



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY



Climate Action Roadmap 2030



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University Of Galway Management Team Approval		21ST March 2023	

Document prepared by Michael Curran EPO, Image of Quadrangle and Aras De Brun Pathfinder 2021.

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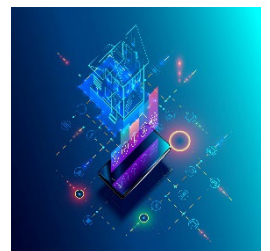
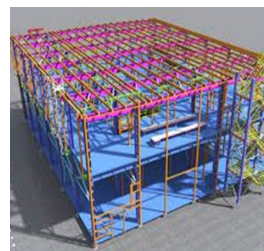
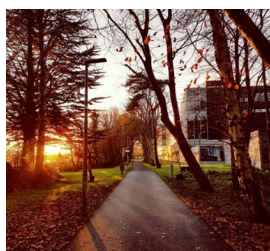
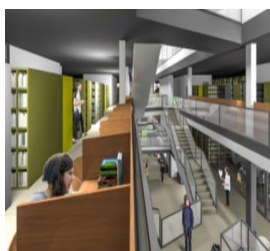
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Introduction

Purpose

The Government's Climate Action Plan 2021 and the Climate Action and Low Carbon Development (Amendment) Bill 2021 is aligned with the European Green Deal, which sets out European Commission policy initiatives with the overarching aim of making the European Union (EU) climate neutral by 2050. Energy policy and directives such as the Energy Performance of Buildings Directive and the Energy Efficiency Directive are being updated under the European Green Deal and will be reflected in the Irish Government's annual updating of the Climate Action Plan.

The Government's Climate Action Plan sets out the energy efficiency and energy related Green House Gas (GHG) emissions reduction targets which Public Sector Bodies in Ireland are legally obliged to meet and mandates the University of Galway as a Public Body to develop a Climate Action Roadmap setting out how it will deliver these targets.

This Climate Action Roadmap has been developed by the University of Galway in response to this obligation. It outlines the work undertaken by the University of Galway to date and our approach to continuing to reduce carbon emissions from our buildings and their operation by reducing energy usage and shifting the University of Galway Energy sources from fossil fuels towards renewable and carbon zero energy sources.

It also highlights the role of the university to be a shared resource as a 'Living Lab in Action' to assist the public and private sector develop new pathways and research into Climate Change.

The University of Galway SHARED VISION, SHAPED BY VALUES Strategic Plan for 2020- 2025 and the Sustainability Strategy 2021-2025 were primary resources in formation of the Climate Action Roadmap.

The Climate Action Mandate sets emission reduction and energy efficiency targets for public bodies as follows:

Decarbonisation Targets and Scope

1. Reduce energy related GHG emissions by 51% by 2030 (against a baseline of 2016-2018 average emissions)
2. Increase the improvement in energy efficiency in the Public Sector from the 33% target in 2020 to 50% by 2030 (against a 2009 baseline)
3. A net zero energy related emissions target for 2050 at the latest.

These targets relate to:

- **Scope 1 Emissions:**

Direct energy related emissions from fuel (Oil, Gas, Coal etc.) used by owned buildings, vehicles, and equipment (including energy used for heating, catering, and the delivery of research and teaching).

AND

- **Scope 2 Emissions:**

Indirect energy related emissions from electricity used by owned buildings, vehicles, and equipment.

AND

- Energy related emissions from fuel (Oil, Gas, Coal etc.) and electricity used by leased and controlled buildings, vehicles, and equipment also.

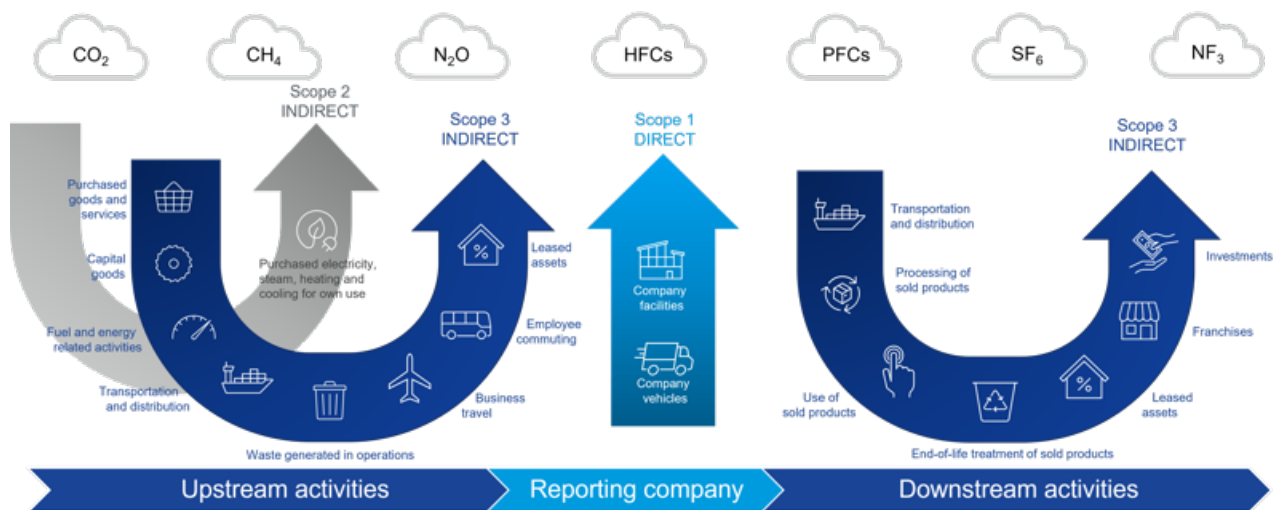


Figure 1: Diagram of Scope 1,2 and 3 of Climate Action Plan Public Sector Targets

Climate Action Roadmap.

The targets set for the Public Sector do not include any non-energy related Scope 3 emissions.

It is expected that such emissions may be included in future updates of the Government's Climate Action Plan, but they are not currently.

Scope 3 non-energy activities are not formally recorded in the plan, although as set out in Action A.9 Optional Content the University of Galway have processes in place reviewing a number of the actions listed which include waste, water, biodiversity and transport in our Sustainability Strategy.

The Carbon Budgets that are being developed by Government currently relate to energy emissions only for the commercial and public buildings sector.

This Climate Action Roadmap will be updated annually and will be directed, coordinated, and informed by the implementation of the University of Galway Sustainability Strategy 2021-2025 (future iterations) and will support delivery of the strategic objective to develop campus's locations that are net zero no later than 2050.

It will also form an integral part of and support the strategic objectives of the wider University of Galway Climate Action and Sustainability Strategy which will include an approach to reducing supply chain carbon emissions and emissions associated with research and teaching.

The Director of Sustainability will be the owner of the document and all changes will be authorised through the office of Climate and Sustainability Champion.

How far have we come?

University of Galway is mindful of its educational and operational responsibilities to mitigate against the impact of anthropogenic related changes to our climate.

This Climate Action Roadmap encompasses our education and research programmes and operational related environment impacts. Our intent is to mitigate against the impacts of global warming which is causing extreme changes to our climate and biodiversity.

Our Climate Action Roadmap will be reviewed and updated annually and aligned with National Climate Action Plans. As such this is a dynamic plan, and as our understanding and potential solutions evolve, alongside ever improving technologies and techniques, we will revise our plan to enable University of Galway to respond in a timely and impactful manner.

In preparing the Climate Action Roadmap we cross referenced the following publications developed by the Department of Environment, Climate and Communications (DECC), Sustainable Energy Authority of Ireland (SEAI), Higher Education Authority (HEA), University of Galway, Community and University Sustainability Partnership (CUSP) and Operations teams.

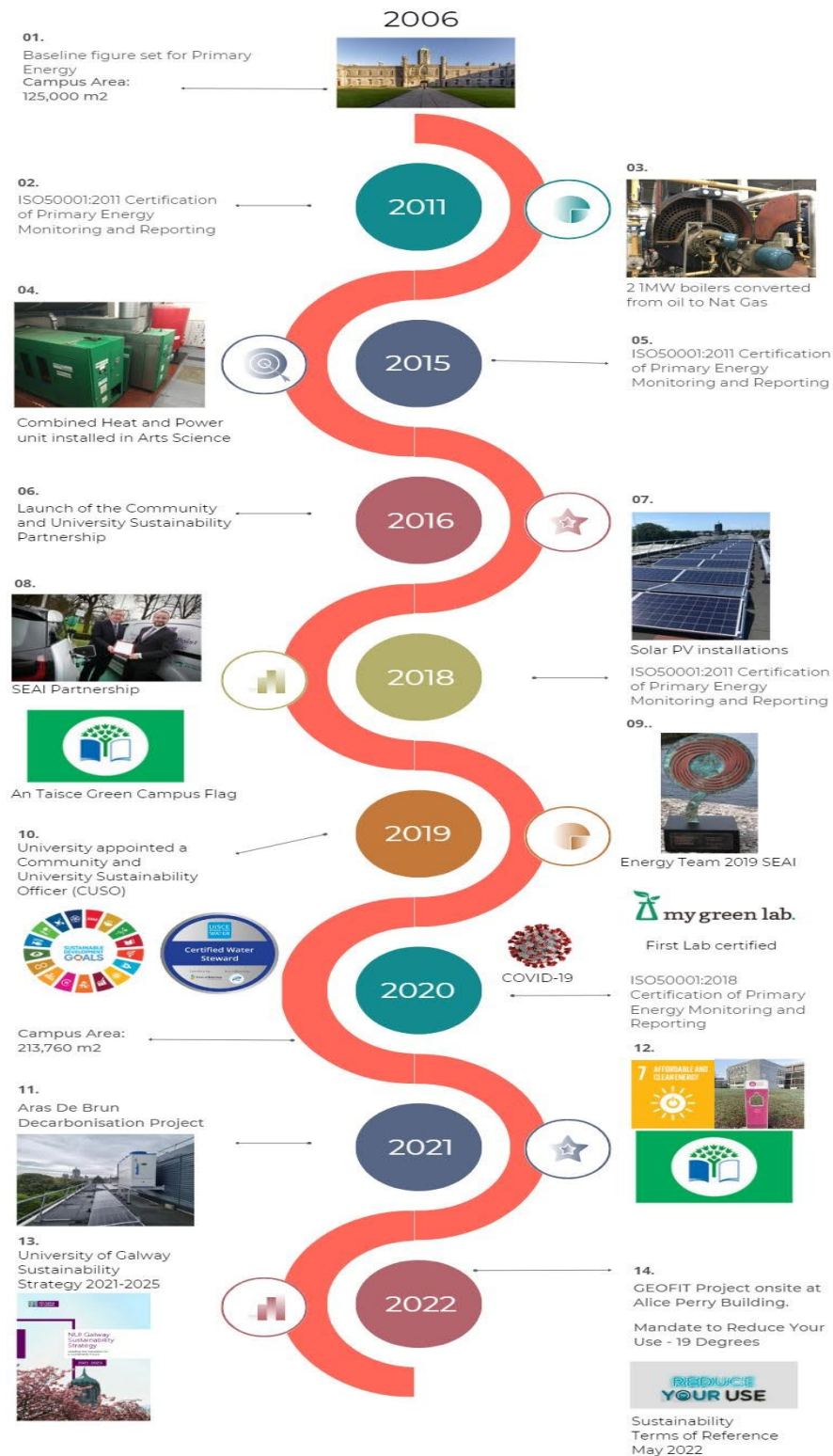
- Climate Action Plan 2021 and 2023
- Climate Action Plan Annex of Actions
- Sustainability Terms of Reference May 2022
- University of Galway Strategic Plan for 2020- 2025
- University of Galway Sustainability Strategy 2021-2025
- Sustainability Report Academic Year 2021-2022
- University of Galway Green Campus Charter.
- University of Galway Annual Energy Report 2019,2020,2021, 2022
- University of Galway Carbon Footprint Report Baseline 2017, 2018 & 2019
- SDG Accord, committing to embedding the Sustainable Development Goals (SDGs) into our education, research, leadership operations, administration, and engagement activities.

The University of Galway have actively adhered to reducing the energy used in its buildings and operations, from 2006 to 2010 several energy projects were developed by the Buildings and Estates team with Energy Team.

In 2010 the University of Galway invested in a full-time person to manage the Energy consumption of the campus and a Steering committee was setup to identify and manage the Energy used on campus. In 2011 University of Galway achieved ISO 50001:2011 Energy Management Certificate and this formalised the report method and register of opportunities, the standard was retained until 2020 where the University were accredited with the new ISO 50001:2018 standard.

Figure 2 details the Timeline headline events from 2010 to 2022 and gives a flavour of some of the successes.

FIGURE 2 - UNIVERSITY OF GALWAY TIMELINE FROM 2010 TO 2022



Our People

University of Galway President Ciarán Ó hÓgartaigh is committed to placing core values of respect, excellence, openness and sustainability at the core of our teaching, learning, research and operations of our busy campus and will continue to push forward to respond to global challenges as part of our central mission to serve the public good.

To achieve these core attributes i.e., respect, excellence, education, research and sustainability we will continue to undertake and the following key activities;

1. Develop our Energy & Carbon Emissions Strategy using our Certified ISO50001: 2018 Energy Management System and SEA's Monitoring and Reporting Database, to develop emissions baselines for our campus' and for each of our significant energy using buildings.
2. Continue to work with An Taisce and the International Foundation of Environmental Education to support energy and carbon (GHG) related awareness and to highlight the need for urgent climate action environmental and sustainability amongst our staff, students, researchers, neighbours and communities.

At University of Galway, we have developed leadership and governance structures to manage and take ultimate responsibility for delivering the objectives set out in this Climate Action Plan.

We have established an Energy Team within Buildings & Estates reporting to senior management that are integrated drivers of Carbon and Energy reduction at our university.

The University of Galway Energy Team include the Director of Estates Operations, the Head of Building Services, Energy & Utilities, the Environmental, Health & Safety Manager, the Building Services Engineer, the Mechanical Supervisor, the Electrical Supervisor, a Senior Energy Consultant (external) and a Senior Building Energy Management Engineer (external).

Michael Curran (Head of Building Services, Utilities & Energy) is the Energy Performance Officer and Lorraine Rushe who is the ISO50001 standard and Energy Manager. Both are responsible for incorporating appropriate climate action and sustainability training (technical and behavioural) into learning and development strategies for staff. Annual workshops are run to engage on climate issues, including a focus on decreasing our university's carbon footprint.

Members of the Energy Team are members of the Community University Sustainability Partnership (CUSP) and provide expertise in several work packages of the Sustainability Strategy.

President Professor Ciarán Ó hÓgartaigh annually signs the energy and carbon policy which is a requirement of the ISO 50001:2018 plan, a copy of the policy is attached in Appendix A.

Engaging and Training Staff

University of Galway has conducted workshops to engage on climate issues and energy awareness measures that focus on decreasing our carbon footprint. We carry these bi-annually during energy awareness open days.

During these events we invite suppliers of energy efficient equipment, renewable energy systems and experts in the field of energy and carbon measurement and management to share their technologies and techniques to enable staff, students and the wider public to educate themselves on climate actions they can take to reduce their environmental impacts.

We also enable the technical officers of each of our buildings to review energy and carbon emissions associated with their buildings so that they can manage and improve each of their building's energy & carbon performances.

We are members of An Taisce – The National Trust for Ireland who are active in the areas of environmental and built heritage in Ireland and our partnership with An Taisce enables our university to avail of environmental & sustainability support schemes such as the Green Flag initiatives. We have gained 'green flag' status in the areas of energy, water and biodiversity which demonstrates our ongoing work in managing and promoting sustainability and climate action related aspects.

We are also partner with the SEAI- Sustainable Energy Authority of Ireland under their Public Sector Partnership Programme and use the SEAI resources and in particular the Energy Academy, Engaging People at Work Accelerator and Energy Basics & Carbon Basics Training Programmes to bolster the skillsets of our staff.

Staff and Students are encouraged regularly through awareness campaigns to Switch Off during ban holidays weekends, extended holidays breaks and social media campaigns.

Students and Staff took part in the recent #ReduceYourUse campaign led by SEAI and OPW, awareness campaigns and staff events outlined how we can save energy at work and home.

Where are we now?

Since 2011, Public Sector bodies have had to report to the Sustainable Energy Authority of Ireland annually on their energy usage and actions taken to reduce consumption in accordance with SI 426 of 2014 (and previously with SI 542 of 2009). This allows SEAI to track progress towards National energy reduction targets.

The University of Galway reports annually on energy consumption for all fuel types (electricity, thermal fuels, and transport fuels (including fossil and renewables)) at an organisational level. All information below is provided by SEAI via their Public Sector Monitoring & Reporting System.

The initial mandate was described in the National Energy Efficiency Action Plan which set out an energy reduction performance target of 33% for the Public Sector by 2020, compared to the position in 2009. This energy reduction target was not an absolute reduction target but instead an activity-adjusted target to take account of the area of the campus and population of an organisation against energy usage in the 2009 baseline year.

The energy baseline used is the kWh (e) and kWh (th) per m² of treated floor area. The baseline year is 2006 and University of Galway's progress since then is plotted on Figure 3. Our energy performance during 2006 was 462.64 kWh per m² of treated floor area. During 2020 that figure fell to 180 kWh per m², which is a 54.2% improvement.

However, as we are coming back to more regular and normal routines during 2021 that figure rose to 189.98 kWh per m², which still a significant improvement of 51.7% lower than the baseline. The target set for 2030 set under the Climate Action Plan 2021 is 196.47 kWh per m², and we have already surpassed that target, which is pleasing.

As expected our targeted performance will continue to be a challenge e.g. the Human Biology Building, is approaching operational capacity, and has exact heating, cooling & humidity control to some areas and that is dragging down the overall energy performance of our University.

As expected, the Climate Action Plan targets a 50% improvement in carbon emissions performance compared to the baseline year; for all public sector organisations. Our baseline year is 2006. In preparation for the transition to Carbon and Green House Gas Emissions – GHGs, we are monitoring our CO₂ emissions every year, since 2006.

We have placed more emphasis on this aspect since 2014 and are delighted to report that our primary emissions are on the wane, since then.

Finally, there is a requirement to monitor travel related carbon emissions associated with our operations and a database is being compiled to capture and populated all travel related carbon emissions. This is an onerous task and take some time to develop and mature. It is expected that during next year's M&R return cycle our college will have enough data to accurately report travel related carbon emissions.

Legal & Other Requirements

Legal and other requirements are being evaluated on an ongoing basis. Since Q1 of 2017, University of Galway has subscribed to an external register of energy legislation and staff has undergone training in its use, and the requirements of ISO50001: 2018 Clause 9.1.2.

The main pieces of legislation and other requirements that apply to the university on an ongoing basis are: -

- S.I. 426 of 2014 – European Union (Energy Efficiency) Regulations – that place responsibilities on public sector organisations to take an exemplar role in relation to energy efficiency and energy management.
- SI393/2021 Energy Performance of buildings, which requires installation of Building Automation and Control by 2025, for buildings with HVAC rated output over 290kW; requires installation of electric vehicle charging points in car parks for new or refurbished buildings with more than 10 car parking spaces.
- S.I. 292 & 183 of 2019, S.I. 243 of 2012, S.I. 872 of 2005 – European Union (Energy Performance of Buildings) Regulations 2005, 2012 & 2019
- Climate Action Plan – 2021 and previous National Energy Efficiency Action Plans – i.e. National Energy Efficiency Action Plans 1, 2, 3 & 4
- Building Regulations 2021: Technical Guidance Document L – Buildings other than Dwellings Published on 7th December 2020 and updated on 12th August 2021.
- SI381/2021 Clean Vehicles Directive, which sets targets for the procurement of clean light and heavy-duty vehicles, with the first target falling in 2025 and the second in 2030. The definition of clean vehicle changes to zero emission vehicles in 2025.
- SI4/2017 Energy Performance of Buildings, which requires all new public sector buildings built since 2018 to be “nearly zero emissions”.
- SI646/2016, which requires that public bodies procure only energy using products and vehicles that are on the Triple E register.

Finally, the Buildings and Estates team operate a comprehensive ‘Statement of fundamentals’ that is integrated into the college’s purchasing procedure. This document obliges all interested parties to undertake life cycle assessments so that all new and refurbished plant, equipment, and projects undertaken include energy efficiency measures during the design, procurement, installation, and commissioning phases.

Targets

The University of Galway has committed to a reduction in our Green House Gas (GHG) Emissions by 51% in 2030. We will also increase the improvement in energy efficiency from the 33% target in 2020 to 50% by 2030.

This Climate Action Roadmap is in compliance with the 2021 National Climate Action Plan. The ways in which we will achieve our energy and carbon (GHG) emissions are outlined on the following sections of this document.

Achieving the Carbon Emissions Reduction Targets & Overview of Energy Usage

The University of Galway Energy Team has been pivotal in managing energy and carbon related Green House Gas (GHG) emissions for the past 15 years. We continue to adhere to national legislation and other requirements and are fully compliant with the Sustainable Energy Authority of Ireland's Monitoring and Reporting obligations. We are very proud of our continued certification to ISO50001: 2018 Energy Management System and we use this standard to enable us to continuously improve our energy & carbon performance.

Our staff, students & researcher have continued to improve the overall energy performance of our college. Energy usage at each of our significant energy using buildings is monitored using our bespoke building energy management system software. We also demonstrate our continued improvement using the centralised and independent reporting platform (M&R), which is managed by the Sustainable Energy Authority of Ireland.

Our baseline year is 2006. Since then, our 'treated' floor area has increased by 56% and student numbers have increased by almost 30%. Our energy performance is TUFA- Treated Unit Floor Area or kWh (electricity and thermal related energy) per m.2. That said, we have managed our energy & carbon usage and have pushed for and consistently achieved a position well below the glidepath-targets.

Our target for the period from 2010 to 2020 was to achieve a reduction in energy usage and consumption by 30% and we managed a 51.7% reduction.

A copy of the latest M&R glidepath graph is outlined on Figure 3 below.

Energy Performance Indicators - 2022

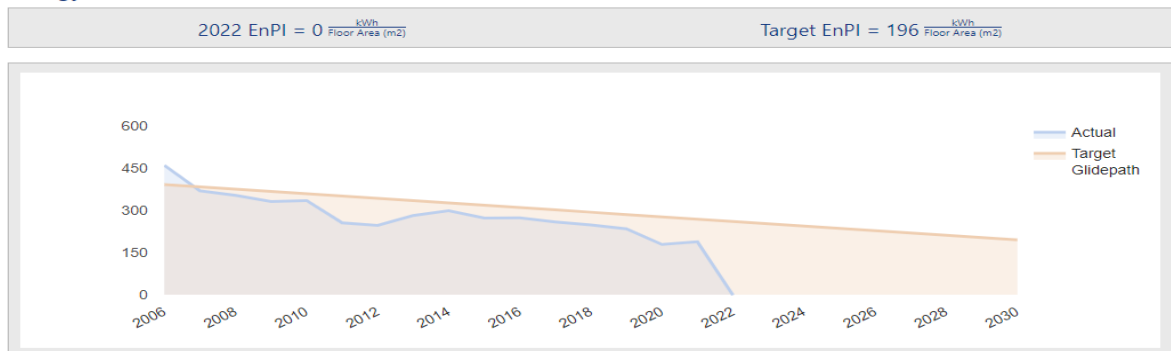


Figure 3: Energy performance is being tracked through SEAI Monitoring and Reporting portal

Table 1 and Table 2 are taken from the Monitoring and Reporting portal consumption for University of Galway in 2021.

Total Final Consumption

Energy	Unit	Energy Efficiency Baseline	2021
Electricity	kWh	17,793,570	13,825,553
Thermal	kWh	11,874,729	12,080,470
Transport	kWh	581,624	168,755
Total Final Energy	kWh	30,249,923	26,074,778

Table 1: Total Final Energy kWh figures comparison of baseline year 2006 and 2021

Energy-related CO2 Emissions

Energy	Unit	Energy Efficiency Baseline	2021
Electricity	kgCO2	10,944,076	4,916,526
Thermal	kgCO2	2,903,760	2,370,275
Transport	kgCO2	145,872	44,335
Total CO2 Emissions	kgCO2	13,993,707	7,331,135

Table 2: Total CO2 Emissions figures comparison of baseline year 2006 and 2021

During 2021 & 22, the pandemic continued to cause disruptions to our operations. However, we managed our electrical and mains gas related energy usage at a level well below that of 2019. Additionally, heating oil & LPG has continued to decrease over the past 3 years. Transport related energy usage is insignificant and relates to maintenance of our green spaces.

As outlined previously, we monitor energy consumption per building and link this to ambient weather conditions to develop performance indicators based on energy usage per treated floor area. We do this by carrying out Display Energy Certificates each year and in accordance with our legal obligation i.e. S.I. 426 of 2014.

Energy Projects completed.

The University of Galway have undertaken numerous projects to reduce the Energy and Carbon footprint, funding for these projects has come jointly from the university finances, savings in energy schemes and funding from SEAI and HEA.

The following list highlight some of the main achievements but is not exhaustive.

- University of Galway have reduced primary energy by 51.7% since our baseline in 2006.
- University of Galway Energy Team award SEAI Energy team 2019.
- Shortlisted for SEAI Awards four years in a row.
- Partnership agreements with CLÁR ÉIFEACHTACHT FUINNIMH.
- ISO 50001:2018 Monitoring and Reporting accredited in 2021, 12 years of certification to the ISO50001 standard.
- Enthusiastic Energy team conducting individual energy projects.
- 500kw SOLAR PV Installed on campus rooftops, a further 500kw scoped.
- 20 EV Car Charging Points around campus.
- 6500 LED lights installed throughout campus buildings.
- 1MW Wood Pellet Boilers serving Alice Perry and The Quadrangle.
- 19000 student energy engineers' potential.
- Improved control strategies across older building stock, replacement of equipment that was no longer energy efficient, boilers, pumps, air handling units, fume cupboard fans, light fittings and electric motors.
- Collaboration with researchers and students on projects installed.
- Refurbishment of No 9 Distillery Road as exemplar building from G to A2 rating
- Innovation Energy Research funded by SEAI/H2020 allows innovative technologies/systems developed by researchers integrate into the campus fabric and systems with collaboration between teams. Examples of these are Geofit Thermal Heat Pump, HITTHEGAP, Wave and Wind research.
<http://www.nuigalway.ie/sustainability>.
- 12 Days of Energy Christmas campaign, seasonal tips and advice at holidays to Switch Off and Save, Awareness campaigns are run regularly with the Student Unions, through 'One Good Ideas', Battle of the Dorms, Student Fairs.
- The CUSP group are the university sustainability team, and they interact with a number of bodies around Galway, ie Galway City and County Council, HSE and GMIT as examples. We are currently involved in preparing the GCC Decarbonisation plan.
- Purchase of Electric Vehicles for Library and Post room, further vehicles purchase to come in the next few years.
- Green Flag Campus (2019) and Green Park Flag (2020) by An Taisce, recertified 2022.

- In 2021 University of Galway were ranked 14th in World Universities for SDG 7: Energy, we have shown our capability that through our actions, awareness and hard work we can exceed the targets set.

Decarbonisation journey to 2030.

We have successfully completed several projects to as exemplar and Pathfinder projects to understand the implications and standards necessary.

Participation in the SEAI/HEA Pathfinders project Aras De Brun 2021, new Air to Water 200kw heat pump, LED lighting upgrade, 35KW PV Panels completed on the roof, Radiators and a new Building Management system installed.

Installation of new Fabric roof upgrade to the Aras Na Macleinn building installation of 150kw Solar PV installation and new Building Management Control System.

Participation in the GEOFIT project in the Alice Perry Building, installation of 18no 150m boreholes, district heating pipework, 2no new 50kw Heat Pumps will link to the Kingfisher Swimming Pool providing a secondary heat source.

University of Galway have developed as part of the ISO50001:2018 Register of Opportunities, these projects will be developed and costed to achieve the targets set in the plan. Potential future schemes and projects will be evaluated to ascertain value for money against carbon reduction.

Potentiel Large Carbon Reduction programmes.

- Energy performance contracting scheme.
- Staff Carbon Credits scheme around reducing travelling and decision making.
- Financing large-scale deep retrofit of the current Building stock.
- Sustainable heating options, e.g., district heating, heat pumps, wood pellet and phase technology schemes.
- Large-scale rooftop PV and Battery Storage.
- High-energy-efficient data centres.
- Energy optimised applied research facilities.
- NZEB and/or energy-positive residences.
- Sustainable campus and transport development.
- Piloting of innovative energy technologies and approaches, incorporating third-level research capabilities where appropriate.
- Investigating the installation of PV Farm on Campus Generating 50% Electrical load of the complete campus.
- Deploying Renewable Hydrogen Solutions in transport and heating.
- Wind Generation in remote campuses, Vertical turbine blade systems.
- Green Lab implication and Lab of Future Design.

Overview of Carbon & GHG Usage

Over the next period there will be a shift in reporting mechanisms so that the weight of carbon (and GHG equivalent) associated with our energy usage will be the common metric used. The main reason behind this approach is to promote the use of electricity and demote the use of fossil fuels. As a nation, we are decarbonising our grid supplied energy (by using renewable resources such as wind and solar generators).

Therefore, we will benefit from the reduction in carbon emissions associated electricity use, when using operational related electricity. Our strategy will be to incorporate the principle of energy efficiency first, the use of renewable energy technologies and heat pump systems, when replacing gas and oil boiler systems. See also the Gap to Target section.

Our carbon related performance is being managed using a kilogramme of carbon per student per academic year metric.

Figure 4 outlines the carbon related emission per student over the past 10 years. We will continue to use this metric and develop this tool for educational and research purposes. As per Figure 3, there is a marginal increase in the carbon emissions per student during 2021 which is most likely associated with changes to our ventilation strategies associated with mitigating against the risks of air born microbes and national pandemic guidelines.

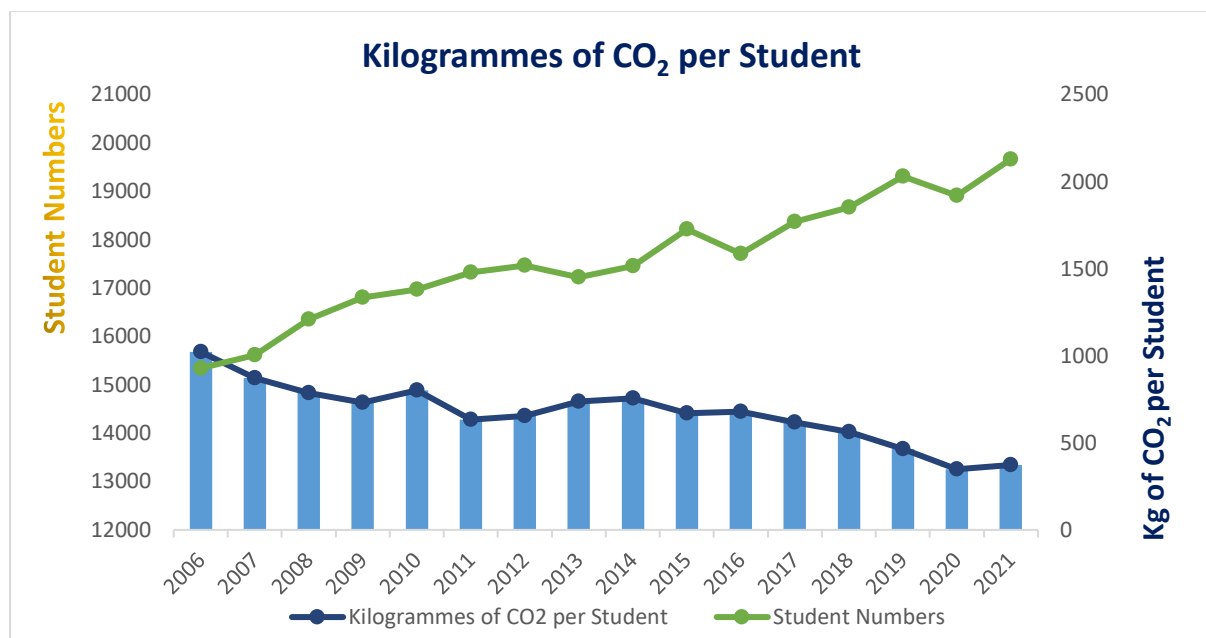


Figure 4: Carbon emissions per Student performance is being tracked.

The Climate Action Plan dictates our targets for the period up to 2030 and this is outlined in the next section.

National Climate Action Planning

The University of Galway's targets are a reflection of the public sector targets as outlined in the 2021 Climate Action Plan and as outlined above. This plan stipulates that, as a Public Body, we should lead by example, and we are proud of our over-achieving our 2020 targets (51.7% improvement in energy performance). We are on a correct trajectory to surpass our 2030 target, as required and have developed our Gap to Target Tool to open a pathway of projects that will enable us to reach our 2030 targets.

Additionally, we have already achieved a reduction in our emissions by 51% by 2030 and will not use any new fossil fuel heating systems after 2023.

Furthermore, we are working on achieving zero emissions by 2030, which will be 20-years ahead of targets set out in the national action plan.

Where are we now?

To assist Public Sector bodies understand the journey to 2030 and Decarbonising of the campus the SEAI have released a Gap to Target Tool, this sets out the decarbonisation and energy efficiency 2030 targets that apply to University of Galway and summarises and forecast GHG emissions from energy consumption, and the organisation's expected energy efficiency by 2030.

The gap-to-target model (GTT model) is a spreadsheet model for use by public bodies to evaluate their energy efficiency (EE) performance and energy-related greenhouse gas (GHG) emissions¹ over time, in accordance with SEAI's public sector energy monitoring and reporting framework for the period to 2030 (M&R-2030).

Several key calculations, including the target configuration calculations for GHGs and the gap-to-target calculations for EE and GHGs are very sensitive to forecasts for future values of the primary energy conversion factor and the CO₂ emission factor for Ireland's electricity system. SEAI prepares forecasts for both these factors, which are refined continually. The forecasts incorporate many variables and assumptions. We should carefully consider their appropriateness for use in our circumstances, particularly if using the forecast values for making investment decisions.

Completion of the Gap to Target modelling will provide a summary of the planned projects that will contribute to University of Galway decarbonisation and energy efficiency.

University of Galway decarbonisation target is set by SEAI. SEAI calculates the 2030 decarbonisation target using the data reported to the M&R system and SEAI emissions projections for electricity.

GHG emissions savings are highly sensitive to changes in the national electricity grid carbon emissions factors. These carbon emissions factors change from year to year as the efficiency of the electricity grid changes. Ireland's electricity grid has significantly decarbonised in recent years, and it is expected that this trend will continue, as fossil fuels are phased out of power generation.

We have completed the Gap to Target modelling tool and checked the targets to ensure we are using the correct methodology. It will be important when carrying out the review on annual basis of the Climate Action Roadmap that the Gap to Target model is adjusted and corrected. It is envisaged SEAI will issue updated models through the Monitoring and Reporting portal, and this will include future Carbon tools.

The next section highlights some of the analysis from the completed model for reference.

Gap to Target

Our strategy is to achieve the targets by incorporating renewable energy technologies in all deep retrofit projects and using heat pump systems when replacing older gas and oil boiler systems. Our design brief for all new and retrofit projects/ buildings will be to achieve nZEB standard i.e., nearly zero energy buildings. We will use best available technologies not entailing excessive costs i.e. BATNECC and will incorporate life cycle cost analysis exercises in all capital projects.

We are cognisant of the scale of the challenge (to achieve our targets) and the cost barriers associated with designing, building, installing and commissioning energy efficient & renewable energy projects/ buildings. Our approach will be to position applications for funding as valuable propositions (from cost & environmental perspectives).

We have mapped our plan to close the gap in achieving our 2030 target and have populated our Gap to Target with projects that will enable us to reach and surpass these targets. The overview of our modelled Gap to Target is outlined on Figure 8, below.

It is essential that the University of Galway have a pipeline of projects ready so when Government funding or grants become available like the Pathfinder projects we can submit and achieve funding support.

Our Sustainability office as set out in Figure 11 has the correct balance of human resources necessary to achieve, or to maximise the probability of attaining, our targets. Our group is made up of human resources with educational, financial, technical, and specialised skillsets and we will continually review the make-up of our committee, as needs change or arise.



Public sector energy efficiency and GHG targets

Gap-to-target model | University of Galway

v3.10

This spreadsheet model can be used to:

- Change historical values for existing activity metrics and model the impact of this on historical performance
- Create new simple activity metrics, enter historical values for same and model the impact on historical performance
- Create new composite activity metrics, enter historical values for same and model the impact on historical performance
- Model the impact of different activity metric choices on future performance
- Model your gap to the 2020 and 2030 energy efficiency (EE) targets on a business-as-usual basis
- Model the impact of implementing energy-saving projects on your gap to the 2020 and 2030 energy efficiency targets
- Configure greenhouse gas (GHG) emissions targets for 2030 for energy-related GHGs
- Model future changes to GHG emissions, incorporating decarbonisation initiatives and anticipated supply-side gains from electricity system decarbonisation

The model from can be downloaded from within the M&R system. The model contains the latest M&R data.

Figure 5: SEAI Gap to Target Tool Front page introduction.

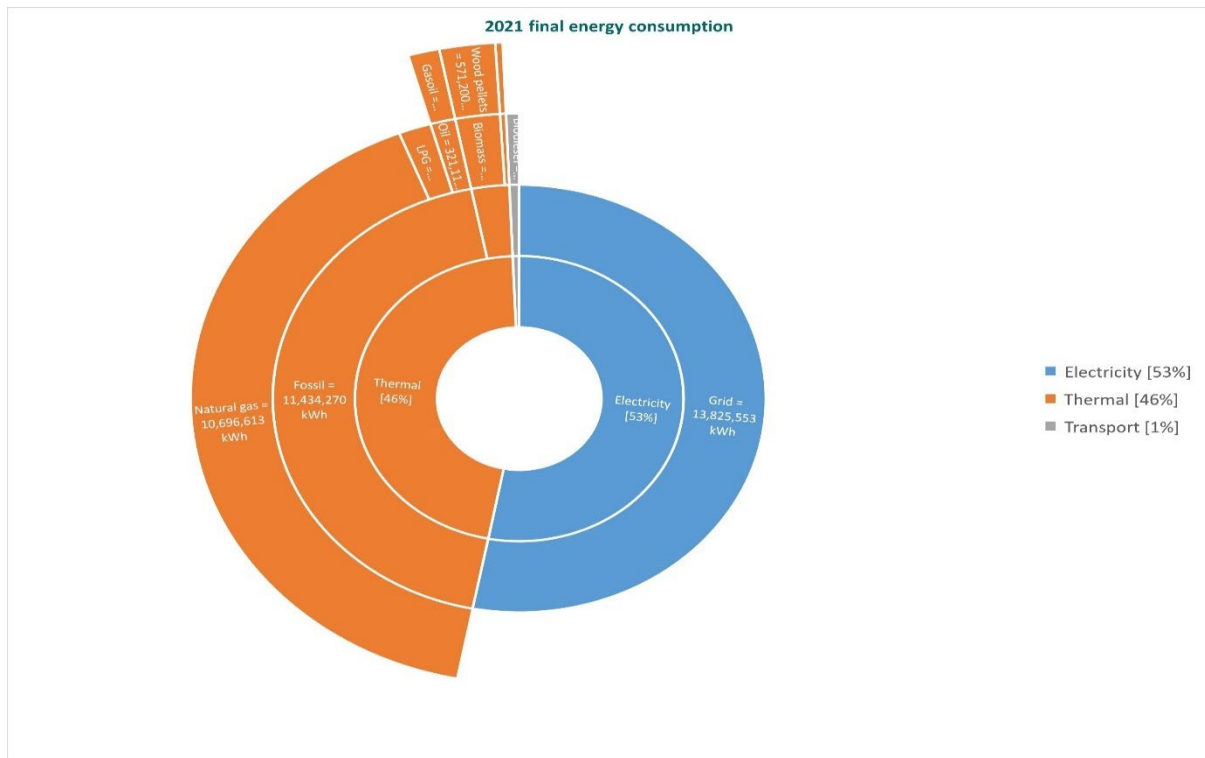


Figure 6: GHG Energy Data for 2021 taken from the modelling.

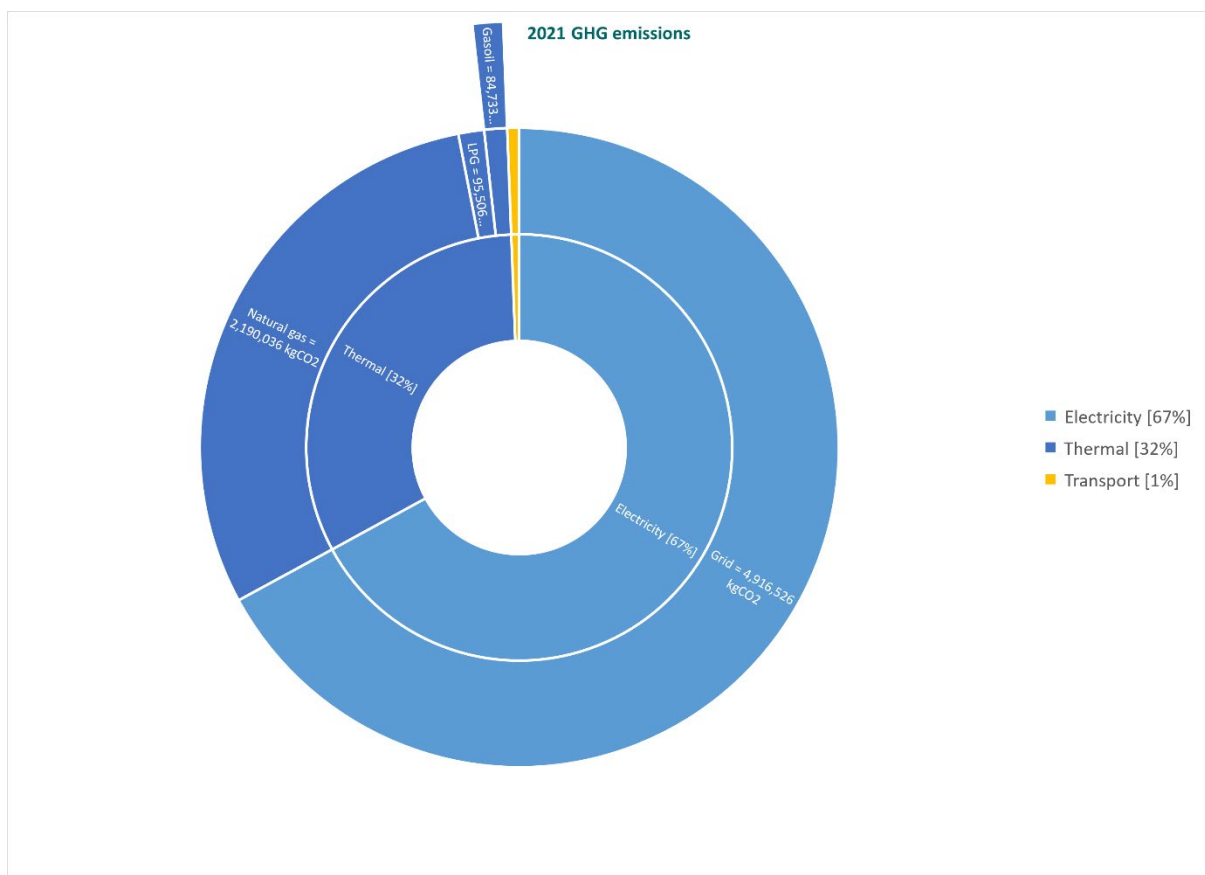


Figure 7: GHG Green House Gases for 2021 taken from the modelling tool

Total GHG pathways & targets | University of Galway

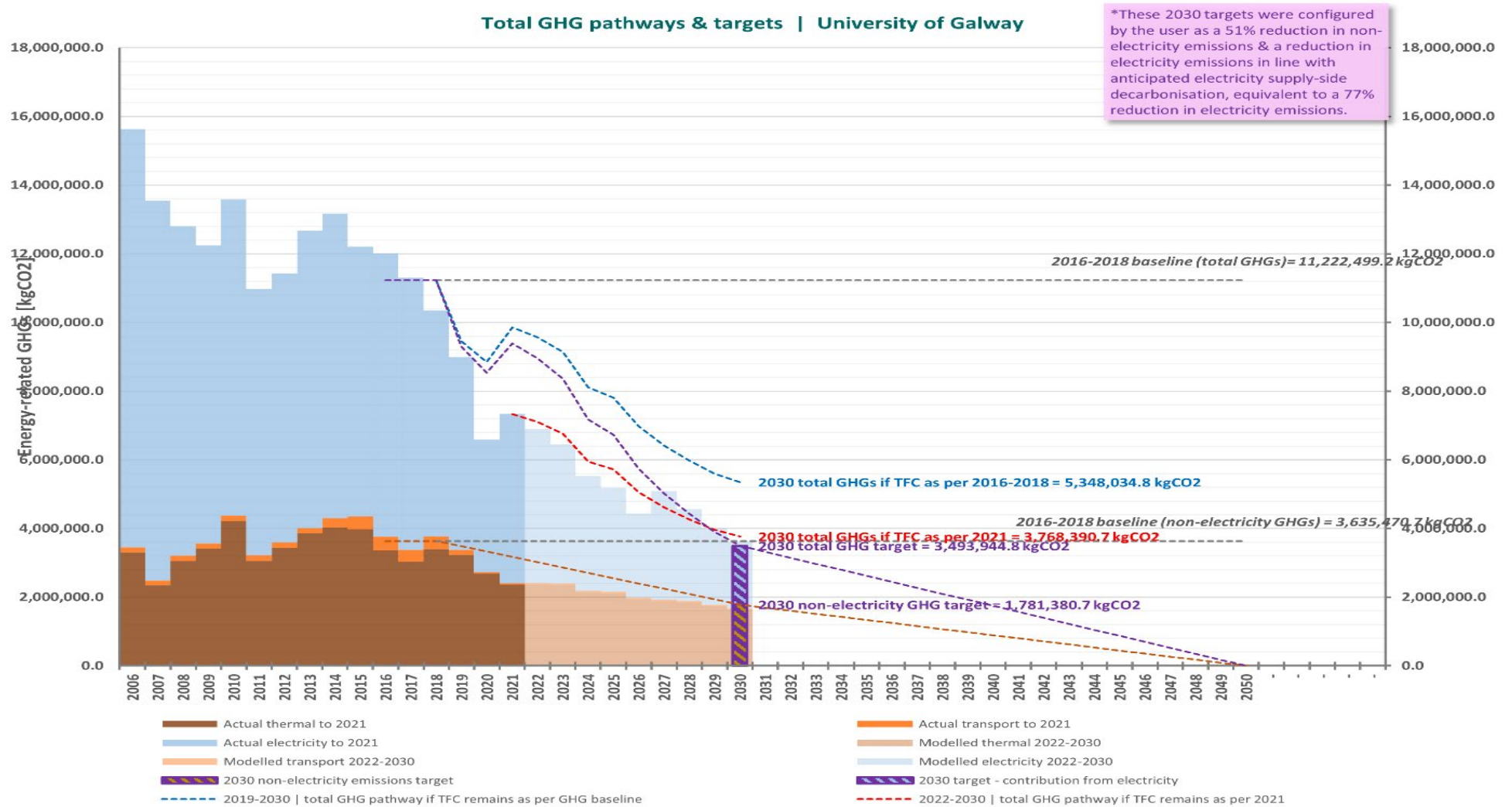


Figure 8: Graph detailing the required level of Carbon Reduction modelled by the tool for the University of Galway meet the target.

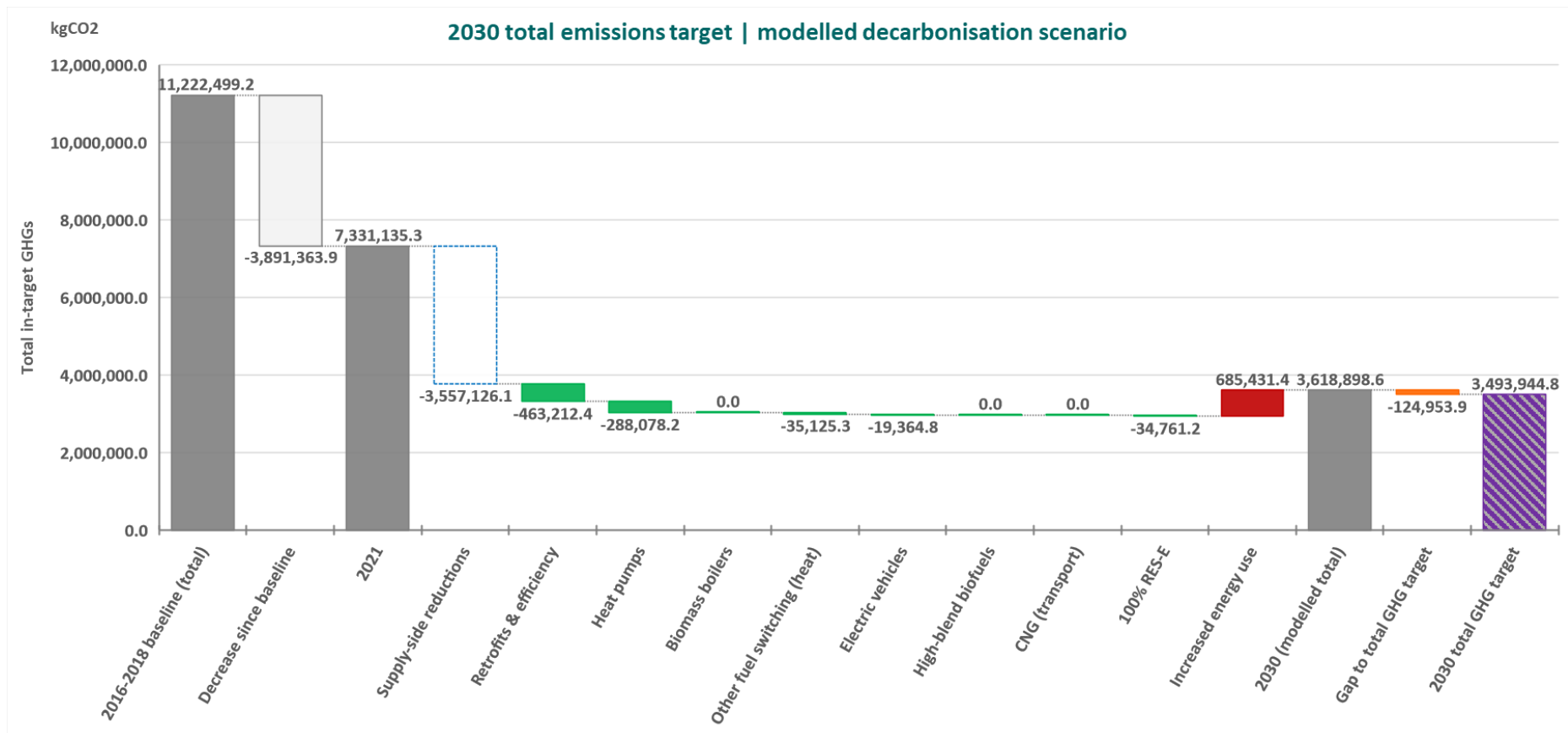


Figure 9: 2030 Modelling Decarbonisation for University of Galway.

Note: The model will need to be updated when major infrastructure projects are completed, consideration for the new Learning Commons, Water Sports, School of Law, Medicine Extension, and future retrofit projects. It will be essential to meet the Net Zero standards outlined in the Statement of Fundamentals.

Energy efficiency | new projects

Define your organisation's readiness to implement additional projects
 Organisational readiness: 3 Reasonable capacity

Select a project from M&R list using dropdown below or choose 'Enter project details >>' below to define a new project in columns F-T	Project details		Project categorisation					Energy savings in year after implementation <small>[see note for explanation how to enter RE & CHP savings]</small>				Financial summary			Project included in scenario			Notes (optional)
	Project name	Location	Type	Sub-type	Project scale	Project readiness	EE or RE of CHP?	Grid electricity	Thermal	Transport	Total	Estimated cost	Project will seek to avail of external funding or support	Project will seek to incorporate pay for performance	1	2	3	
	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[kWh TFC]	[kWh TFC]	[kWh TFC]	[kWh TFC]	[€]	[-]	[-]	[-]	[-]	[-]	[-]
Achieve ISO 50001 status Unknown	Achieve ISO 50001 status	Campus Wide	Energy Management	EM Certification (ISO 50001, IS 993, EN 16001)	1 Zero- or minimal-Investment	6 Tender / contracting stage	EE	506,378.000	452,395.000	1,643.000	960,416.000	€ 12,500	Other (non-SEAI)	No	No	No	No	
Buildings identified through internal energy audits Unknown	Buildings identified through internal energy audits	Each of the top 15 Significant Energy Using Buildings	Energy management	Formal monitoring & targeting system	1 Zero- or minimal-Investment	6 Tender / contracting stage	EE	337,585.000	301,596.400	1,038.000	640,219.400	€ 16,500	Other (non-SEAI)	No	Yes	No	No	
Enter project details >>	DERI (Digital Enterprise Research Institute) Building - Boiler Upgrade	NUI Galway campus	HVAC	Boiler upgrade	3 Standalone energy project (>€100k)	3 Project scope developed	EE	-15,000.000	160,000.000	0.000	145,000.000	€ 300,000	SEAI	No	Yes	No	No	Will require replacement of radiator systems
Enter project details >>	DERI Building - PV Installation (50 kWp e)	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	3 Project scope developed	RE	45,000.000	0.000	0.000	0.000	€ 120,000	None	No	Yes	No	No	50 kWp
	DERI Building - Lighting Upgrade- LEDs & Presence & Daylight Controls	NUI Galway campus	Lighting	Lighting & lighting controls (indoors)	3 Standalone energy project (>€100k)	3 Project scope developed	EE	100,000.000	0.000	0.000	100,000.000	€ 75,000	None	No	Yes	No	No	NEW led lighting and sensors
	Bio-Science building; Lighting Upgrade- LEDs & Presence & Daylight Controls	NUI Galway campus	Lighting	Lighting & lighting controls (indoors)	3 Standalone energy project (>€100k)	2 Priority project	EE	150,000.000	0.000	0.000	150,000.000	€ 120,000	SEAI	No	Yes	No	No	Replace out existing lighting for new LED
	Arts Science - PV	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	6 Tender / contracting stage	RE	125,000.000	0.000	0.000	0.000	€ 180,000	SEAI	No	No	No	No	Install 150 kWp of PV on Arts Science roof
	Cairnes Building	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	3 Project scope developed	RE	45,000.000	0.000	0.000	0.000	€ 120,000	SEAI	No	No	No	No	Install 50 kWp Solar PV Panels
	Moyola Building	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	3 Project scope developed	RE	38,000.000	0.000	0.000	0.000	€ 110,000	SEAI	No	No	No	No	Install 35kw Solar PV Panels
	Aras De Brun Building	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	2 Standalone energy project (>€100k)	6 Tender / contracting stage	RE	0.000	0.000	0.000	0.000	€ 80,000	SEAI	No	No	No	No	Install 33 kWp Solar PV Panels
	Geography builing	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	4 Business case developed	RE	0.000	0.000	0.000	0.000	€ 210,000	SEAI	No	No	No	No	Install 200 kWp Solar PV Panels
	Kingfisher building	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	4 Business case developed	RE	0.000	0.000	0.000	0.000	€ 250,000	Other (non-SEAI)	No	No	No	No	Install 300 kWp PV Panels
	PV Field at Dangan	NUI Galway campus	Energy supply	Onsite renewable electricity generation - solar PV	3 Standalone energy project (>€100k)	4 Business case developed	RE	816,000.000	0.000	0.000	0.000	€ 1,000,000	Other (non-SEAI)	Yes - energy performance contract (EPC)	No	No	No	Install 1000 kWp PV Panels on ground of Dangan
	Lighting projects various; Lighting Upgrades- LEDs & Presence & Daylight Controls	NUI Galway campus	Lighting	Lighting & lighting controls (indoors)	3 Standalone energy project (>€100k)	3 Project scope developed	EE	100,000.000	0.000	0.000	100,000.000	€ 200,000	SEAI	No	No	No	No	Upgrade 3000 light fittings to LED
	Anatomy boilerhouse	NUI Galway campus	Energy supply	Heat pump	2 Standalone energy project (>€100k)	2 Priority project	EE	0.000	28,000.000	0.000	28,000.000	€ 95,000	None	No	No	No	No	Replace existing oil fired boiler
	Aras Na Meinn	NUI Galway campus	Energy supply	Heat pump	3 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	602,784.000	0.000	602,784.000	€ 175,000	SEAI	No	No	No	No	Replace gas fired boilers
	Arts Millenium	NUI Galway campus	Energy supply	Solar thermal	2 Standalone energy project (>€100k)	5 Design stage	EE	0.000	6,000.000	0.000	6,000.000	€ 35,000	Other (non-SEAI)	No	No	No	No	Installation of Solar Water heaters
	MRI Annex	NUI Galway campus	Energy supply	Heat pump	3 Standalone energy project (>€100k)	3 Project scope developed	EE	-35,000.000	160,000.000	0.000	125,000.000	€ 110,000	SEAI	No	No	No	No	Installation of new Heat Pump to replace oil fired boiler
	Alice Perry Building - Variable Speed Drives on HVAC System	NUI Galway campus	HVAC	VSD	3 Standalone energy project (>€100k)	3 Project scope developed	EE	190,000.000	0.000	0.000	190,000.000	€ 110,000	SEAI	No	No	No	No	Replacement of pump sets and distribution new VSD speed drives
	Biomedical science	NUI Galway campus	Energy supply	CHP	3 Standalone energy project (>€100k)	5 Design stage	CHP	686,000.000	-350,000.000	0.000	336,000.000	€ 300,000	None	No	No	No	No	Install new Gas fired CHP, 150 kWp
	Human Biology Building	NUI Galway campus	Energy supply	CHP	3 Standalone energy project (>€100k)	5 Design stage	CHP	686,000.000	-350,000.000	0.000	336,000.000	€ 300,000	None	No	No	No	No	Install new gas fired CHP 150kWp
	North Campus District	NUI Galway campus	Energy supply	District heating	3 Standalone energy project (>€100k)	1 Concept	EE	0.000	2,500,000.000	0.000	2,500,000.000	€ 1,500,000	Other (non-SEAI)	No	No	No	No	Installation of new North Campus district heating scheme
	South Campus District	NUI Galway campus	Energy supply	District heating	3 Standalone energy project (>€100k)	1 Concept	EE	0.000	2,500,000.000	0.000	2,500,000.000	€ 2,000,000	Other (non-SEAI)	No	No	No	No	Installation of new North Campus district heating scheme
	no 10 distillery road	NUI Galway campus	Building fabric	Combination/other	2 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	35,000.000	0.000	35,000.000	€ 70,000	SEAI	No	No	No	No	External insulation and roof insulation, new windows.
	no 19 distillery road	NUI Galway campus	Building fabric	Combination/other	2 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	35,000.000	0.000	35,000.000	€ 70,000	SEAI	No	No	No	No	External insulation and roof insulation, new windows.
	Gate lodge	NUI Galway campus	Building fabric	Combination/other	2 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	22,000.000	0.000	22,000.000	€ 50,000	SEAI	No	No	No	No	External insulation and roof insulation, new windows.
	Security building	NUI Galway campus	Building fabric	Combination/other	2 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	28,000.000	0.000	28,000.000	€ 62,000	SEAI	No	No	No	No	External insulation and roof insulation, new windows.
	Arts Science Microbiology	NUI Galway campus	Building fabric	Windows	3 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	75,000.000	0.000	75,000.000	€ 120,000	SEAI	No	No	No	No	Replace existing single glazed windows new triple glazed sections
	arts science Chemistry	NUI Galway campus	Building fabric	Windows	3 Standalone energy project (>€100k)	3 Project scope developed	EE	0.000	100,000.000	0.000	100,000.000	€ 190,000	SEAI	No	No	No	No	Replace existing single glazed windows new triple glazed sections
	Arts Millenium	NUI Galway campus	HVAC	BEMS	2 Standalone energy project (>€100k)	5 Design stage	EE	0.000	260,000.000	0.000	260,000.000	€ 100,000	SEAI	No	No	No	No	upgrade cylon controllers
	Library building	NUI Galway campus	HVAC	BEMS	2 Standalone energy project (>€100k)	5 Design stage	EE	0.000	200,000.000	0.000	200,000.000	€ 82,000	SEAI	No	No	No	No	upgrade cylon controllers

Figure 10: Register of Opportunities from ISO50001:2018 project listed developed by the EPO. 2030, this list will be added to annually.

How will we get there?

As set out in the Government's Climate Action Plan 2021, the University of Galway, as a Public Body, must lead by example and are mandated to develop a Roadmap setting out how we will deliver our energy efficiency and energy related GHG emissions reduction targets.

Decarbonisation Targets and Scope

1. Reduce energy related GHG emissions by 51% by 2030 (against a baseline of 2016-2018 average emissions)
2. Increase the improvement in energy efficiency in the Public Sector from the 33% target in 2020 to 50% by 2030 (against a 2009 baseline)
3. A net zero energy related emissions target for 2050 at the latest.

These targets as set are based on:

- **Scope 1 Emissions:**

Direct energy related emissions from fuel (Oil, Gas, Coal etc.) used by owned buildings, vehicles and equipment (including energy used for heating, catering, and the delivery of research and teaching)

AND

- **Scope 2 Emissions:**

Indirect energy related emissions from electricity used by owned buildings, vehicles and equipment.

(Including electricity used for heating, cooling, lighting -indoor & outdoor, catering, ICT and the delivery of research and teaching)

AND

Energy related emissions from fuel (Oil, Gas, Coal etc.) and electricity used by leased and controlled buildings, vehicles and equipment also (these emissions associated with buildings and vehicles which the

As previously noted, the targets set for the Public Sector do not currently include any non-energy related Scope 3 emissions; it is anticipated that such emissions may be included in future updates of the Government's Climate Action Plan.

The Carbon Budgets that are being developed by Government currently relate to energy emissions only for the commercial and public buildings sector.

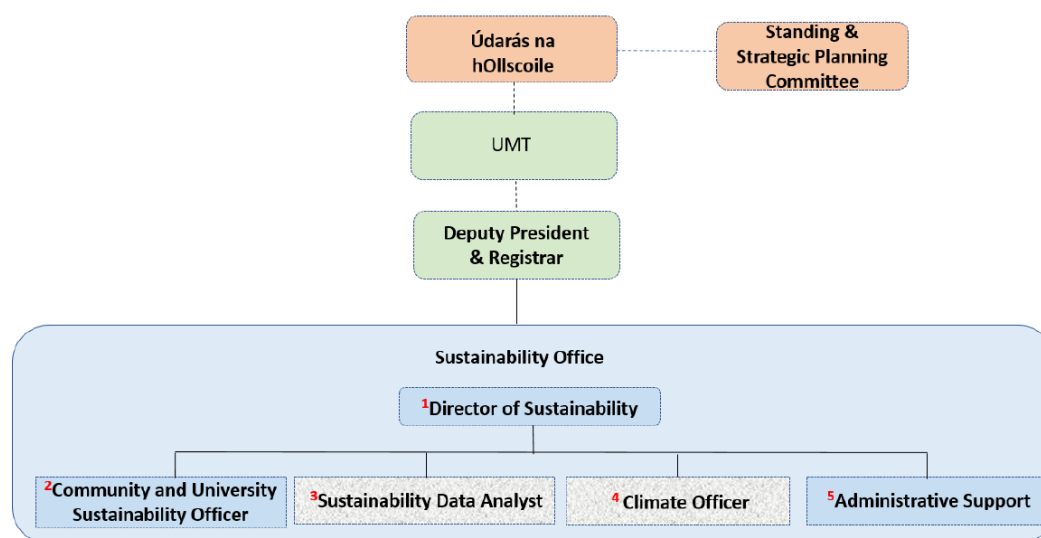
As specifically stated in the Climate Action Plan Mandate, a number of areas need to be addressed and strengthened to support and facilitate the achievement of these explicit targets by Public Sector bodies including:

- Establishment and resourcing of Energy and Green Teams
- Nomination of Senior Management Climate and Sustainability Champions
- Training, learning and development strategies for staff and staff workshops
- Improved reporting and transition to digital processes
- Achieving Energy or Environmental Management Standard ISO 50001 or ISO 14001
- Creating bicycle friendly buildings and a planned transition to zero-emission vehicles
- Displaying Energy Performance Certificates
- Phasing out of fossil fuel heating systems after 2023.

Each of the above steps will be actioned and those already in place will be reviewed and more support given.

Governance and Leadership

The University of Galway identifies as a Leader in Sustainability and therefore sees the Climate Action Roadmap a tool to excel and develop our strategy, therefore a new Management leadership team is proposed as part of the and will be resourced as follows:



¹ New role, funding required for 5 year post ² Funding in place until August 2023, seek permanent funding for 0.5FTE
³ Funding in place for 2022-2023 to pilot role ⁴ Funding in place for 2022-2023 to pilot role ⁵ New role, funding required for 5 year post

Figure 11: University of Galway Sustainability Reporting Structure

The University of Galway Sustainability Strategy 2021-2025 sets out our vision and commitment to lead the implementation of sustainability across the university mission and beyond. Using a Learn-Live-Lead approach, our strategic aim is to embed sustainability in our culture, operational policies and governance structures and empower our communities to be champions of sustainability.

The focus of learn is to embed sustainability literacy into all aspects of university learning and research, the focus of live is to implement the principles of sustainability through campus operations and engagement activities, from a learn perspective the aim is to play a central and transformative role in attaining the SDGs by 2030.

The Strategy was developed by the Community and University Sustainability Partnership (CUSP) General Board, following a yearlong comprehensive engagement process with the campus community.

The University of Galway Strategic Plan 2020-2025 commits to build on the work of CUSP to embed sustainability in our culture, operational policies and governance structures and empower our communities to be champions of sustainability.

Through the University of Galway Climate Action and Sustainability Policy we commit to:

- (i) embed the United Nations (UN) Sustainable Development Goals (SDGs) into all our major efforts in education, research, leadership, operations, administrative and engagement activities and
- (ii) embed carbon management into all University operations and processes with a view to achieving net zero greenhouse gas emissions by 2050.

To delivery on its sustainability commitments, University of Galway has proven a cohesive governance structure to guarantee clear and consistent leadership, responsibility, accountability, and oversight of sustainability.

As the Head and Chief Officer of the University, the President provides leadership, commitment and support for the University's Climate Action and Sustainability Policy.

The Deputy President and Registrar is the University Management Team (UMT) leader with overall responsibility for the sustainability function of the university.

The governance structure for the implementation of the sustainability agenda, using the Learn-Live-Lead model, is outlined in the section below:

Led by the Director of Sustainability, the purpose of the Sustainability Office is to enable greater engagement with and awareness of sustainability and the SDGs at all levels of the university. The Sustainability office leads campus efforts to embed sustainability literacy into all aspects of university learning and research, to implement sustainability throughout campus operations and engagement activities and play a central and transformational role in attaining the SDGs by 2030. The Sustainability office aims to equip empower and engage the campus community to co-create tomorrow's sustainable campus.

The Sustainability Office ensures milestone targets and accomplishments are shared across the University of Galway community through its principal staff members which includes the Director of Sustainability, the Community and University Sustainability Officer, the Climate Officer, the Sustainability Data Analyst and three multidisciplinary Boards (the CUSP General Board; the CUSP Executive Board and the University Sustainability Advisory Board).

The Director of Sustainability serves as an advisory function to the Climate and Sustainability Champion (Deputy President and Registrar), who has overall responsibility for sustainability at University of Galway.

The Director of Sustainability communicates CUSP General Board minutes and Sustainability Strategy progress to the Standing and Strategic Planning Committee for the attention of Governing Authority.

The CUSP Executive Board represents the CUSP General Board on the University Sustainability Advisory Board.

The Sustainability Advisory Board is chaired by the Deputy President and Registrar and minutes are reported to UMT.

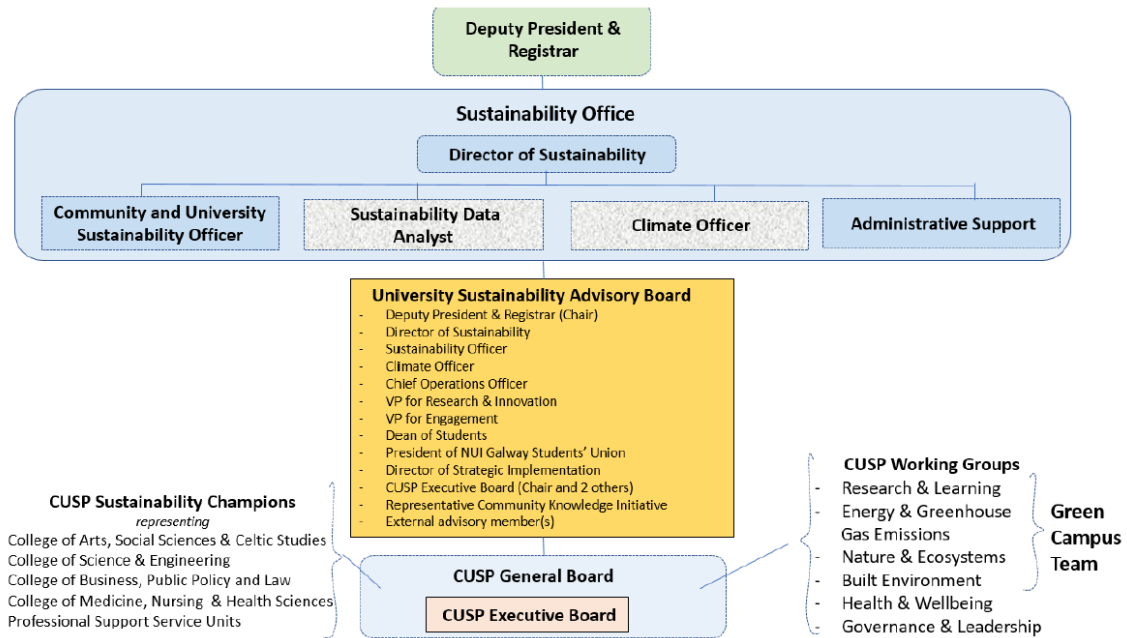


Figure 12: Community and University Sustainability Partnership

Next Steps

The Energy Performance Officer has identified nine key action areas to continue, enhance and expand on the work and progress made to date. Progression of these action areas provides a Roadmap for the University of Galway to achieve the targets set out in the Climate Action plan and to comply with its mandated obligations.

The roadmap builds on the approach to date to reduce the University of Galway existing energy usage load and shift the University of Galway use of energy away from fossil fuels and towards renewable and carbon zero energy sources.

The roadmap will be updated annually and will be directed, coordinated and informed by the implementation of the University of Galway Strategic Plans and it will support delivery of the strategic objective to develop a campus that is net zero no later than 2050.

Roadmap Action Areas

The following Roadmap Action Areas have been developed with the SEAI and University of Galway.

Action	ACTION AREA	Colour
A1	Leadership and Governance for Climate Action - Continuation and expansion of the University of Galway and SEAI partnership agreement. We will continue to supply leadership in Energy and Carbon emissions reduction and will update this Climate Action Roadmap annually.	Purple
A2	Engaging and training staff - Develop the roll out of the SEAI Energy Academy programme to all students and staff, the program promotes effective energy awareness. Continue to develop advice, guidance, and training support programmes to reduce energy, water, waste, and procurement. Promote the #ReduceYourUse campaign.	Blue
A3	Energy and Environmental Management systems and accreditation - Retain the current ISO50001:2018 standard and develop the reporting and monitoring software systems on campus. Increasing metering and data collection tools.	Green
A4	Green Public Procurement - Green Public Procurement is a process where public sector bodies look to source goods, services or works with a reduced environmental impact. Develop policies to support the implementation of Green Procurement.	Grey
A5	Teaching, Learning and Research - We recognise the pivotal role that our teaching and research activities can play in developing the next generation of students, researchers, and innovators for tackling society's evolving sustainable development challenges.	Red
A6	Our Buildings and Vehicles - Our buildings shall be constructed to meet the Net Zero Construction standards set out under BREEAM and industry standards as they develop. Include for purchasing Vehicles as set out in SI381/2021 Clean Vehicles Directive.	Cyan
A7	Our Targets - We will continue to exceed targets set out in the public sector Energy Efficiency programmes and function as a leader in the sector through project demonstration, community engagement and collaboration with energy users across our campuses	Yellow
A8	Display Energy Performance Certificate - Ensure there is a Display Energy Certificate (DEC) in every building.	Light Green
A9	Optional content - We will develop understanding of Scope 3 Carbon emitters and review methods of reporting of Waste, Travel, Water and Biodiversity on our campuses.	Grey

Roadmap Action Areas

A1 Leadership and Governance for Climate Action

A1.1 Develop and Expand the SEAI and University of Galway partnership agreement.

In 2019, University of Galway entered a partnership arrangement with the Sustainable Energy Authority of Ireland (SEAI).

Continuation of the SEAI partnership approach and support will be an essential part in the achievement of the University of Galway Climate Action Roadmap.

A1.2 University of Galway Climate Action Leadership Roles

The Deputy President and Registrar of the University of Galway who is a member of the University Management Team (UMT) acts as the Climate and Sustainability Champion for University of Galway, overseeing the implementation of the Climate Action Roadmap and the Sustainability Strategy 2020-2025.

The University of Galway have nominated the Director of Sustainability (DOS) to lead the Climate Action and Sustainability strategy.

The Director of Sustainability will be nominating the Energy Performance Officer (EPO) who will support the University Green Teams. Green teams will be developed throughout the roadmap.

A1.3 Update the University of Galway Infrastructure Decarbonisation Roadmap annually.

The University of Galway will update this Roadmap annually. The review will include a summary of progress made against the plans set out in the previous year's roadmap, assess progress against meeting the mandated actions for the Climate Action Plan, and a statement on when they will be achieved or delivered.

The annual update of the roadmap will inform the University of Galway engagement with Government Departments in accessing to capital funding and other sources of funding for Carbon reduction measures.

The annual review will include for analysis of progress in the Gap to Target modelling tool.

A1.4 Participate in recognised sustainability metrics and awards to demonstrate leading practice.

The SDG Impact Ranking position annually and measure the success of the program.

Application to other ranking bodies STARS, Green Gown, AUDE and similar ranking groups.

Roadmap Action Areas

A2 Engaging and training staff

A2.1 Develop the roll out of SEAI Energy Academy for staff.

University of Galway will work with the SEAI to deliver online and in person training linked to the SEAI Energy Academy.

A2.2 Develop advice, guidance, and training support programmes to reduce energy, water, waste and procurement.

University of Galway will work with the SEAI to develop guidance documents to conserve energy, water, and waste.

A2.3 Develop guidance of linkage between SDGs and Climate Action Roadmap.

Work with SDGs and prepare links to Energy, Water, Waste, Biodiversity, Wellbeing.

A2.4 Increase extra-curricular opportunities to educate students on sustainability and the climate crisis.

Commence new engagement programmes within University of Galway students, staff and community to learn and experience Carbon related projects or schemes on campuses operated by the University of Galway.

Develop the concept of Living Lab in Action for the campus.

Roadmap Action Areas

A3

Energy and Environmental Management systems and accreditation

A3.1 Retain the Energy Monitoring system ISO50001: 2018 and reporting to the SEAI Monitoring and Reporting System

University of Galway have been accredited in ISO50001:2018 since 2012, certified in 2021 to ISO50001:2018 and passed surveillance test in 2022.

A3.2 Enhance the Metering and Monitoring Enhancement programme by expansion of the Building Management System

The availability of correct metered utility information and data is an essential to the development of an effective decarbonisation policy and ISO50001 accreditation.

A3.3 Development of Energy Data to allow for modelling of the Gap to target tool to achieve Decarbonisation plan.

The University of Galway will develop a Decarbonisation Modelling tool to enable it to evaluate emissions and energy performance scenarios and monitor its trajectory to 2030 and beyond.

The tool will align with the SEAI Gap to Target tool linked to the M&R Tool.

Roadmap Action Areas

A4

Green Public Procurement

A4.1 Develop green criteria for selection and award criteria when procuring all goods and services using the published GPP guidance from EPA and OGP

QA100 Procurement Policy implement policy alignment with Office Government Procurement.

A4.2 Set up a system to gather and record data on GPP implementation, using the reporting template and guidance developed by EPA.

The availability of accurate Green Procurement tenders and purchases is essential for developing Carbon plans, review monitoring of purchases through Agresso system.

A4.3 Measure the environmental and climate benefits achieved through the application of green criteria in future procurements.

The University of Galway will develop policies to embed sustainable considerations into all stages of the procurement process.

Development of a simplified guidance tool for those procuring in the University of Galway to choose sustainable options.

A4.4 Apply a prioritised, risk-based approach to managing emissions from procurement activities.

Identify our 10 most emitting 'material groups' and establish carbon emissions baselines per group.

Through engaging with both suppliers and purchasers, develop a set of carbon reduction targets and actions for implementation.

A4.5 Improve carbon emissions data and Services quality from purchased goods and services.

Develop more accurate carbon emission metrics, per material group.

A4.6 Minimise the embodied carbon emissions associated with our IT infrastructure and provision.

100% of electronic and electrical equipment purchases include energy usage as part of the assessment criteria.

Roadmap Action Areas

A5 Teaching, Learning and Research

A5.1 Expand on our existing education for sustainability across taught programmes.

Integration of sustainability across all education programmes of the university, Liaise with Faculty Deans to establish modules with placements that can contribute to sustainability objectives.

A5.2 Expand the 'My Green Lab' or 'LEAF' process to identify opportunities for applied research on the estate.

Initiate one energy-related, 'My Green Lab' or 'LEAF' project on the University estate, by the end 2023.

A5.3 Understand the contribution our sustainability research has on society.

Expand and assess number of research projects linked to Sustainable Development Goals (SDG).

A5.4 Develop and establish communication routes for raising awareness amongst colleagues, students, and other interested parties.

Expand new sustainability induction information at colleagues' welcome events and student induction.

Roadmap Action Areas

A6

Our Buildings and Vehicles

A6.1 Minimise the embodied carbon emissions associated with our capital schemes.

Embodied carbon refers to the emissions during the construction of a building rather than when it is in use or the carbon footprint of a material, develop Statement of fundamentals around material selection and include in Lifecycle calculations.

A6.2 Fabric Improvements and Demand Reduction.

Develop a building stock plan, as defined in the EPBD, by end-2023 for retrofitting their building stock to meet CAP targets before the end of 2030.

A6.3 Reduce emissions associated with owned vehicle fleet.

Following university sustainable purchasing processes, where the need for a fleet* vehicle is identified, procure only zero emission vehicles.

University owned vehicles that are zero emission.

A6.4 Promote sustainable travel.

Improve cycle and other future travel mode parking infrastructure, accessibility and sustainability.

Roadmap Action Areas

A7

Our Targets

A7.1 Achieving the carbon emissions reduction targets (51% reduction by 2030)

Continual improvement in the University's energy performance by developing a pipeline of projects which will decrease the Carbon and Energy emissions.

A7.2 Achieving the energy efficiency target (50% improvement by 2030)

Analysis of the Gap to Target tool and manage inputs to meet the target set.

A7.3 Climate Action Roadmap

Put in place a Climate Action Roadmap by the end of March 2023.

A7.4 Enhance self-sufficiency from on-site renewables.

Increase kWh power generation from our own renewable assets.

A7.5 Decarbonise our building heating systems.

Reduce natural gas % contribution of total heating supply by 20% by incorporating more Fabric upgrades and reducing heat load. Retrofitting heat pumps and electric heating.

A7.6 Minimise global warming impact of refrigerant gases.

Incorporate F-Gas monitoring & measuring into emissions reporting.

Roadmap Action Areas

A8

Display Energy Performance Certificate

A8.1 Ensure there is a Display Energy Certificate (DEC) in every building frequently visited by the public.

The Display Energy Certificate (DEC) aims to encourage the owners of public buildings to adopt energy efficiency measures by displaying their energy performance.

Roadmap Action Areas

A9

Optional content

A9.1 Minimise environmental impacts of business travel.

Cut annual emissions from business travel by 30% against a 2018-19 baseline.

A9.2 Establish and promote sustainable travel options for mobility to, from and between campus sites.

Improve the response rate of our annual colleagues and student travel surveys.

A9.3 Establish and promote sustainable travel options for mobility to campus.

Decrease % of colleagues and students using car and taxi modes of transport for commuting purposes.

Work with the sector to agree and align international student travel emissions reporting.

Publish a new, updated University Travel plan.

A9.4 Develop approach to responsible consumption, supporting the reduction and elimination of waste within catering and other commercial activity on campus.

Prioritise prevention of waste at every opportunity through eco-design, reuse, and repair. Recycle and re-use waste in ways that promote resource efficiency, reduce cost, protect health and the environment and move us towards a circular economy.

A9.5 To cut all unnecessary water usage on campus, to maintain and further improve the water usage reductions achieved on campus in the last period.

Recognise water as a critical and limited resource by adopting a University of Galway Water Policy.

A9.6 to enhance the management of our campus environment in ways that are sensitive to our ecosystems, in keeping with our aspirations to be an exemplar in biodiversity research and learning.

To be a leader in how we implement sustainable procurement, planning, materials and practices to ensure the campus remains biodiverse, safe and healthy.

Summary Roadmap Action Areas

A1 Leadership and Governance for Climate Action

Actions and Timelines		
Action	Delivery of action	Timeline
A1.1	Develop and expand the University of Galway and SEAI partnership Agreement.	Ongoing
A1.2	The Deputy President and Registrar, The Director of Sustainability (DOS) will be tasked to advise and champion the Decarbonisation Roadmap at Údarás na hOllscoile, Academic Council and University Management Team.	Q2 2023
	The Director of Sustainability (DOS) will continue to support the actions of the university.	Q2 2023
	Establish and resource Green Teams, reporting to senior management. Names and roles of individuals appointed to Green Team, and terms of reference for Green Team.	Q3 2023
	Sustainability Advisory Board to supply strategic oversight of the University's commitment to sustainability, play a key role in the development of strong governance structures, support the integration of sustainability into daily activities at all levels of the University and ensuring cross-sectoral work and implementation	Q3 2023
	Policy QA205 Title: Climate Action and Sustainability Policy implemented from Date: September 21st - 2021	ongoing
A1.3	Update and publish the University of Galway's Climate Action Roadmap annually. Steering group to be formed to update. The CAR should be updated within 3 months of any changes to the Climate Action Plan.	Q1 2024
A1.4	Review THE SDG Impact Ranking criteria to show opportunities for further improvement and linkage to existing networks.	Q2 2023
	Review and update our sustainability information e.g., Sustainable Campus webpages (where needed)	Q2 2023

	International recognition for progress on sustainability. Participate in international sustainable ranking systems, including Sustainable Tracking Assessment and Rating System (STARS) by the Association for the Advancement of Sustainability in Higher Education (AASHE) and Times Higher Societal Impact Rankings. Continue to achieve national recognition through the An Taisce Green Campus Programme, Green Gown and AUDE.	Q3 2023
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A1 Leadership and Governance for Climate Action (cont.)

A1.5	Expand on the University of Galway Carbon Footprint of 2019 and redefine the baselines for scopes 1, 2 & 3	Q3 2023
	Develop data collection and reporting framework for scopes 1, 2 & 3 in line with international best practice, Scope 1&2 with SEAI M&R.	Q 3 2023
	Establish long-term Scope 3 approach, commonality with other Universities.	Q4 2023
	Cost the Climate Plan in financial plans in the 2023/2024 planning cycle and ensure investment is secured through the University planning process.	Q3 2023
A1.6	Develop projects in collaboration to achieve shared net zero aims, including improvements to travel infrastructure and a city-wide living lab approach	ongoing
	Work across the Region on a net zero approach to tackling fuel poverty working in collaboration with colleagues	ongoing
	Explore opportunities to enhance outreach and widening participation activities with the U9 group of universities.	ongoing
	Extend local biodiversity/environmental projects, inc. trailing our urban greenspace biodiversity design principles with local partners and co-developing green-space projects that support local biodiversity	ongoing
	Work with Galway City Council on the Decarbonisation plan for the area, consult with project engineers ARUP	ongoing
	Participate in partnerships with enterprise and community groups who have as their goal improvement in use of resources and reduced climate impact. Promote community building through a partnership approach where campus resources and ability are shared with the local and wider community	ongoing

A2 Engaging and training staff.

Actions and Timelines		
Action	Delivery of action	Timeline
A2.1	Develop a plan to identify climate action training for staff that will be incorporated into ongoing learning and development.	Q2 2023
	Information on training needs and analysis of staff and students.	Q2 2023
	Complete the roll out of access to the SEAI Energy Academy, work with HR to develop link to CORE Hr and make available access.	Q3 2023
	Develop workshop packages around new technologies for onsite training.	Q3 2023
	Develop Energy Expos for staff and students.	Q2 2023
	Explore mechanisms to celebrate success for staff and students in all areas of sustainability.	Q3 2023
A2.2	Development information documents for staff and students and link to the dedicated web portal created by Director of Sustainability	Q4 2023
	Extend and revise programme of sustainability events in partnership with Students Union, including Sustainability Week	Q3 2023
A2.3	Prepare SDG tool to link SDGs with Carbon reporting and identify SDG to activity.	Q4 2023
A2.4	Establishment of a new Student Sustainability Committee to supply opportunities for more students to engage with Energy Team.	Q3 2023
	Review and update policies and procedures across the whole Institution on Carbon and Energy Reduction.	Q4 2023
	Provide continuous opportunities for student and staff involvement in sustainability on campus e.g. through involvement in working groups, workshops, consultation days, seminars and networking events	Q3 2023

	Recognising that sustainability emerged as a core value of our campus community, work with Internal Communications to build an effective, robust communication network on sustainability throughout the university e.g. website, newsletter, social media platforms	Q3 2023
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Energy and Environmental Management systems and accreditation

A3

Actions and Timelines		
Action	Delivery of action	Timeline
A3.1	Develop web-based resource to monitor and maintain the ISO50001:2018 tool, maintaining of records, data and analytics.	Q4 2023
	Continually update the Significant Energy users on campus and monitor.	Q2 2023
	Conduct review of evaluation of compliance post audit cycle and show actions to address gaps in compliance and opportunities for best practice.	Q2 2023
	Implement actions to address internal/external audit findings, work closely with the appointed Data specialist to prepare profile actions.	Q2 2023
A3.2	Complete University of Galway utility meter and sub meter and gap analysis of the buildings.	Q2 2023
	Survey off campus metering and data links.	Q2 2023
	Commence installation of more metering and link to the Building Management Systems.	ongoing
	Develop network of Display screens for promotion of energy use on campus, weather etc.	Q3 2023
A3.3	Develop a decarbonisation modelling tool, referencing nationally agreed and standardised carbon impact assessment methodologies to allow University of Galway meet its targets.	Q4 2023
	Review annually and update the Gap to Target model.	Q4 2023

A4 Green Public Procurement

	Actions and Timelines	
Action	Delivery of action	Timeline
A4.1	Develop staff training on Green Procurement Policy.	Q4 2023
	Continually update the Significant Energy users on campus and monitor.	Q2 2023
	Become visibly leading in sustainable procurement.	
	Liaise with regional and national procurement bodies e.g., OGP to drive improvements in emissions calculations for goods and services and source best available data.	
	Establish and implement a robust approach for embedding circular economy across the University's campus, teaching, research, outreach activities and student experience, including a written policy and framework.	
A4.2	Develop software tool for linking of Purchases through Agresso and link to Carbon offset tools.	Q1 2024
A4.3	Work with OGP, EPA and SEAI to develop guidance tool.	Q4 2023
	Following Science Based Target assessment, understand scope 3 emissions and develop appropriate approaches to reduction	Q4 2023
A4.4	Embed new purchasing data and emissions calculation annual reporting system.	Q4 2023

	Show the top 10 emitting material groups and establish emissions baseline for each.	Q4 2023
	Identify the keystone suppliers per material group (i.e., where most spend is located), and engage with them directly to improve performance.	Q3 2023
A4.5	Begin analysing purchasing card (low value) data trends and highlight areas for improvement.	Q4 2023
	Engage with key suppliers within highest emitting material groups to learn life-cycle carbon emissions figures for their supplied goods	Q4 2023
A4.6	Inclusion of energy assessment in necessary tender documentation, with continued auditing	Q4 2023
	Explore low carbon IT solutions, including Cloud First strategy – noting impact of off-site emissions	Q4 2023
	Build sustainability into decision-making, by incorporating sustainability in business cases and prioritisation criteria	Q4 2023

A5 Teaching, Learning and Research

Actions and Timelines		
Action	Delivery of action	Timeline
A5.1	Develop current review and conduct in-depth review of sustainability content across non-sustainability-related courses.	Q2 2023
	Host sustainability in the curriculum workshop(s).	Q3 2023
	Develop a communications plan to maximise access to our climate related research, within and beyond the sector.	Q3 2023
	Support the University research community to meet funding body requirements by providing access to core information on institutional environmental sustainability policies and metrics, and guidance on measuring project level carbon footprints.	Q3 2023
	Leadership in sustainability innovation and entrepreneurship. Establish a baseline of and increase sustainability innovation and entrepreneurship programmes.	Q3 2023
A5.2	Further collaboration with the University My Green Lab or LEAF working group combining academic and professional services colleagues.	Q3 2023
	Hold annual celebrating success event to solely recognise contributions.	Q4 2023
	Explore approach for immediate, short, and long-term offsetting for research activity.	Q3 2023
	Develop guidelines and manuals for operating labs to reduce energy, i.e., Freezer set points and Fume Cupboards.	Q1 2024
A5.3	Increase research activity aligned to the SDGs across all colleges and research institutions. Establish a baseline of funded research projects aligned to the SDGs with the ambition to achieve alignment of over 60%.	Q1 2024
	Review annually the SDG Accord report	ongoing
A5.4	Enhance process for and reporting mechanism for mapping contributions to SDGs across the research output.	Q4 2023
	Continuation of the publishing of annual sustainability report.	Q3 2023

	Construct an engagement and communication plan for the dissemination of sustainability and climate related activity.	Q3 2023
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A6 Our Buildings and Vehicles

Actions and Timelines		
Action	Delivery of action	Timeline
A6.1	Continually revise our Statement of Fundamentals guidance document and tighten performance specifications on embodied carbon within this.	Ongoing
	Advance our embodied carbon accounting methodologies and increase the accuracy of our emissions reporting from construction activities.	ongoing
	Optimise space usage through provision of flexible research facilities, offices, and working spaces (campus master planning), and focus resources on refurbishing existing building stock to 'net-zero standard.'	ongoing
A6.2	Develop a business case to undertake assessment of energy efficiency evaluation across the campus to improve thermal performance and energy reduction.	Q3 2023
	Complete an energy efficiency evaluation and use the findings to develop a retrofit strategy which focuses on fabric improvement and energy efficiency measures.	Q3 2023
	Explore Digital Twin opportunities to replicate key buildings and model energy interventions and fabric improvement, and show carbon impact changes for potential implementation.	Q4 2023
	Work with construction and refurbishment contractors to improve understanding of waste arising from this activity maximise application of the waste hierarchy in this setting.	Q3 2023
	Establish process to monitor and record furniture and equipment reuse, including baseline setting.	Q3 2023
	Generate our own renewable energy on campus.	Q4 2023

A6.3	Develop improved fleet vehicle register with life-span analysis to prioritise replacements and maximise life of existing vehicles.	Q2 2023
	Ensure procurement of vehicles to meet the CAP21 target for purchase of zero emission vehicles where operationally feasible, as well as the minimum targets set out by SI381/2021 Clean Vehicles Directive.	Q2 2023
	Provide funding for EV replacement and EV charging points through recycling fund or carbon fund, internal funding, or other finance route.	Q4 2023
A6.4	Assess our parking infrastructure suitability with respect to new travel patterns, behaviours, and technology, and develop new parking systems to accommodate.	Q2 2023
	Explore salary sacrifice schemes for staff to purchase reduced price electric vehicle.	Q4 2023
	Review and expand cycling infrastructure, including showers, storage, and racks and explore expanding Cycle to Work scheme to include electric bikes and provide bicycle repair facilities.	Q3 2023

A7 Our Targets

Actions and Timelines		
Action	Delivery of action	Timeline
A7.1	Improve the energy performance of existing buildings and facilities through continued investment in energy efficiency and conservation measures e.g., BMS expansion, capital refurbishment projects, LED lighting, heating and ventilation system upgrades etc. utilising our SEAI/HEA and other funding streams.	Ongoing
	Undertake climate risk assessment and assess whether climate risk should be included in the Strategic Risk Register.	Ongoing
	Increase number of colleague members actively engaged in energy management-related activities.	Ongoing
	Ensure life cycle energy performance considerations are made for high value buying activities.	Ongoing
	Roll out Switch Off initiative across the campus.	Ongoing
A7.2	Minimise the embodied carbon emissions associated with our IT infrastructure and provision.	Ongoing
	Become a research leader in the development of energy-saving technologies and renewable energy technologies through pilot projects with Higher Education Authority (HEA) and Sustainable Energy Authority Ireland (SEAI).	Ongoing
A7.3	Develop the Climate Action Roadmap 2023.	Q1 2023
	Confirm baselines for scopes 1, 2 & 3.	Q3 2023
	Develop business cases for campus adaptation solutions – including projects which improve biodiversity, nature, and improved wellbeing. For example, enhanced rainwater goods, grey water solutions, Sustainable Drainage Systems (SUDS), improved localised temperature control, biodiversity planting regimes.	Q4 2023
A7.4	Complete campus-wide feasibility assessment of Solar PV retrofit installations.	Q2 2023

A7.5	Further develop our understanding of heat pump, Solar PV-Thermal and other low carbon heating technologies (including electrification) from a retrofit context and begin installations.	Q2 2023
	Implementation of other heat decarbonisation projects and creation of a 'Heat Carbonisation Plan,' in line with the requirements and funding available.	Q2 2023
	Undertake mapping of demand side power and heat to develop a long list of options to decarbonise the heat network & associated infrastructure, including future fuel options.	Q2 2023
	Develop a robust decarbonisation plan business case from a short list of viable options across all sites outlining changes to infrastructure, fuel options, scope of work, schedule of work and approximate budget estimate.	Q2 2023
A7.6	Develop baseline survey and record current F-Gas levels and refrigerants.	Q3 2023
	Work on guidance materials ongoing. Work on hazardous waste procedures has progressed elements of this, however further work needed to produce comprehensive guidance.	Q3 2023

A8 Display Energy Performance Certificate

Actions and Timelines		
Action	Delivery of action	Timeline
A8.1	Conduct audit of the current DEC and prepare schedule of DEC certificates to be completed.	Q3 2023
	Install DEC certificates on all buildings.	ongoing

A9 Optional content

Actions and Timelines		
Action	Delivery of action	Timeline
A9.1	Enhance our business travel data collection processes including further detailed journey mapping.	Q4 2023
	Enable/incentivise alternatives to air travel through methods such as investment in videoconferencing technology, an internal carbon taxation scheme, subsidies, or other actions.	TBC
A9.2	Work with SU, Organisational Development, and other key University stakeholders to enlarge our outreach for our surveys.	Q3 2023
	Consult with Galway City Council (GCC) and National Transport Authority (NTA) to raise awareness of deficiencies in Galway City's pedestrian and cycle network. Collaborate to increase opportunities for sustainable transportation.	Q3 2023
	Student Commuting Further develop our social media platforms to generate more 'hits' and maintain a more active online presence.	Q3 2023
	Provide more incentives to survey completion via prizes and / or reducing survey completion time.	Q3 2023
A9.3	Incentivise the uptake of public transport, cycling and walking by supplying additional showering and cycle parking facilities, and promoting cycle-to-work schemes.	Q3 2023
	Collaborate with local authorities, private and public partners to develop new travel modes and networks.	Q3 2023
	Invest resource in colleagues training and / or third-party assistance in the preparation and publishing of an updated University Travel Plan document.	Q3 2023
	Consult with relevant sectoral bodies and working groups.	Q3 2023

Action	Delivery of action	Timeline
A9.4	Agree and implement a university wide Waste Policy, which seeks to go beyond the management of waste and addresses how we design out harmful waste, extend the life cycle of the products we use and prevent waste arising in the first place.	Q2 2023
	Undertake a new campus-wide waste characterisation survey as part of an information gathering exercise to influence and target behavioural change.	Q2 2023
	Work with catering contractors to achieve a 50% reduction in food waste (i.e., kitchen waste and plate waste) from catering outlets by 2025, ahead of the Irish Government's target of halving food waste by 2030.	Q3 2023
	As part of Galway Green Labs programme and the new Procurement Framework, seek to reduce single-use laboratory plastics and promote the use of green products/alternatives. Substitute single-use plastic with other reusable materials and work with suppliers to reduce packaging plastic.	Q3 2023
	Be a world leader in research and innovation that looks to optimise waste as a resource to recover raw materials.	Q3 2023
A9.5	To eliminate the reliance of staff, students, and visitors on single use plastics for water consumption.	Q2 2023
	Reduce, from a 2019 baseline, water usage in campus buildings by 10% by 2025.	ONGOING
	Programme of installing water metering and sub-metering on our largest buildings on campus.	Ongoing
	Programme of installing water saving devices in laboratories, kitchens workshops and WC facilities across the campus e.g., low flow taps, dual flush WC's time control on urinal flushes and showers and low flow shower heads.	ongoing
	Incorporate water usage reduction as a key project design component as part of new buildings and retrofits. For example, identify opportunities to install rainwater harvesting systems in new buildings and buildings being retrofitted, in line with Statement of Fundamentals.	ongoing

	Increase the awareness of staff, students and visitors of the importance of water as a critical resource that must be used responsibly.	ongoing
	Continue to lead and contribute to research activities in water resources management, water usage reduction, water supply and water treatment.	ongoing
	Share knowledge and information with the wider community about sustainable water practices locally and globally and by example look to encourage responsible water use beyond the campus.	ongoing
	Use research led teaching and on campus applied solutions to instil sustainable water practice in our future generations of water professionals.	ongoing
	Map accessible water points on the University app.	Q3 2023
A9.6	Build on survey work to show, map and enhance biodiversity sites on campus.	Ongoing
	Implement and update our biodiversity action and pollinator plans.	Ongoing
	To use the campus and our wider research stations as a living lab, and utilise research to inform management/biodiversity practices; for example, habitat management for wildlife (including pollinators), invasive species treatment and control, and diverting food wastes into composting/ anaerobic digestion and bio-compatible outdoor lighting (low blue content, lower overall intensity, fully directed downwards).	Ongoing
	Increase campus and wider community awareness and appreciation of biodiversity for its intrinsic value, for ecosystem health and for personal health and wellbeing. Sign up to and encourage Leave No Trace ethos in engagement with biodiversity and across campus.	Ongoing
	Work with national bodies, local and regional authorities, city and county civil and civic society organisations, including for example, Galway Environmental Network, National Park City for Galway and Galway Atlantaquaria, to help implement Galway City Biodiversity Action Plan.	Ongoing

Appendix A: University of Galway Energy Policy

University of Galway uses an Energy Management System which complies in every respect with the requirements of ISO50001:2018 and all legal requirements related to our energy use, consumption and efficiency. It is our policy to continually adhere to the requirements of this standard and to have our Energy Management System externally certified by an independent certification body.

University of Galway's Energy Policy provides a framework for setting, reviewing and achieving our energy objectives and targets. We are committed to providing information and necessary resources required to reach and surpass our energy targets and objectives, and to comply with our legal obligations and requirements.

University of Galway is committed to minimising its impact on, and preserving, the environment for the benefit of present and future generations. Our University takes an exemplar role and continues to meet and exceed the requirements set out in the International Organisation for Standardisations ISO50001:2018 Energy Management Systems Standard.

We are committed to a policy of continual assessment and improvement in our energy performance. University of Galway purchase energy efficient products and services and liaise with our 'facilities' partners to encourage initiatives for energy performance improvement and energy efficient design and procurement.

A dynamic list of energy conservation action plans and regular energy management reviews are carried out to monitor our progress in attaining our objectives and targets. The energy reviews include an analysis of energy use, identification of the significant energy users, evaluation of energy performance; using appropriate performance indicators, and identification of opportunities for energy performance improvements. By taking a systematic approach to managing our energy usage and consumption and by implementing energy efficiency and renewable energy action plans, we achieve continual improvements in the energy performance of our buildings and services.

University of Galway's Energy Policy is documented and communicated at all levels within our organisation, it is posted online and will be periodically updated and reviewed, as necessary.



Professor Ciarán Ó hÓgartaigh

President, University of Galway

Appendix B: Green Team's Roles & Responsibilities

Periodic Roles	Responsibility
Communicate the Energy Policy & develop each Climate Action Roadmap	The University of Galway Energy & Green Team
Implement the Energy Policy & Climate Actions	The University of Galway Energy & Green Team
Report on energy & carbon performance	Head of Building Services, Energy & Utilities and Energy Manager
Communicate responsibilities for energy & carbon footprint	Head of Building Services, Energy & Utilities and Energy Manager
Allocation of resources to manage sustainability, carbon and energy performance of University of Galway	President of University of Galway & the Director, Estates Operations
Show and review Legal and other requirements	Energy Manager
Update the Energy & Carbon Review Records	Senior Energy & Carbon Consultant
Establish a monitoring and measurement plan	Senior Energy & Carbon Consultant
Develop and update the baselines	Energy & Green Team – M&R
Develop and update the EnPI reports	Energy & Green Team - M&R
Establish and develop climate action plans	Head of Building Services, Energy & Utilities and Energy Manager
Review training requirements	Energy Manager & Energy Performance Officer (EPO)
Conduct awareness campaign	Energy Manager, EPO and Building Services Engineer
Energy Efficient Design reviews; including sustainability and carbon related matters	Head of Building Services, Energy & Utilities
Internal Auditing	Senior Energy & Carbon Consultant and Energy Manager
Management Review	Energy & Green Team
Ongoing Roles	Responsibility
Communicate the EnPI reports	Energy & Green Team
Show opportunities for improvement	Energy & Green Team
Review the action plan progress	Energy & Green Team
Communicate energy, carbon & sustainability performance of our university	Head of Building Services, Energy & Utilities and Energy Manager
Operational control of SEUs	Head of Building Services, Energy & Utilities
Maintenance of SEUs	Head of Building Services, Energy & Utilities
Procurement of energy, carbon, goods and services	Head of Building Services, Energy & Utilities & Energy Manager
Significant deviation tracking	Energy Manager
Non-conformance tracking	Energy Manager
Records management	Energy Manager
Review actual v expected energy & carbon consumption	Head of Building Services, Energy & Utilities
Review energy, carbon and sustainability related performance of our university.	Director, Estates Operations, EPO, Energy Manager & the Energy & Green Team

Appendix C: Additional Information & SEAI Supports

We are aware of various agencies that may be in a position to assist any technical, financial and organisational aspects enabling University of Galway to promote case analysis and financing larger projects, as follows.

- Ireland - <https://www.ndfa.ie/services> ,
- Ireland - <https://isif.ie/> ,
- EU - <https://advisory.eib.org/index.htm>,
- EU - https://cinea.ec.europa.eu/programmes/life_en.

SEAI, HEA & DFHERIS - <https://www.seai.ie/business-and-public-sector/building-retrofit/pathfinder-programme/>

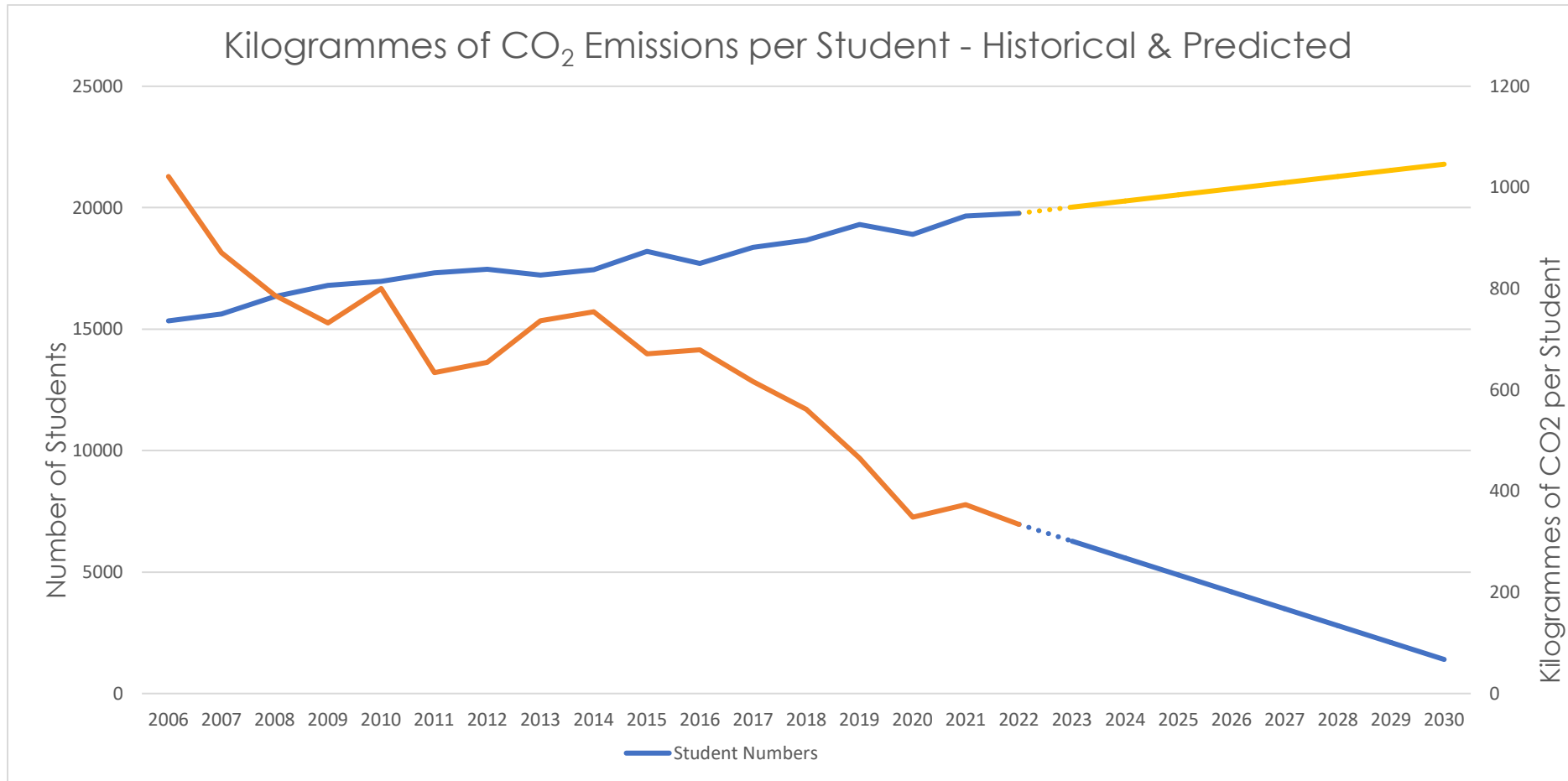
SEAI Energy Contracting Support Scheme - technical assistance for developing and supporting project implementation through an energy contracting approach.

SEAI's Gap to Target Model User Guide v3.09.

SEAI's M&R guidance document Chapter 6 – to understand the target methodology.

We also use Display Energy Certificates and Non-Domestic Building Energy Rating Software tools to assess, monitor and verify improvements; before, during and after carrying out building retrofit projects. See also <https://www.seai.ie/home-energy/building-energy-rating-ber/support-for-ber-assessors/software/neap/>

Appendix D: Carbon Emissions per Student – historical & planned.



Glossary

Climate and Sustainability Champion	Member of the management board with responsibility for implementing and reporting on the Climate Action Mandate
CO2	Carbon dioxide
EMAS	Eco-management and Audit Scheme.
Energy MAP	SEAI bespoke energy management system training
Energy Performance Officer (EPO)	Member of senior management appointed to lead on energy management and performance.
Gap to Target Tool	Spreadsheet model developed by SEAI for use by public bodies to evaluate their energy efficiency (EE) performance and energy related greenhouse gases GHG Greenhouse gases.
Green Campus Ireland	Environmental management and award scheme for third level education
Green Public Procurement (GPP)	Green Public Procurement is a process where public authorities seek to source goods, services or works with a reduced environmental impact.
GWh	Giga Watt hour
HVAC	Heating, ventilation, and air conditioning
ISO14001:2015	International standard, setting requirements for environmental management systems.

ISO50001	International standard, setting requirements for energy management systems.
kW	kilo Watt
Public Sector M&R SEAI's	Monitoring and Reporting system for public sector energy efficiency and carbon emissions.
Register of Opportunities	List of energy efficiency opportunities developed as part of an energy management system.
Triple E register	List of energy efficient products. Products on this register all meet a minimum set of stringent energy efficiency criteria and typically will be of a best-in-class efficiency standard.
LED	Light emitting diode
EPA	Environmental Protection Agency
SEAI	Sustainable Energy Authority of Ireland