMPLEMENTED

The SEAI M&R reporting tool indicates that the average annual Total Final Consumption (TFC) over the energy efficiency baseline period was 36,983,394 kWh/year and the Energy Performance Indicator (EnPI)<sup>2</sup> was 2,633.84. This means that the maximum EnPI which TU Dublin must achieve in 2030 is 1,316.92. The actual annual TFC recorded in 2023 was 36,538,693 kWh and the EnPI was 1,996.41.

In pursuit of the 2030 51% energy efficiency target, TU Dublin is commencing the Deep Retrofit of the Aras Fios (Block F) Building in 2024 supported by the HEA/SEAI Pathfinder fund. This will contribute 1.9% of the 3% per annum retrofitting target for our existing stock.

ISO 50001 certification was achieved for all three campuses in April 2024.

### 3.2.c PLANNED ENERGY EFFICIENCY ACTIVITIES

Actions to achieve increased energy efficiency will include, and not be limited to, the following activities:

- Track and update the Register Energy Efficiency Opportunities.
- Track and update the Building Stock Register (as defined by Energy Performance of Buildings Directive (EPBD)).
- Develop TU Dublin Building Stock Retrofit programme (and associated targets).
- Achieving a national standard Nearly Zero Energy Buildings (NZEB) targets for buildings built, retrofitted, or leased from 2025 and a national standard Zero Energy buildings by 2030, by scheduling a minimum of 3% of existing buildings stock per annum to undergo energy improvements, subject to funding being made available.
- Achieve Display Energy Certificate (DEC) A rating or better for 60% of our building stock by 2030.
- Optimise the use of our existing campus infrastructure assets to achieve optimal utilisation of buildings in line with our academic mission.
- Maintain certification of ISO 50001 processes at required intervals.

#### Existing Buildings

- Undertake data gathering and consider the long-term (to 2050) retrofit key performance indicators to upgrade all building stock to Nearly Zero Energy Buildings (NZEB) or Zero Energy Buildings (ZEB) as outlined in the recast EPBD and Energy Efficiency Directive.

### 3.2.d ANALYSIS OF SIGNIFICANT ENERGY USERS

#### TU Dublin Building Stock

TU Dublin’s building stock currently includes 210,887m<sup>2</sup> in 46 buildings across five campus locations. Most of these buildings are owned by TU Dublin, with a small number of leased buildings. In addition, there are live medium- and long-term plans to build eight new buildings and to divest of five older buildings. This will potentially bring the entirety of the building stock to 49 buildings by 2030.

TU Dublin Campus	Site (m <sup>2</sup> )	Gross Internal Area (m <sup>2</sup> )				No. of Buildings						
		Existing	New Planned	To be Discounted	Total	Current Owned	Current PPP/Leased	NEW Planned Owned	NEW Planned PPP/Leased	To be Discounted	Total	
		As of 2024	By 2030	By 2030	By 2030	As of 2024	As of 2024	By 2030	By 2030	By 2030	By 2030	
TU Dublin Grangegorman	266,100	85,252	69,680	-616	154,316	12	7	6			-1	24
TU Dublin Tallaght	191,300	29,478	5,200	-1,209	33,469	7	3				-1	10
TU Dublin Blanchardstown	230,900	25,573	4,040		29,613	9			1			10
TU Dublin Bolton Street	22,662	41,519		-1,200	40,319	5	1				-1	5
TU Dublin Aungier Street	14,300	29,065		-29,065	0	2					-2	0
<b>Sub Total</b>	<b>725,262</b>	<b>210,887</b>	<b>78,920</b>	<b>-32,090</b>	<b>257,717</b>	<b>35</b>	<b>11</b>	<b>6</b>	<b>2</b>	<b></b>	<b>-5</b>	<b>49</b>

Table 2: TU Dublin campuses building stock inventory

TU Dublin’s current buildings register includes 46 extant buildings. The M&R reporting tool tracks data for specific buildings: two in Aungier Street, eight on the Tallaght campus, nine on the Blanchardstown campus, and five across Bolton Street and Linenhall, covering both electricity and non-electricity energy sources. Grangegorman has multiple buildings that report to a single electricity meter, with others grouped under shared gas meters. This grouping makes it challenging to disaggregate data and identify major energy consumers on a per-building basis.

The Energy Elephant platform provides MPRN and GPRN readings for 2023, from which we estimate the energy consumption for each building based on its square meterage. The top energy users based on these estimations are displayed in Figures 9 and 10 for MPRN and GPRN respectively.

<sup>2</sup>Tracking Performance Using EnPI | M&R | SEAI is calculated based on the Total Primary Energy Requirement (TPER). The Activity Metric we selected is the ‘Student Number’, following best practices for TU Dublin as a university

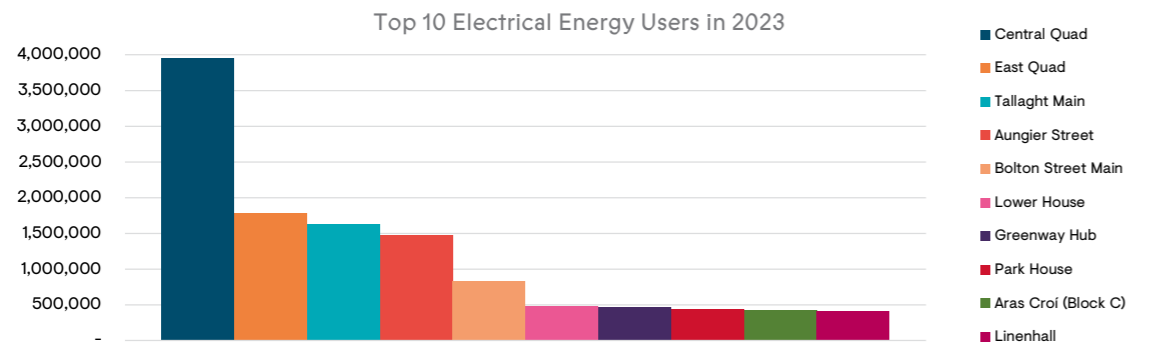
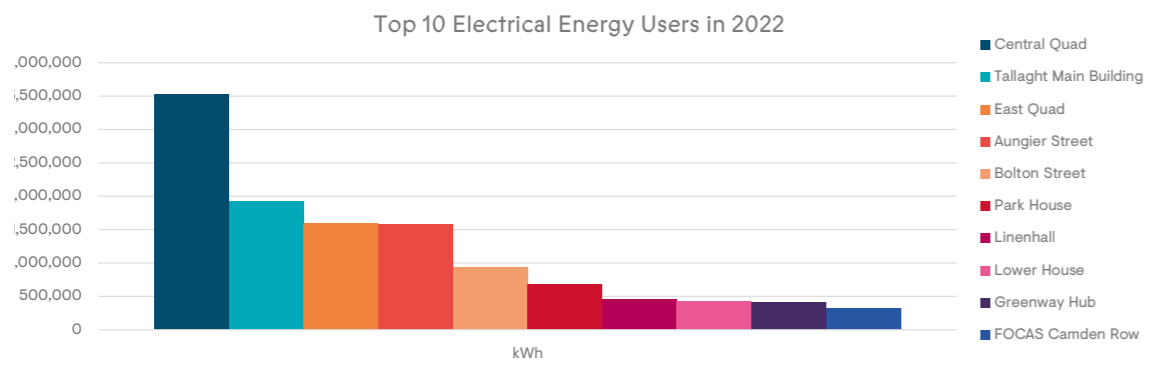


Figure 11: Top 10 Electrical Energy Users - Attributable consumption (kWh) in 2022 as per SEAI M&R (2023)

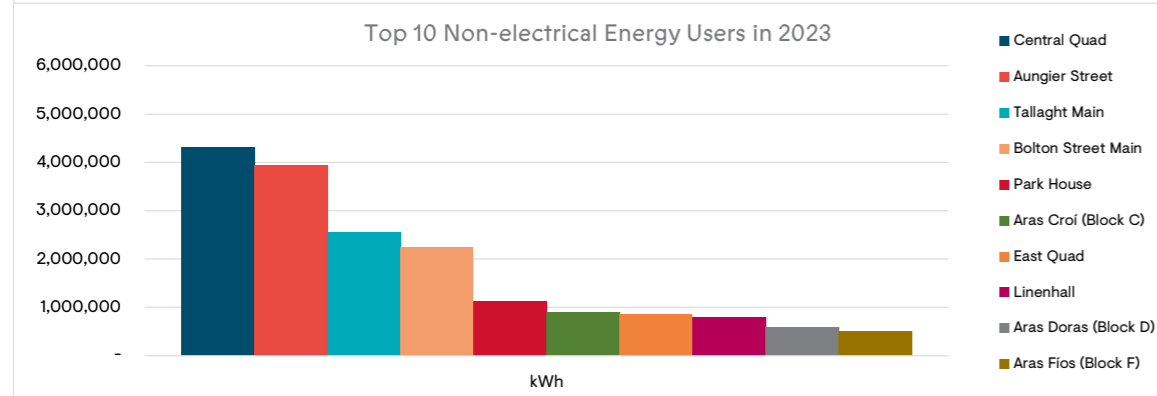
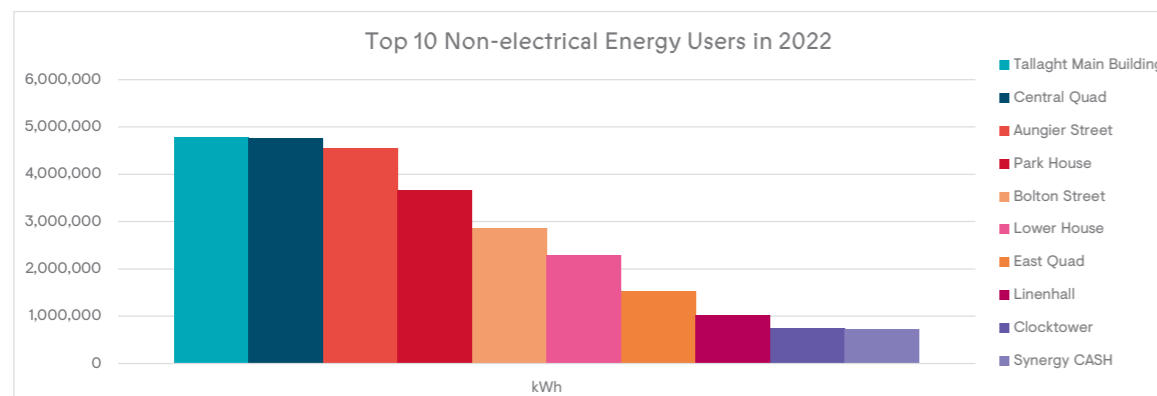


Figure 12: Top 10 Non-electrical Energy Users - Attributable consumption (kWh) in 2022 as per SEAI M&R

In terms of electricity, the Central Quad building reports over 3,952,679 kWh/year as the top electricity user with East Quad as the second highest user with just over 1,787,500 kWh/year. The Tallaght Main and Aungier Street are the next two significant electricity users at approximately 1,500,000 kWh/year each. Bolton Street Main uses approximately 800,000 kWh/year.

### 3.2.e GAP TO TARGET TO BE ADDRESSED

Based on the 2006-2008 benchmark year, TU Dublin is required to improve its energy efficiency, which is monitored by the EnPI, by 50% by the year 2030. In line with the 2020 targets TU Dublin has already reduced TPER by 25% on the benchmark year resulting in a gap to target of 25%. TU Dublin will continue to target a 3.6% TPER reduction per year to achieve our Energy Efficiency Target.

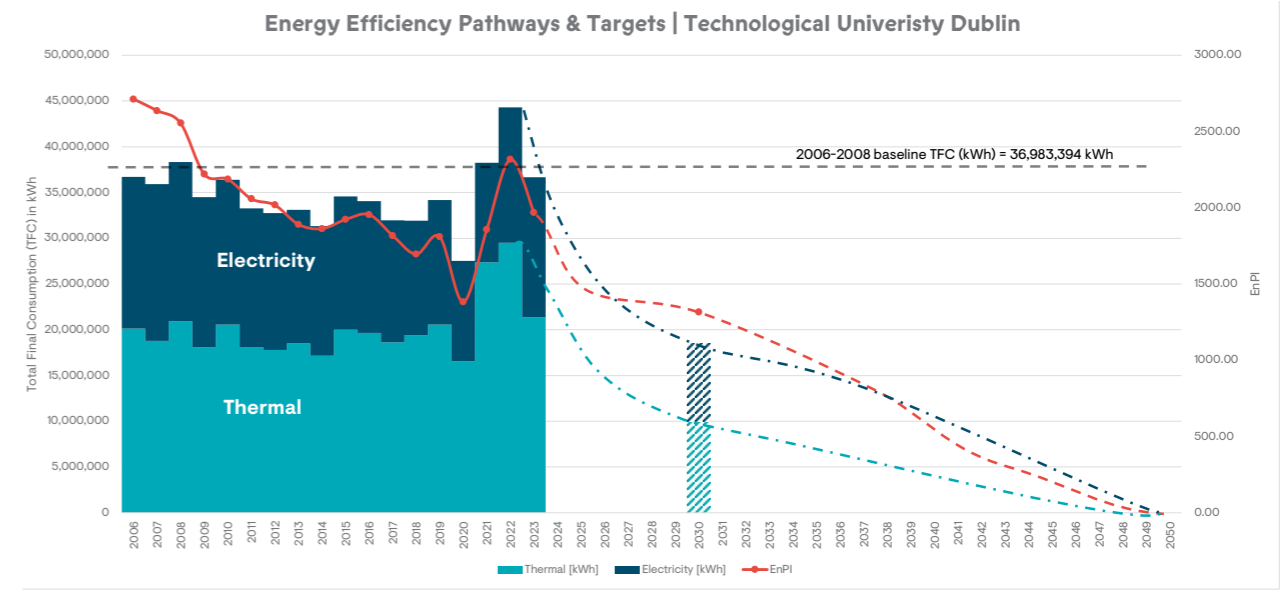


Figure 13: TU Dublin energy efficiency pathways and targets as per SEAI M&R (2021)

The Central Quad and the Aungier Street building constitute the largest significant energy users of non-electrical energy using approximately 4,000,000 kWh/ year each. The Tallaght Main Building and Bolton Street is the next significant non-electricity user with over 2,000,000 kWh/year. Park House and Aras Croí (block C) are the next two largest users with approximately 1,000,000 kWh/ year each. The Tallaght Main Building which was the largest significant user of non-electrical energy last year is now the third-largest non-electrical energy user due to its inclusion in the district heating system. The lower gas consumption of the Park House building in 2023 compared to 2022 was due to improved submetering. The reduction in gas usage at the Lower House in 2023 was partially attributed to a supplier compensation credit. We anticipate that the gas consumption figure for 2024 will be higher than in 2023.

### 3.2.f PROPOSED ACTIONS TO ACHIEVE ENERGY EFFICIENCY TARGET

#### Using Less Energy

TU Dublin will continue to promote demand reduction wherever possible through participation in the following activities:

- The Optimizing Power @ Work initiative,
- The [Reduce Your Use campaign](#),
- The [TU Dublin is Switching Off campaign](#),
- The [My Green Lab](#) certification procedures,
- Reviewing building opening hours,
- Assessing and reviewing Information Communication Technologies (ICT) loads concerning auto-energy savings systems,
- Enhancing overall energy management systems at building level.

In addition, demand response technologies will be investigated to incorporate measures across building stock. The new University Sustainability Council has initiated a Green Labs Working Group to engage with all types of lab/energy intensive spaces (EIS) across TU Dublin. My Green Lab certification is being sought across all appropriate lab spaces in TU Dublin. TU Dublin is a member of the Irish Green Labs network which is a member of Sustainable [European Laboratories Network](#). TU Dublin is also member of the SEAI Public Sector Labs Working Group with an aim of optimising energy management in public sector laboratories.

	Campus	School/ Research Hub	Lab Name	Overall Score	AWARD	Location
Faculty of Sciences & Health	1 Tallaght	School of Chemical & BioPharmaceutical Sciences	Chemistry Lab Suite	74	Platinum	111, 113/115, 119/121, 129
	2 Tallaght	School of Chemical & BioPharmaceutical Sciences	Biological Sciences Lab	74	Platinum	131, 149, 151
	3 Tallaght	School of Chemical & BioPharmaceutical Sciences	Apprenticeship Lab	90	Green	127
	4 Grangegorman	School of Chemical & BioPharmaceutical Sciences	Chemical Sciences	64	Gold	CQ-415, CQ-416, CQ-418, CQ-420, CQ-422, CQ-423, CQ-424, CQ-426
	5 Grangegorman	School of Biological, Health and Sports Sciences	Biological Sciences Lab	68	Gold	CQ-217, CQ-218
	6 Grangegorman	School of Physics, Clinical & Optometric Sciences	Junior Lab Suite	58	Silver	CQ-117, CQ-118, CQ-120
	7 Grangegorman	School of Food Science and Environmental Health	Biology Lab Suite	79	Platinum	CQ-226, CQ-333, CQ-335
	8 Grangegorman	School of Food Science and Environmental Health	Chemistry Lab Suite	62	Gold	CQ-113, CQ-114, CQ-115
Research & Innovation	1 Grangegorman	Environmental Sustainability and Health Institute (ESHI)	Core Lab Area	53	Silver	Core
	2 Aungier Street	Facility for Optical Characterisation and Spectroscopy (FOCAS)	Core Lab Area	79	Platinum	Core

Table 3: My Green Lab progress reporting for TU Dublin May 2023

#### Optimising our Assets

A review of blended working policies will ensure that full advantage from a climate action perspective can be taken to support remote/hybrid working. The review will provide information on changes in our space requirements and through optimisation may facilitate a further reduction in energy use. Working models will be reviewed within an assessment of TU Dublin's building programme to ensure space optimisation is achieved. Where practical, zoned heating and lighting will be incorporated to align servicing of buildings to utilisation.

The University has undertaken an initial space occupancy analysis across all campuses and is currently finalising a strategy to undertake improving our data driven analysis through the use of new technologies for on an ongoing monitoring towards optimisation. This work is to determine how spaces are used with a view to optimising the usage of the current estate and targeting areas for improvement. The University will continue to endeavour to achieve good space utilisation and rigorously interrogate the need for additional spaces.

#### Deep Energy Retrofit Pilot for 2023

TU Dublin has received funding in 2023 through the HEA/SEAI Energy Efficiency and Decarbonisation Pathfinder programme to commence a deep retrofit project. The Áras Fíos building comprises 3,862 m<sup>2</sup> over three levels with a rooftop plant room and was one of four buildings constructed in 2002 on the Blanchardstown campus. A thermal imaging survey was completed in January 2021 at the Blanchardstown campus on the 2001 and 2002 buildings, which identified several areas of heat loss. The project is to review, in depth, areas identified in the thermal survey and rectify the heat loss through deep energy retrofit measures including, entrance areas, doors, windows and the roof. This review will include, but is not limited to, optimal operation energy efficiency utilising passive architectural solutions, optimal life cycle energy and environmental impacts from materials, optimal thermal, daylight and air quality and advanced circularity utilising Modern Methods of Construction (MMC) and modularised solutions. By taking a more in-depth look at heat loss and other energy performance gaps in the pathfinder building, a programme of measures for implementation can be created to replicate at scale across other buildings within the TU Dublin building stock to decarbonise through deep retrofit measures.

## Energy Efficient Buildings

The retrofitting of existing buildings to sufficient standards to reach our energy efficiency improvement targets will require significant financing. With 46 buildings and more than 210,000m<sup>2</sup> of accommodation space to be upgraded at a nominal cost of €2500/m<sup>2</sup> to retrofit to BER B2 would exceed €480 million and may not provide sufficient energy reductions to meet our absolute emissions targets. To more accurately quantify the scope of works and costs, utilising the DEC advisory reports as a start, we will undertake feasibility assessments of all existing buildings to determine retrofit requirements and energy source considerations to ensure our climate action targets can be attained. TU Dublin will develop a high-level prioritised retrofit plan for buildings on all campuses as a priority action of the Energy Management Team established through the ISO 50001 process.

## Design for Efficiency

Embedding energy efficient design practice and expertise at the earliest stages of all new projects as they develop will ensure that lifecycle costs, energy efficiency and carbon reductions are considered at the outset, recognising the goal of absolute reduction across the University boundary. In this way, we will ensure maximum value for money and the greatest carbon savings as a whole life consideration across buildings, building systems, services, and materials.

We will introduce systems to include the environmental costs of carbon using the [Public Spending Code](#) guidance on measuring and valuing changes in GHG emissions in economic appraisals to feed into the business plans for proposed projects.

## 3.3 ENSURING CONSISTENCY WITH SECTION 15(1) OF THE CLIMATE ACTION LOW CARBON ACT 2021

### 3.3A SECTION 15(1) SCREENING

TU Dublin will carry out a screening exercise of each of its key activities and functions to assess whether it has a material role in implementing the Climate Action Plan, the Public Sector Climate Action Strategy or the furtherance of the national Climate

Objective set out in the Climate Action Low Carbon Act 2021. It will build on existing taxonomies/approaches to incorporate lessons learnt elsewhere. It will develop/use an appropriate methodology to reflect the full climate impact of decisions made both direct and indirect and including Scope 1, 2 & 3 emissions. In preparing this report, it will be informed by SEAI guidance specifically relating to this action when published.





4

# OUR WAY OF WORKING

## 4.1 SUSTAINABILITY ACTIVITIES REPORT

TU Dublin endeavours to offer a range of sustainability activities suitable for all members of the TU Dublin community to participate in and engage with through which we highlight our commitment to 100% renewable energy. The scale, format, and location of our activities depends on the activity purpose and the target audience. Sustainability activities operate as both long-term planned and ad-hoc events, including;

- A series of annual University sustainability events.
- Celebrating relevant UN international days.
- Hosting sustainability events led by community partners.
- Supporting students and staff in the development of new sustainability activities.
- TU Dublin provides a neutral platform and safe space for different political stakeholders to come together to frankly discuss challenges.
- Initiate and participate in cross-sectoral dialogue about the United Nations (UN) Sustainable Development Goals (SDGs).

In conjunction with training and education activities planned as per section 2.2, a summary of Sustainability Roadmap Actions and Activities will be included in the [TU Dublin Annual Report](#).

## 4.2 EMISSIONS ASSOCIATED WITH AIR TRAVEL

TU Dublin is reviewing travel policies in compliance with circular 01/2020 procedures for offsetting the emissions associated with air travel. Following research and international benchmarking across university exemplars, TU Dublin's Travel & Subsistence Policy is underway to incorporate Circular 01/2020 through a revised policy which is envisaged to be in place by 2025. In preparation for this, TU Dublin is reviewing current practices and requirements for travel with research staff. TU Dublin is engaging with our contracted travel suppliers to include green criteria as part of purchase information and to collect relevant data in relation to carbon emissions for reporting on progress.



### 4.3 ENERGY AND ENVIRONMENTAL MANAGEMENT SYSTEMS AND ACCREDITATION

TU Dublin has implemented and achieved ISO 50001 certification for all of its campuses and locations.

### 4.4 GREEN PUBLIC PROCUREMENT

TU Dublin intends to implement Green Public Procurement (GPP) processes in new sourcing of goods, services and work to ensure a reduced environmental impact.

- Develop sustainable purchasing practices in our procurement policies and procedures supported by Environmental Protection Agency (EPA), GPP, and Office of Government Procurement (OGP) guidance.
- Develop/train staff and engage with suppliers to be knowledgeable about GPP.

We are reviewing our purchasing needs considering the changing nature of work, learning and teaching, and research, digital infrastructure, and resilience enhancement with a view to;

- Implement circular economy principles.
- Provide for the inclusion of measurable data for greenhouse gas (GHG) emissions savings in tenders and is then brought into contracts to provide figures for energy consumption, waste generated, circular economy and financial savings, with savings reviewed for ringfencing for recirculation into other sustainability projects and initiatives.

We are reviewing purchasing categories in detail, identifying ongoing contracts and critical timelines of contracts up for renewal. Where new contracts are considered they will;

- Include green criteria in our procurement processes in a manner that allows suppliers sufficient timelines and understanding to respond.
- Ensure implementation by establishing gateway signoff for business cases to procure goods and services with a minimum 10% award weighting for green award and selection criteria. Increase to 30% over time as appropriate by 2024.
- Include contract clauses requiring suppliers to monitor the environmental footprint of activities carried out by them to fulfil the contract, provide data verification, and

record the improvement performance incrementally over the contract period.

- All new public sector procurement contracts for delivery and haulage should specify zero emissions vehicles where possible.

We are reviewing ongoing contracts, identifying the largest suppliers to measure emissions associated with TU Dublin purchasing and identify areas in which we can influence emissions reductions.

- We are reviewing existing contractual arrangements to ascertain how quickly green criteria can be incorporated into the provision of services and products. We are making the renewal or extension of the contract contingent on achieving TU Dublin climate action targets.

We aim to increase sustainable purchasing criteria and performance of suppliers using futureproof frameworks provided by OGP through GPP guidance.

- Apply lifecycle costing principles at pre-procurement, tender evaluation, and contract monitoring phases to mitigate key environmental impacts of purchased products and services.
- Implement innovation procurement for new green solutions to support green fuels, innovative renewables processes, and circular economy initiatives.



## 4.5 CONSTRUCTION

TU Dublin specifies low carbon construction methods and low carbon cement material as far as practicable for directly procured or supported construction projects since 2023. The University adheres to the best practice guidelines for the preparation of resource and waste management plans for construction and demolition projects for directly procured or supported construction projects from 2024.

## 4.6 FOOD WASTE

TU Dublin commits to the following food waste measures:

- Measure and monitor food waste generated on premises from 2024 using a standardised approach to food waste measurement set out in the EPA Protocol/ Pathway.
- All new contract arrangements related to canteen or food services, including events and conferences to include measures targeted at addressing food waste, with a specific focus on food waste prevention and food waste segregation.
- Calculate TU Dublin's food waste benchmark, set a target to reduce food waste and identify actions to meet that target. We will report on progress annually.
- The Green Team will focus on food waste prevention.
- Support the National Stop Food Waste campaign on 01 March.
- Encourage canteen operators to sign the Food Waste Charter.

## 4.7 WATER

TU Dublin commits to the following water conservation measures:

- Provide suitable drinking water refill points for all students and staff and in any premises accessed by the public and measure and monitor usage of the refill points.
- The Green Team will focus on reducing water consumption.
- Put a plan in place to reduce water consumption.
- Engage in Uisce Eireann Water Stewardship programme.

## 4.8 PAPER

TU Dublin commits to the following measures:

- Review any paper-based processes and evaluate the possibilities for digitisation, so it becomes the default approach.
- Eliminate paper-based processes as far as is practicable.
- Where paper must be procured, ensure that recycled paper is the default.
- Measure and monitor paper consumption.
- Once baseline for paper consumption is known, set a target to reduce paper use and identify and take actions to meet that target. Report on activities in our annual report.
- Measure paper waste generation (quantity and/or expenditure).
- Once a baseline for waste paper generation is known, set a target to reduce the amount of paper waste generated.

## 4.9 SINGLE USE

TU Dublin will cease using disposable cups, plates and cutlery in its canteens and closed facilities where feasible. The University will progressively eliminate all other single use items within the organisation and from events organised, funded or sponsored.

## 4.10 OTHER MATERIALS

TU Dublin will:

- Support Ireland's Producer Responsibility Initiatives in the collection and recycling of products.
- Use waste collection services that are segregated into a minimum of three streams residual/general waste, recycling waste and organic/biowaste.
- Track waste generation (general waste, dry recyclables, organic waste, other wastes e.g., waste electrical and electronic equipment).
- Set out plans to prevent waste (general waste, dry recyclables, organic waste, other wastes) to progressively reduce waste generation.

## 5 | OUR BUILDINGS AND VEHICLES

### Display Energy Certificates

TU Dublin will display up-to-date Display Energy Certificates (DECs) in each campus building 'frequently visited by the public' to clearly show energy use. DECs have been carried out for 12 of the buildings that represent our significant energy users. These buildings account for 73% of the floor area of our buildings stock and include areas frequently accessed by the public. The remaining buildings are scheduled to be audited with completion due for Q4 2024.

### Fleet Conversion

TU Dublin replaced two diesel vans with zero emission vehicles, meeting the minimum targets set out by SI381/2021 Clean Vehicles Directive.

### Procurement and Design Procedures

TU Dublin will update procurement policies and process and design specifications to comply with the requirement for no fossil fuel heating systems will be installed from 2023.

### Sustainable Transport and Mobility

TU Dublin will promote the use of bicycle and shared mobility options as an alternative to car use among students, staff and visitors by creating and maintaining facilities that support sustainable transport and mobility and promote active travel health benefits. TU Dublin will create secure, accessible bicycle parking which is simple for cyclists to recognise and increase use. TU Dublin will review all on-site car parking considering public transport services to promote the use of sustainable transportation alternatives whilst ensuring accessible parking is maintained for those with physical mobility needs. TU Dublin is undertaking a parking review study across all campus and building locations, the report will advise on a parking policy which will regularise parking operations and activities on a University-wide basis.

## 5.1 UPDATES AND REPORTING

- This Climate Action Roadmap will be updated within three months of issuance of additional guidance from SEAI and EPA if necessary to reflect revised mandate requirements.
- The roadmap will be reviewed and updated annually, including summary progress against the plans set out in the previous year's roadmap, assess progress against meeting those requirements and include a statement on when they will be achieved or delivered.
- SEAI M&R system will be used to track progress towards energy efficiency and energy related carbon targets as well as the SI281/2021 Clean Vehicle Directive procurement targets.
- TU Dublin will report annually on progress on implementation of Green Public Procurement (GPP) using the template provided by the Environmental Protection Agency (EPA).
- Climate Action Roadmap targets and progress will feature in TU Dublin annual reports.



## 6 CONCLUSION

From the baseline analysis provided in section 3.1.a on TU Dublin carbon emissions reduction between 2018-2021, it indicated a total emissions reduction of 34%. However, the period leading up to the 2022 data highlighted an increase in emissions, attributed to infrastructural expansions and increased operational activities. In 2023, energy related carbon emissions have dropped by 19% due largely to participation in the sustainable district heating system in Tallaght and better control and operations coupled with medium retrofitting measures. TU Dublin continues to pursue renewable on-site and community networked energy solutions. However, we anticipate that even with the additional operational energy loads and embodied carbon produced from buildings planned and in construction, a programme of cross-campus deep retrofit, and the intensified use of existing buildings across our campuses, that a sustained rate of total emissions reductions over the coming years will be significantly challenging.

Our current carbon emission target, without additionality and assuming continued reductions in energy use and increases in energy efficiency, is currently projected at 3,343 tCO<sub>2</sub> from our 2016-2018 new baseline of 10,063 tCO<sub>2</sub>. With the expectation that the electricity grid will decarbonise by 77% by 2030, TU Dublin's nonelectrical emissions target is estimated as 1,986 tCO<sub>2</sub>. To deliver on our climate action targets and ensure we have the resources to support the transition to carbon neutrality, significant investment is required. As set out earlier, the retrofitting of existing buildings to sufficient standards to reach our energy efficiency improvement targets will require significant financial investment, estimated at €480m, to achieve the National Climate Action Plan and TU Dublin targets by 2030 and 2040.

To more accurately quantify the scope of works and costs for all retrofit and new buildings updates will require feasibility assessments of both retrofit requirements and

energy sources to ensure our climate action targets can be attained. TU Dublin will develop a high level prioritised retrofit plan for buildings on all campuses over the next year as a priority action of the Energy Management Team established through the ISO 50001 process.

This financial investment in our building stock and sustainable energy solutions to achieve absolute reductions, rather than a separate exercise, must be accompanied by a continuing investment in our people, to nurture their sustainability mindsets and build upon their expertise to ensure we offer relevant education, research and innovation, and engagement necessary to support society at this critical time.



## 6.1 GAP TO TARGET FOR INVESTMENT AND ACTIONS

The detailed actions listed in this roadmap will be enabled through the following overarching gap to target supporting actions that TU Dublin intend to pursue.

- Advocate directly and through sectoral representative bodies for multi-annual budgeting for capital infrastructure requirements. This includes consolidated funding streams to deliver strategic decarbonisation impact across two-to-seven years minimum programme to ensure full life-cycle costing (€ invested/kWh/ CO<sub>2</sub> reduced) to create lasting societal value and mitigate further climate risk.
- Establish green budgeting internally to enable funding for and co-funded delivery on decarbonisation implementation programmes and timelines in line with our Climate Action Roadmap, and in anticipation of external funding opportunities
- Allocation of budgeting to be informed by return-on-investment models with respect to climate action impacts on people and emissions reductions targets achieved and reported to the University Executive Team (UET).
- Develop and enhance information and reporting systems to support the measuring, monitoring of climate action plan gap-to-target performance to achieve of our targets.
- Work with the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) and other appropriate national Government departments and agencies, and European Union (UN) bodies, to identify appropriate external funding vehicles to obtain private equity funding opportunities.

## 6.2 CONCLUDING REMARKS

TU Dublin's Climate Action Roadmap sets out a route towards meeting our obligations under the Public Sector Climate Action Mandate, but also more broadly our ambitions to develop responsible citizens, advance new knowledge, shape policy, and transform our campus infrastructure and operations into a living breathing beacon of sustainability. Our roadmap is an integrated driver for developing a sustainability strategy that is ambitious and holistic in the interest of public good. It calls on every person within TU Dublin – students, educators, researchers, professional services, alumni, industry, global network of partners, and our local communities to engage in climate action and to work collectively to limit global warming to ensure a safe future for our planet the next generations.



**T**  
**DUBLIN**

OLLSCOIL TEICNEOLAÍOCHTA  
BHAILE ÁTHA CLIATH

TECHNOLOGICAL  
UNIVERSITY DUBLIN