Foreword to the MIC Climate Action Roadmap (CAR/MIC 2030)

It is with great pride that I introduce the Mary Immaculate College Climate Action Roadmap 2030 (CAR/MIC 2030). As we face the defining challenge of our generation—climate change—MIC embraces its role as a leader in higher education, shaping a sustainable future through education, research, and institutional action.

CAR/MIC 2030 reflects MIC's unwavering commitment to aligning our practices and values with the principles of climate justice, sustainability, and global citizenship. It is a bold, actionable plan that prioritises measurable progress across teaching, research, campus operations, and community engagement. By embedding sustainability at every level, we are not only meeting national mandates such as Ireland's Public Sector Climate Action goals but also contributing meaningfully to the global vision outlined in the United Nations' Sustainable Development Goals (SDGs).

This roadmap demonstrates how collaboration, leadership, and innovation can drive transformative change. It celebrates the collective efforts of our students, staff, and partners, whose commitment to climate action inspires hope and progress. Through education, we empower individuals to think critically, act responsibly, and lead courageously in the face of environmental challenges.

The Climate Action Roadmap is both an aspiration and a commitment—a commitment to measurable action, to public accountability, and to a campus and community that embraces sustainability not only as a goal but as a way of life. Together, we will ensure MIC is a model for environmental leadership in Ireland and beyond.

I commend all those involved in developing this ambitious plan and invite the entire MIC community to join us in creating a more sustainable, just, and resilient future.

Professor Dermot Nestor

President, Mary Immaculate College

INTRODUCTION

The Public Sector Climate Action Mandate

Mary Immaculate College (MIC) presents its Climate Action Roadmap, 2030. The Roadmap (*CAR/MIC 2030*) is a response to the request made of all publicly-funded organisations and institutions, through the Public Sector Climate Action Mandate, '*to show leadership in climate action*.' Organisations such as MIC, including all Higher Education Institutions (HEIs), have been called upon to help realise the State's target of reducing Ireland's greenhouse gas (GHG) emissions by 51%, as well as to support the achievement of energy efficiency in the public sector.

These goals were set in response to the Irish Government's undertakings following the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change. Notwithstanding the much-debated efficacy of the COP process – particularly since the 26th Conference – COP-26 remains the loudest clarion call to governments to take action towards a mass decarbonisation effort aimed at arresting the pace of global warming and fending off the run-away effects of greenhouse gas emissions. The key message from COP-26 is that time is of the essence and that if action is not immediate the tipping point for climate catastrophe will not be avoided.

HEIs, in particular, have an essential role to play in meeting the challenge of averting the worst ravages of climate crisis, a role envisaged by the UN in the articulation of the 17 Sustainable Development Goals (SDGs) it has set, which include objectives of direct relevance to the College's core mission, including equitable provision of educational opportunities in addition to well-targeted teaching, learning and research strategies.

WHY MIC MUST CONTRIBUTE

Reducing the MIC Carbon Footprint

As a large publicly-funded higher education institution – and a net contributor to Ireland's carbon emissions - MIC has a social and moral obligation to enhance the sustainability of its operations and to contribute to collective efforts to meet the ambitious targets outlined in the Climate Action Mandate. Although it will be a significant challenge for it to do so, MIC has set ambitious targets for reduced greenhouse gas emissions that are proportionate to its size and to its carbon footprint within the broader context of Ireland's decarbonisation goals. **The main deliverable is a 64% reduction from the College's baseline GHGs (inclusive of SCOPE 2 electricity usage) to 679,458.3 kg CO_2 by 2030** and the College is steadfastly committed to the full achievement of that target.

A Vital Agent for Change

As a College of Education and the Liberal Arts, MIC also has the potential to serve as a significant catalyst for change through its students, staff, and partners. This influence extends from the immediate impact of its teaching and learning mission to its research and knowledge transfer initiatives. Additionally, MIC's broader relationships with its alumni, with the early years, primary, and post-primary education sectors, with its professional development program stakeholders, with other sectoral partners contributing collectively to local and regional governance, and with the College's own significant capacity to influence policy, means that the institution can exert a substantial multiplier effect.

What is needed now is to gather these strands together is a coherent and effective roadmap 'framework' and *CAR/MIC 2030* paves the way for this by establishing 6 thematic categories of action:

- **Theme 1:** An Emissions-First Focus
- **Theme 2:** Institutional Ethos
- **Theme 3:** Innovation in Teaching & Learning
- **Theme 4:** Research & Knowledge-Sharing
- **Theme 5:** Partnership & Stakeholder Mobilisation
- **Theme 6:** Leadership & Governance

CONTENT & STRUCTURE

Much has been achieved to date under each theme but beyond the baseline positions and current contexts linked to them there is potential for significantly enhanced impact in all instances. The sections below set out the specific meaning of each thematic category for MIC, relevant baseline positions, targets, progress to date, and initiatives to be put into action.

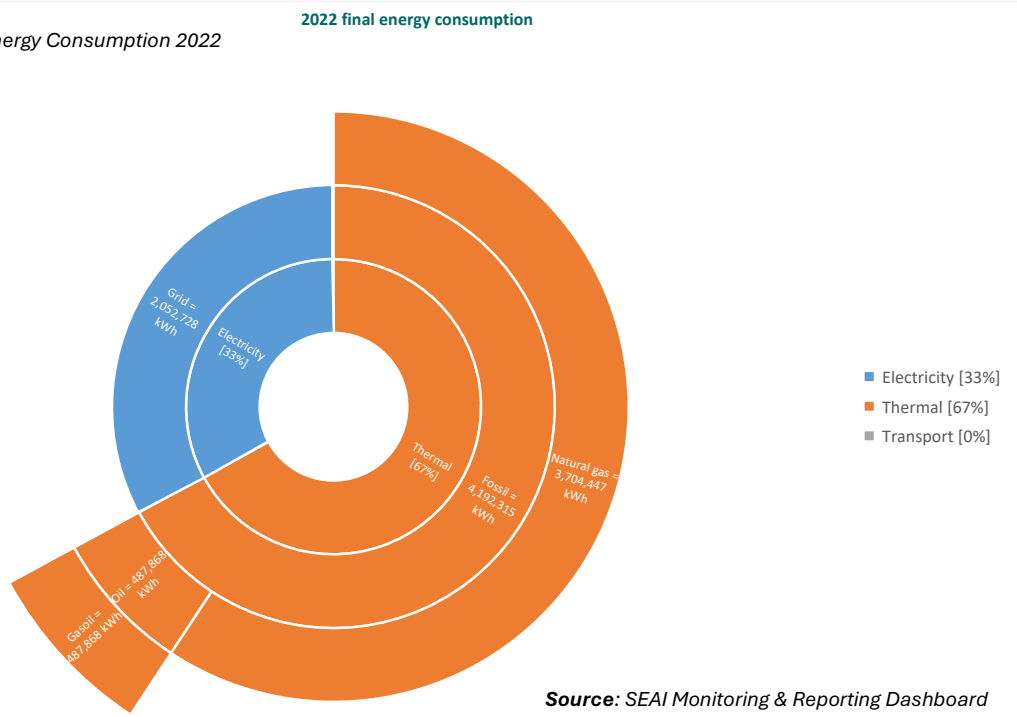
AN EMISSIONS-FIRST FOCUS

About Theme 1

MIC has an extensive built environment and operational footprint, including campuses in South Circular Road, Limerick and Cathedral Street, Thurles, that comprise of 11.5 hectares and 24.3 hectares, respectively (at the 2018 baseline). MIC recognises that it is a net contributor to greenhouse gas emissions (GHGs) and that it has responsibility to deliver effective management and mitigation of GHG emissions directly linked to our operations (Scope 1 and Scope 2 emissions).

In addition, indirect emissions (Scope 3) arise as a result of significant on-site waste generation and water use. The impact of travel to and from both campuses, on behalf of staff, students and College visitors is significant, and is a substantial source of GHG emissions which we further recognise and commit to addressing, in collaboration with key College partners where optimal (see Table X, below).

Figure 1: *MIC Energy Consumption 2022*



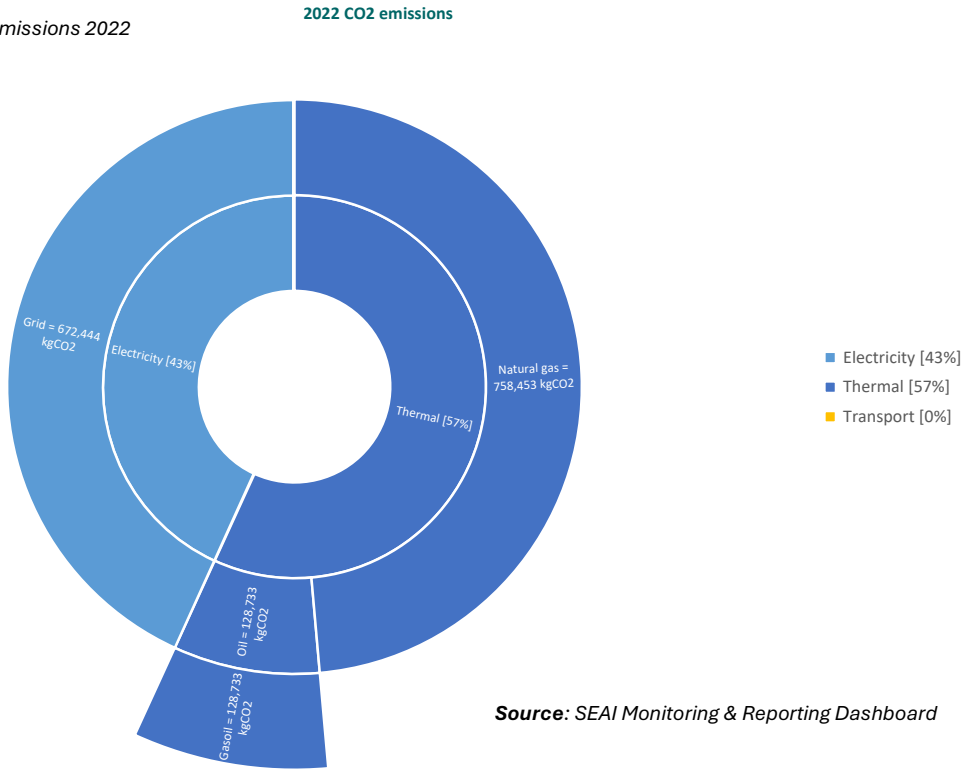
Source*: SEAI Monitoring & Reporting Dashboard*

In the sections that follow, the College demonstrates how it can exert significant impact in respect of the objectives underpinning the national targets for addressing climate change, particularly in relation to the UN SDGs and the Education for Sustainable Development (ESD) agenda. These are important and MIC, in particular, has a crucial role to play - not just as a higher education institution but, in

particular, as a provider of both initial teacher education and professional development opportunities for practising teachers (along the continuum from early years, through to the primary system and on to the post-primary system).

However, the damaging effect of the baseline emissions of the College outweighs the positive strategic role it can play in other domains. For this reason, there must be an '**emissions-first**' emphasis in CAR/MIC 2030 in order for the College to fulfil its obligations under the Public Sector Climate Action Mandate as well as the moral and ethical responsibilities that it has in the broader social and ecological contexts.

***Figure 2**: MIC $C0_2$ Emissions 2022*

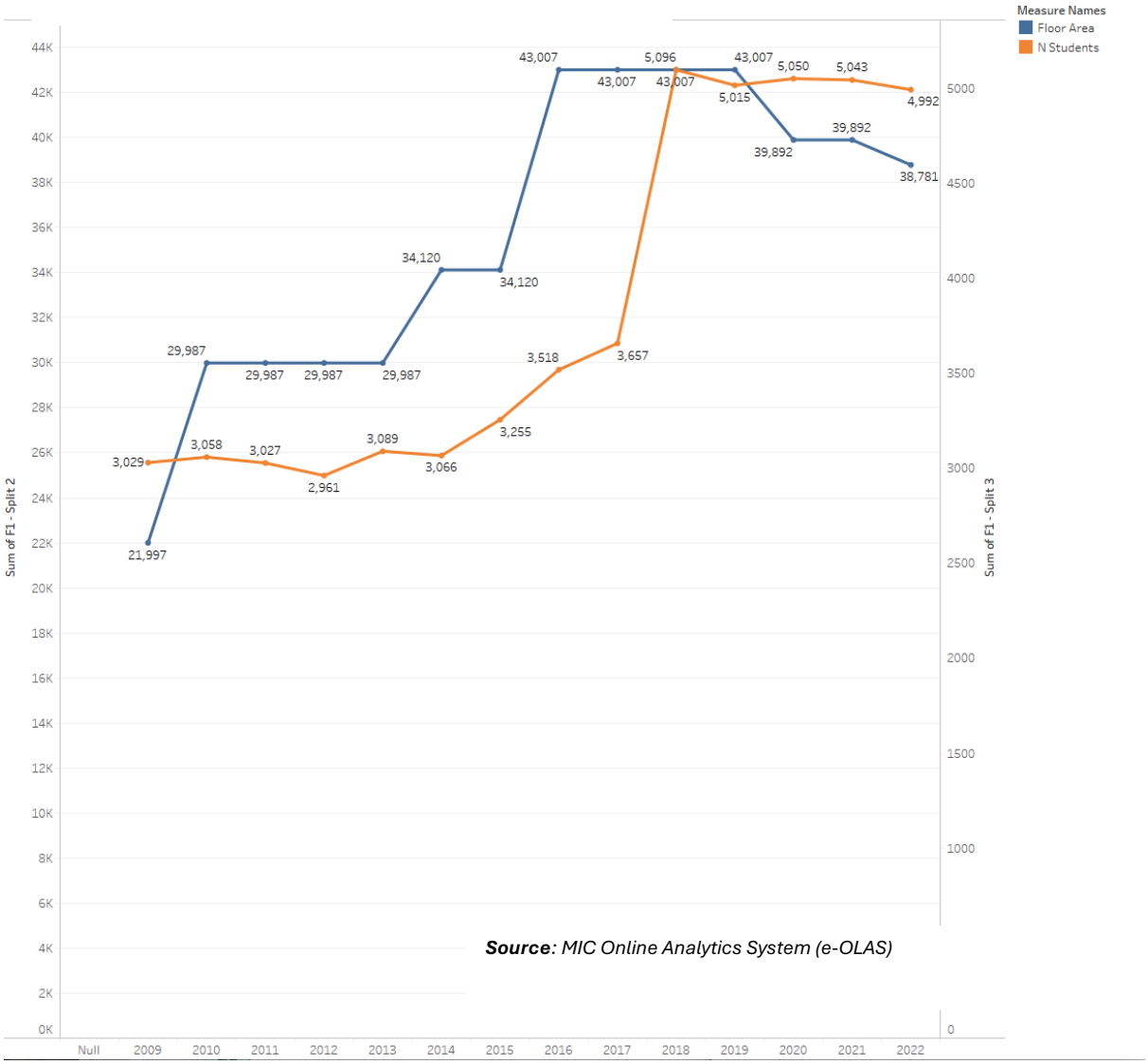


***Source**: SEAI Monitoring & Reporting Dashboard*

Setting the Baseline

As the College's first Climate Action Roadmap showed, MIC has been monitoring its carbon emissions since 2009. Since that time, during which the total reckonable floor area has more than doubled and student numbers increased by a factor of 1.64, energy performance targets set over a 10-year period were met (see Table X).

Figure 3: *Ratio MIC Student Population to Floor Area 2009-2022*



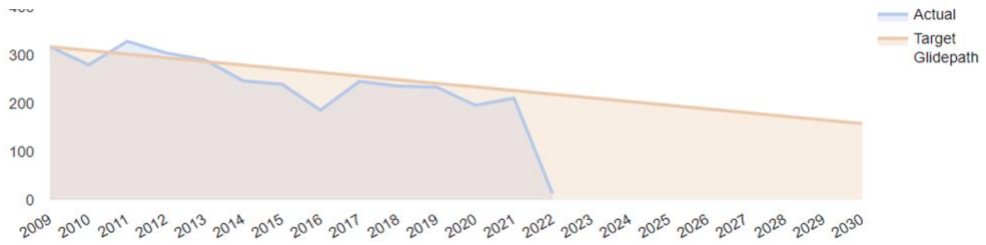
Source: *MIC Online Analytics System (e-OLAS)*

As shown below (Table X), the 'glidepath' target of a 30% reduction, overall, in energy usage consumption was reached by 2020, before the introduction of the SEAI's new Public Sector Monitoring and Reporting System where the weight of carbon (and GHG equivalent) associated with energy usage became the metric used (the main reason behind this new approach was to promote the use of electricity and to decrease and eliminate the use of fossil fuels towards the glidepath target for 2030). MIC began its decarbonization journey with a detailed assessment of its emissions across Scope 1 (direct emissions), Scope 2 (indirect emissions), and Scope 3 (supply chain, commuting, and waste). The baseline data identified the following critical sources of emissions:

- Heating systems: Reliance on fossil fuels such as imported gas, kerosene, and diesel remains a significant contributor to Scope 1 emissions.
- Electricity consumption: While partially mitigated through energy-efficient lighting and systems, Scope 2 emissions persist where grid electricity remains carbon-intensive.
- Campus operations: Activities such as procurement, waste management, and staff/student commuting contribute to Scope 3 emissions.

Table X: MIC Energy Consumption Performance 2009-2020

Figure 4: *MIC Energy Consumption 2022*

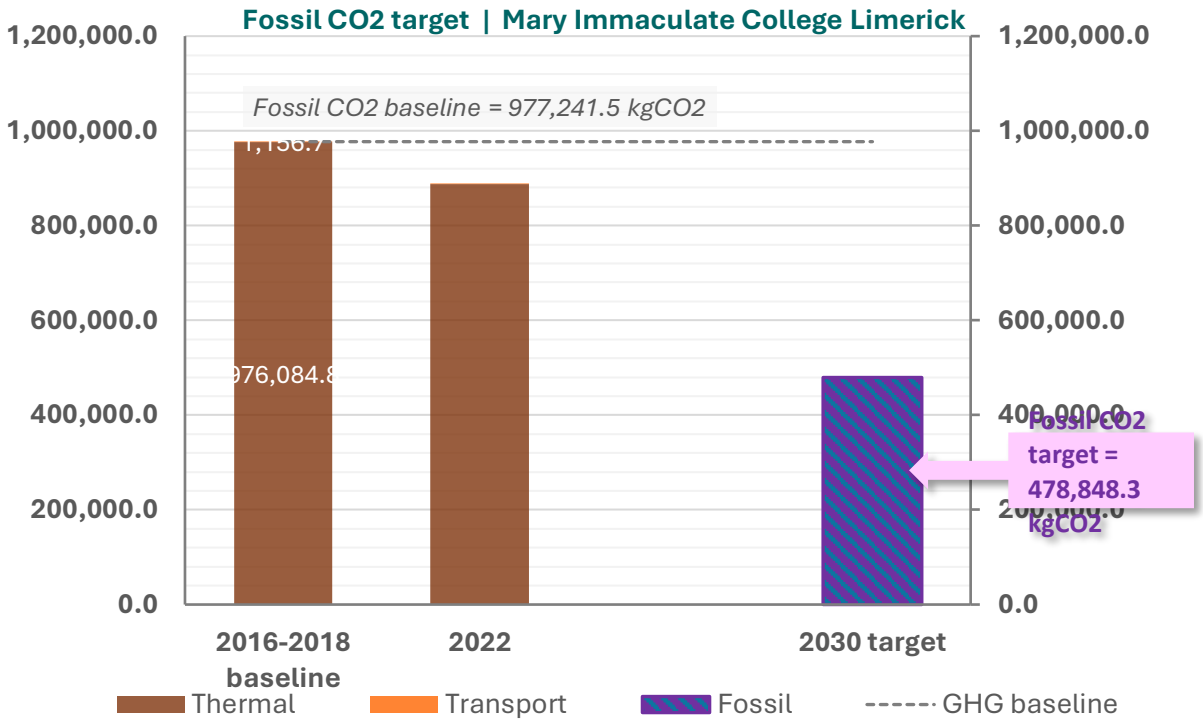


Source*: SEAI Monitoring & Reporting Dashboard*

The new metric is particularly helpful in terms of differentiating between the emissions 'Scopes.' By resetting the baseline (to 2018) for calculating the targets required to meet the College's contribution to the national target of a 51% reduction, a sub-total showing a new emissions 'average' (based on a 2016-2018 time-span) for both 'Fossil' emissions per $kgCO_2$ (thermal and transport emissions) and 'Electricity' emissions per $kgCO_2$ (energy procured from electricity providers whose GHGs become a factor in the calculation) can be combined in order to establish the institution's total carbon footprint taken across its campuses. This new baseline for the 2030 target has been set as follows:

- Thermal CO_2: 976,084.8 $kgCO_2$
- Transport CO_2: 1,156.7 $kgCO_2$
- <u>Subtotal Fossil CO_2: 977,241.5 $kgCO_2$</u>
- Electricity CO_2: 936,430.0 $kgCO_2$
- <u>Total CO_2: 1,913,671.5 $kgCO_2$</u>

Figure 5: *MIC Energy Consumption 2022*



Source: *SEAI Monitoring & Reporting Dashboard*

Progress to Date

Since this baseline position was established, the College has commenced its decarbonisation strategy. Key deliverables set out in the previous iteration of CAR/MIC 2030 (2023), inclusive of the following, have all commenced with some already largely met:

Key Deliverables in 2023 Version of CAR/MIC 2030

Project	Goal	Status
Expansion of water fountains throughout campus	Provide water infrastructure to support 'no plastic' campus project	In progress / partly achieved
Waste segregation throughout campus	Recycling facilities to replace 'black-bag' bins; composting facilities where appropriate	Achieved
Install light sensors where appropriate	Arrest non-essential lighting	Achieved
Bike-to-Work scheme	Dedicated 'push' on advertising of bike-to-work scheme for staff	In progress / partly achieved
Bike lockup and storage	Upgrade/expansion of bike-lock-up and storage infrastructure on-campus	In progress
Campus Biodiversity Strategy	Develop and initiate campus biodiversity strategy, including pollinator meadow	In progress
Application for Green Flag	Obtain Green Flag Status	In progress / partly achieved
User-behaviour 'switch-off' campaign	Reduce energy-use from lighting & electronic devices by 10%	In progress
'No-plastic' Campus	Eliminate all single-use plastics in MIC operations	Achieved
Install LED lighting throughout campuses	100% of halogen lighting replaced	In progress / partly achieved

Explore potential for installation of PV array Thurles Campus	10 kWp capacity	In progress
Explore potential for installation of PV array Limerick Campus	20 kWp capacity	In progress
Park-and-Ride	Increase awareness and incentivise usage of Park-and Ride options introduced by the College	In progress
Car-pool programme	Support College community car-pooling (discounts, vouchers, College community website or app to support same)	In progress
On-campus 'grey-water' scoping study	Feasibility study on potential use of rain water for non-portable uses on-campus	In progress
On-site biodigester scoping study	Feasibility study on biodigester to generate energy from on-site organic waste	In progress

In addition to these activities, the College has focused its efforts during routine maintenance as well as planned summer works on addressing the gap to target. In all, an 18.4% reduction in total emissions has been signalled by MIC in its Annual Report under the Climate Mandate using the SEAI Monitoring and Reporting Dashboard. The breakdown, as follows, is interesting because it shows a decrease of 75% within the overall reduction in electricity CO_2 indicating the particular success of energy-related decarbonisation efforts:

- Thermal CO_2: -88,899.5 $kgCO_2$ (to 887,185.3 $kgCO_2$)
- Transport CO_2: -35.3 $kgCO_2$ (to 1,121.4 $kgCO_2$)
- **Subtotal Fossil CO_2: -88,934.8 $kgCO_2$** (to **888,306.7 $kgCO_2$)**
- Electricity CO_2: -263,985.6 $kgCO_2$ (to 672,444.4 $kgCO_2$)
- **Total CO_2: -352,920.4 $kgCO_2$** (to **1,560,751.2 $kgCO_2$)**

Improved BER Ratings

Completion of analysis for Display Energy Certificates that indicate the BER rating for the College's Limerick-based buildings (over a constant 24,297 m^2) held at C3 in 2024 (C3 in 2023) – with a slight reduction to 61.66 $kgCO_2/m^2$ from 63.87 $kgCO_2/m^2$ in the previous year. This is a very good result

year-on-year given the difficulties in maintaining ratings for older building stock on large sites and typical annual energy use for the categories of building on the Limerick Campus is higher.

Even more encouraging was the improved rating reported in respect of the Thurles campus, with the B2 rating in 2023 moving to B1 for 2024 (where the previous CO_2 emissions rate of 38.59 $kgCO_2/m^2$ reduced by 21% to 30.46 $kgCO_2/m^2$). Again, the Thurles buildings perform better against the equivalent rate of energy use for buildings of similar type, but significantly added to this have been the concentrated efforts of the Green Campus Committee at Thurles to achieve Green Campus status and to demonstrate sectoral excellence in impactful practices developed and adopted (exemplar actions carried out by the Green Team, included active encouragement of behavioural interventions such as turning down and switching off energised equipment and space heating, when not required).

An Integrated Approach with a Focus on Thermal Emissions

Although all reductions achieved to date represent a positive start to the decarbonisation strand of CAR/MIC 2030, it is evident that the dominant contributor to the College's total emissions remains thermal (57%). Overall, the figures quoted above indicate that MIC must reduce emissions by a further 880,192 $kgCO_2$ to meet its 2030 target. At a general remove, the following insights emerge:

- A gap of **880,192 $kgCO_2$** to the 2030 target necessitates accelerated action across all dimensions of the GHGs, particularly **fossil fuel use**;
- The College needs to prioritize **thermal energy projects**, including electrification and renewable heating systems;
- The College should seek to continue driving electricity CO_2 reductions through **further renewable energy adoption and efficiency improvements**.
- Transport emissions, while small in absolute terms, show **limited reduction** (-35.3 $kgCO_2$) and may require more **focused** strategies, inclusive of initiatives to raise awareness and to promote viable and cost-effective sustainable mobility options for students and staff.

Accordingly, the focus on decarbonization at MIC is driven by a multi-faceted strategy that integrates renewable energy deployment, retrofitting of existing infrastructure, electrification of heating systems, and the fostering a campus-wide culture of energy efficiency. This holistic strategic approach ensures that every operational and developmental decision prioritises emissions reduction.

Renewable Energy Transition

To reduce reliance on fossil fuels, MIC has prioritized the adoption of renewable energy across its campuses. Key milestones anticipated include:

- **Solar Energy Deployment**: A target to install 50 kW of additional solar PV panels by Autumn 2025 will significantly increase renewable energy generation .
- **Geothermal Heating Pilot**: MIC has initiated a feasibility study for geothermal heating, which will replace kerosene-dependent systems with clean, renewable alternatives.
- **Procurement of Green Energy**: The College has committed to a dedicated and authentic effort to maximise its procurement of energy from renewable electricity sources over the lifetime of CAR/MIC 2030 (in compliance with available Government procurement frameworks).

Retrofitting for Energy Efficiency

Improving energy performance in campus infrastructure is central to emissions reduction. Milestone deliverables that follow efforts to date will include:

- Deep Retrofit: Commencing in 2025, the library project will reconstitute the footprint of the library (inclusive of retrofit for infrastructure that will be retained and the construction of a new building) to Nearly Zero Energy Building (NZEB) standards, achieving significant thermal efficiency. Since the setting of the baseline, the College has already embarked upon deep retrofit of parts of the main buildings located on the Limerick campus which urgently required remedial attention;
- Energy-Efficient Upgrades: MIC has systematically upgraded heating, ventilation, and lighting systems to reduce energy consumption and this will deliver phased energy usage reductions;
- Building Energy Management Systems (BEMS): Plans are underway to implement a centralised BEMS, an imperative for the College's estates management function that will enable real-time monitoring and management of energy performance.

Electrification of Heating Systems

In line with the Climate Action Mandate's prohibition on any new fossil fuel installations, MIC has committed to transitioning all heating systems to electric alternatives by 2026. This initiative will include:

- Phased Replacement of Oil and Gas Boilers: MIC's heating infrastructure will be retrofitted to accommodate electric heat pumps and renewable energy inputs;
- Thermal Energy Optimization: Integrating advanced controls and insulation will enhance system efficiency, further reducing emissions.

Mobility & Commuting

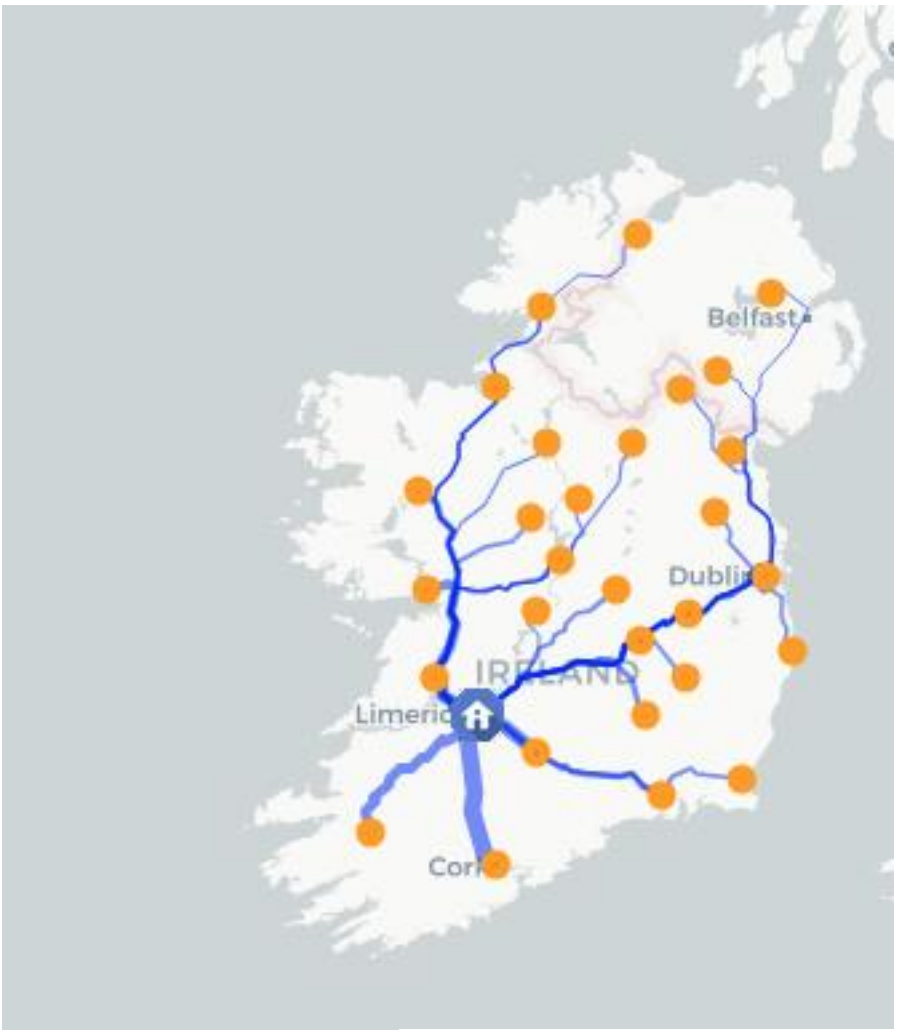
Recognizing the role of commuting emissions in Scope 3 (see Appendix E for geographical spread of domiciliary residences of MIC staff), MIC will continue investing in sustainable transport infrastructure:

- Expanded secure bicycle parking and water-managed shower facilities: to encourage active commuting;
- Collaboration with TFI Bikes: which will provide shared mobility options for students and staff;
- Phase-out of some parking spaces: which will occur where public transport is a viable alternative, reinforcing MIC's sustainable transport ethos (and re-presenting new opportunities for greening of the campus and biodiversity strategies in line with the College's new Landscape Masterplan;
- Expansion and promotion of park-and-ride options: current (and increasing) levels of car travel to the campuses is not sustainable from a climate action and decarbonisation perspective and sets a particularly bad example of sustainability management by a publicly-funded institution – notwithstanding the local accommodation deficits that have activated recent increases in car usage.

In addition to this, only zero emissions vehicles have been purchased by the College for its transportation requirements. This is in line with EU Directive 2019/1161 (the Clean Vehicle Directive). The College aims to go further by specifying within its procurement contracts that only zero-emissions vehicles should be used by contractors for delivery and haulage services.

A more potentially intractable problem arises on foot of the 'post-COVID" pattern of student engagement and the parallel structural issue caused by the dramatic reduction of proximal and affordable accommodation options for those living far from their domiciliary residences (see *Figure 6*, below). MIC and its Students' Union (MISU) are partnering to analyse the scale and effect of these issues on both the quality of the MIC learning experience and on mobility patterns (and the concomitant emissions impact). MISU has been pioneering within the sector by conducting robustly-constructed surveys of the MIC student cohort (and capturing an excellent sample size of almost 25% of the total student populace). A key finding made by MISU is that almost 20% of MIC students are commuting more than 50 kilometres per day. This is a vast increase over pre-COVID patterns of mobility and the environmental implications (as well as the negative connotations for student life) are obvious. MIC will continue to work with MISU to explore this new phenomenon and to identify ways in which adverse consequences can be eliminated or, at least, significantly mitigated.

Figure 6: *MIC Student Mobility – Travel Pathways for Students Not Living in Rented Accommodation or MIC Accommodation*



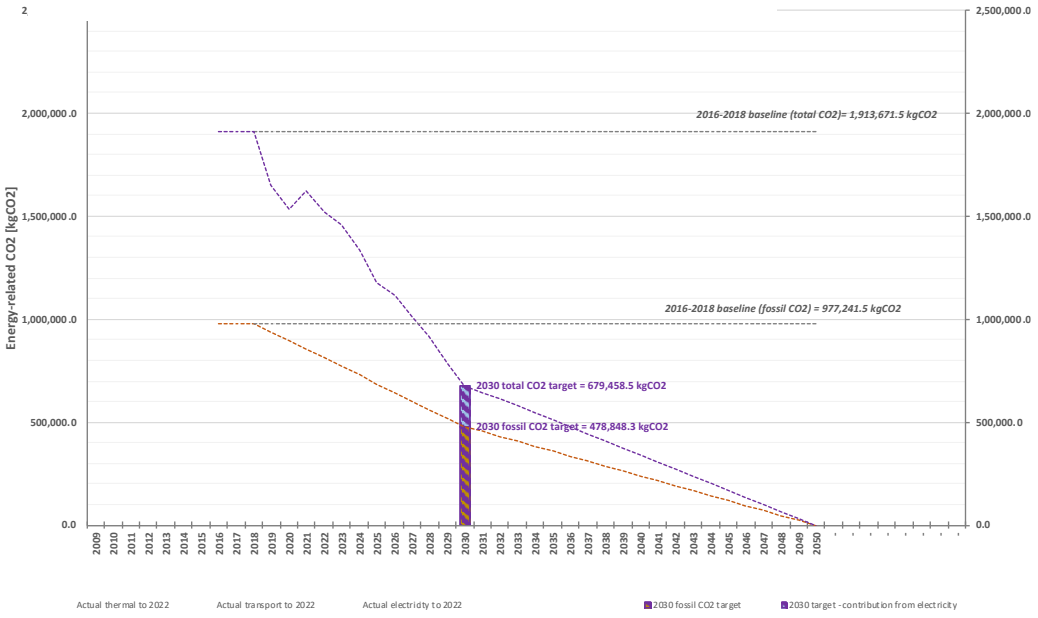
Source*: MIC Online Analytics System (e-OLAS)*

Scale of Challenge

Despite notable progress, MIC faces several critical challenges:

- **Thermal Energy Projects:** As most of the College's major buildings approach 70-130 years since first construction (its main Thurles building is fast approaching 200 years), the retrofitting of aging heating infrastructure (and remediating energy loss through very old building fabric) will inevitably require substantial capital investment as well as on-the-ground technical expertise;
- **Centralised Energy Management**: The continued absence of a fully operational BEMS severely limits MIC's ability to optimize energy usage within a relatively tight time-frame for rectification;
- **Behavioural Change**: Achieving sustained emissions reduction requires active participation from all segments of the College community across its campuses.

***Figure 6**: MIC – Total $C0_2$ Pathways and Targets 2030*



Source: *SEAI Monitoring & Reporting Dashboard*

In response, MIC is addressing these challenges through:

- **Strategic Investment:** Prioritizing thermal projects in capital development plans.
- **Capacity Building**: Staff training in energy efficiency and sustainability practices.
- **Partnerships**: Collaborating with local and national agencies to leverage funding and expertise.

Opportunities to Meet the Challenge

As noted, MIC must now focus on decarbonizing its heating systems as a cornerstone of its sustainability efforts. A Register of Opportunities (see below) has been developed in order to inform continued refinement of CAR/MIC 2030 and identification as of precise targets for GHG emission reductions. Deriving from this register, key initiatives will include replacement of fossil-fuel-based heating systems with modern heat pumps in buildings such as Gerard House, the Franco-German

Lodge, the staffroom and the Halla on the Limerick Campus, and the library space on the Thurles campus. Participation within a district heating network (DHN) is also being explored, with them aim of integrating heating systems across the Limerick campus to align with Limerick City Council's plans for a city-wide DHN. This strategic project includes preparing piping and instrumentation diagrams (P & IDs) to integrate current heating systems into the future network. These efforts are complemented by retrofitting buildings with upgraded insulation for windows, doors and roofs to minimize thermal energy losses.

Renewable energy deployment will be central to MIC's decarbonization opportunities. Solar photovoltaic (PV) systems are being expanded across both the Limerick and Thurles campuses, supported by funding models such as self-funding or energy-as-a-service arrangements where MIC purchases energy at a fixed rate before assuming ownership of the systems. The expansion of roof-top PVs will contribute significantly to MIC's objective of transitioning to 100% renewable energy sources, in alignment with its sustainability goals, post-2030.

Other critical projects include upgrading fluorescent lighting systems with energy-efficient LED equivalents and integrating exemplar lighting controls to reduce electricity consumption further. These lighting enhancements, coupled with the implementation of a centralised Building Energy Management System (BEMS) alluded to above, will allow real-time energy monitoring and interactive control. This system will provide the data-driven insights required for optimising energy use and identifying areas for improvement.

Key Roadmap Actions (MIC Register of Opportunities)

Campus	Project Opportunity
Limerick	Heat Pump Replacement Project - Gerard House
Limerick	Heat Pump Replacement Project - Franco German Lodge
Limerick	Heat Pump Replacement Project - Halla and Staffroom
Limerick	P & ID of heating systems from Main Foundation Building, 'Res' Block and Boiler Houses.
Limerick	Carry out a feasibility study into the development of a district heating system, with 1 or more energy zones on campus (based on P & ID in respect of areas specified above)
Limerick	Storage heating to solo radiators
Limerick	EXEED Project – 'Res' Block - Deep Retrofit of the entire building with the introduction of heat pump technologies as the main heating source & the introduction of other renewable systems such as roof-top PVs.
Limerick	External doors - replacement and draught seal upgrades

Limerick	Fabric Insulation - windows Foundation Building – on a phased basis. Stage 1 to prove a method that will allow the insulation upgrades of each sash window.
Limerick	Continue ongoing project to retrofit all fluorescent lighting with LED equivalents and incorporating exemplar lighting control systems
Limerick	Review wall wash lighting system on the front and sides of the Foundation Building
Limerick	Implement a comprehensive building energy monitoring system with centralised interactive controls
Limerick	Carry out a photovoltaic system development programme across the Limerick Campus
Thurles	Carry out a photovoltaic system development programme across the Thurles Campus
Thurles	Heat Pump Replacement Project - commencing with boiler house serving the Library
Thurles	Fabric Insulation - windows main building - phased basis. Stage 1 to prove a method that will allow the insulation upgrades of each sash window (as at Limerick campus).

Sources of funding for these opportunities have been identified, with the College investing from within its own resources where viable (including through routine maintenance and summer works schedules), and also targeting the SEAI SSRH programme, the Business Energy Upgrade Scheme, the SEAI EXEED Certified Grant Scheme where more appropriate, as well as assessing the suitability of the EsCO model.

These decarbonisation opportunities reflect a phased and multi-faceted approach to achieving MIC's ambitious climate targets. By integrating advanced technologies, strategic heating systems, and renewable energy solutions, MIC is taking substantial steps to reduce its carbon footprint while enhancing the efficiency and sustainability of its operations.

An additional and highly significant benefit for a research-performing organisation such as MIC is that its operational activities and any impactful innovation introduced can be assessed in terms of a 'proving ground' for more sustainable and efficient energy production and usage, especially unique initiatives the College may introduce such as installation of renewables on-site and at scale (the learnings from which can also permeate the curriculum within undergraduate and postgraduate offerings), the benefits of exploring financing options such as 'green bonds,' and partnerships with energy providers.

Theme 2: Institutional Mission & Ethos

A Holistic Learning Experience with a Call to Action

At the heart of Mary Immaculate College's (MIC) mission is its commitment to fostering a transformative learning environment that supports the holistic development of students. MIC recognizes that education is not solely about knowledge acquisition but also about cultivating ethical,

socially conscious individuals who are equipped to meet the challenges of an ever-changing world. This formative mission ensures that MIC graduates are not only prepared for their professional roles but are also empowered to lead with purpose, responsibility, and compassion.

MIC understands the profound impact exerted by shaping learners who can become agents of change within their communities and beyond. The College nurtures a culture of inquiry, critical thinking, and creativity, encouraging students to explore solutions to complex global challenges, including climate change. Through personalized learning experiences, reflective practice, and hands-on engagement, MIC instils in its students a sense of stewardship for the environment, social justice, and the common good. This mission aligns seamlessly with MIC's broader climate action goals, as education becomes a cornerstone for societal transformation.

For these reasons, MIC is particularly well-positioned to provide an offering that incorporates the UN SDGs at programme level, and in terms of immersion at the level of delivery a wide span of modules contain learning outcomes that explicitly reference specific SDGs. This includes professional teacher education programmes across Levels 8-10 as well as professional development programmes, in addition to Direct Access programmes for 'non-traditional' learners. The College has set a target for further integration of the SDGs which will be implemented in the context of its forthcoming strategic plan for the period 2025-2030 as well as in its Performance Agreement with the Higher Education Authority (for the period 2024-2028). Utilising the STARS Sustainability Tracking, Assessment and Rating System, the College is seeking to bring a minimum of 15% of all modules across the entirety of its provision into alignment with the SDGs, benchmarking itself against comparable institutions (in the international context) and verifying its performance against the STARS indicators. This is detailed further under the thematic area focused on innovation in teaching and learning (Theme 3), below.

Institutional Ethos

In terms of institution-level ethos, *Laudato Si'*, the landmark encyclical written by Pope Francis on care for the Earth, our common home, resonates deeply with the mission and values of Mary Immaculate College (MIC). MIC, as an institution rooted in Catholic heritage, embraces a commitment to fostering social justice, environmental stewardship, and ethical leadership.

By mapping to the core principles set out in the encyclical, *Laudato Si'* provides a conceptual framework that helps develop an understanding of the College's distinctive mission – and its potential to be an influential agent of change - in the broad context of climate action and sustainability:

- Integral Ecology: Recognizing the interconnection of social, economic, and environmental systems.
- Social Justice: Prioritizing equity and inclusion, addressing both "*the cry of the earth and the cry of the poor*."
- Sustainability and Leadership: Cultivating ethical leaders committed to environmental stewardship.
- Community-Driven Solutions: Engaging with partners to foster collaborative, local responses to global challenges.

- Educational Excellence with Ethical Purpose: Instilling climate-conscious values alongside academic knowledge.

These principles resonate deeply with MIC's insistence on its role as an agent of change, shaping graduates who lead with compassion, responsibility, and innovation.

Key Roadmap Actions

- The new MIC Strategic Plan (2025-2030) will place a core emphasis on the centrality of climate action and sustainability across all dimensions of the College mission;
- MIC graduate attributes will reflect the resonance of climate knowledge and commitment to sustainability within the skillsets offered by our students as they enter their respective career pathways.

Theme 3: Innovation in Teaching & Learning

Mary Immaculate College (MIC) aspires to stand at the forefront of climate action and sustainability within higher education, championing an integrated vision that combines academic excellence, innovative teaching, and dynamic community engagement. Rooted in the principles of Education for Sustainable Development (ESD) and guided by the United Nations' Sustainable Development Goals (SDGs), MIC has embedded sustainability into the heart of its programmes, pedagogy, and partnerships.

From its forward-thinking undergraduate and postgraduate programmes to its transformative teaching approaches and impactful outreach activities, MIC prepares graduates to address the defining challenges of our time. Its success will lie not only in what is taught but in how learning is brought to life—through experiential, place-based education, interdisciplinary innovation, and a deep commitment to the wider community. MIC's climate efforts reflect both a *vision* and a *practice* of education as a vehicle for environmental stewardship and social justice.

Teaching & Learning

Transformative Programme Offerings: Sustainability at the Core

One of the most critical ways MIC can contribute is through the integration of climate literacy into its curriculum. MIC's emphasis on education for sustainable development (ESD) ensures that students' learning journeys are deeply connected to global priorities, including the UN Sustainable Development Goals (SDGs). By integrating sustainability and climate-related themes across its teaching and learning programs, MIC equips students with the skills, knowledge, and values necessary to drive meaningful change. From teacher education programs that train future educators to embed environmental literacy in schools, to humanities courses that explore social and ecological justice, MIC ensures its graduates are prepared to lead sustainable, ethical, and impactful lives and also to promulgate these values by empowering younger generations to understand the imperatives of life in the coming decades of the twenty first century and to become agents of change themselves.

Curriculum Design

Programme design at MIC can explicitly integrate sustainability and climate action across diverse disciplines, from teacher education to humanities disciplines. The College has an opportunity to design academic programmes that address contemporary global challenges, with a strong emphasis on the United Nations Sustainable Development Goals (UN SDGs). Embedding the SDGs into programme design not only aligns with international sustainability frameworks but also reflects MIC's commitment to preparing graduates who can contribute meaningfully to societal well-being and environmental stewardship.

Undergraduate Programmes

Accordingly, at MIC, sustainability is not an isolated concept but a unifying thread woven throughout its undergraduate curricula, incorporating themes such as environmental awareness, climate justice, and sustainable development principles across a multiplicity of modules that are intended to have both a foundational and transformative effect for students.

Modules design is characterised by direct reference to the UNESCO objective to create learning opportunities that are interdisciplinary and holistic; values-driven, that encourage critical thinking and problem solving, that use a wide range of methods, media and activities, that foster participatory decision-making, and address local as well as global issues.

MIC also aims to embed sustainable energy in all relevant curricula within the Irish school system, in an integrated manner and that all schools have a whole school approach to energy education, and have an embedded culture of sustainable energy. The College strives to achieve this through the delivery of specific ESD electives for pre-service primary school teachers and incorporating the concepts of energy, the environment and climate change across our STEM, Geography and Visual Art modules and curricula for pre-service primary teachers.

While all pre-service teachers gain experience in ESD in their core geography modules, they can also pursue this further through an ESD elective. This module explores the theories and practices related to outdoor learning and sustainability education. It provides principles and guidelines for student teachers to use their local landscape as a key resource for teaching geography. This module aims to provide students with a background in biodiversity, ecology and environmental awareness and care. Theoretical perspectives of Environmental Education and ESD are addressed. One of the core aspects of this module is the promotion of outdoor education. A range of field trips are offered to support classroom- based understanding of our planetary geophysical and ecological systems. These trips include visits to Green Schools, school gardens, local nature reserves and a variety of natural habitats e.g. woodlands, fresh water and sea shore. Biodiversity is explored in a range of habitats in addition to other key learning contexts such as climate change and pollution. The module places a strong emphasis on integration, i.e. how sustainability education can be linked with all other subject areas in the primary curriculum.

Bachelor of Education programmes containing these features include the following:

- EDU154 STEM 6: This first-year core module introduces *Environmental Awareness and Care*, equipping future teachers with foundational concepts about ecology and sustainability.

- EDU216 Social Studies A includes content focusing on sustainability, responsibility and climate justice.
- EDU268 Social Studies A & B: In the second year, this module empowers student teachers to *engage young learners in conversations about climate change*. Using practical classroom strategies, students learn to inspire critical thinking and responsibility in primary classrooms.
- EDU301 STEM 6 is a core module within the B. Ed. Programme incorporating the concepts of Environmental Awareness and Care.
- EDE427 Education for Sustainability: A fourth-year elective that exemplifies MIC's commitment to innovative teaching. Each year, themes such as ocean literacy take centre stage, connecting students to Ireland's marine environments through immersive learning and interdisciplinary exploration.

MIC also has a Development Education and Global Citizenship Education (DICE) strand within its teacher education provision. DICE enables the College to deliver a variety of modules to pre-service primary teachers and to offer a wide range of workshops, symposia and events for teachers (and the general public). A DICE committee helps to coordinate the integration of DICE themes within the curriculum and includes content and pedagogy experts in STEM Education, CSPE, SPHE and geography.

In the Liberal Arts, the College's geography modules, rich in both physical and human geography, offer an introduction to climate and sustainability themes as well as elective opportunities to specialise and to gain an intellectual and applied foundation for understanding the complexities of climate change (and forge a pathway towards postgraduate study):

- GY4741 Dynamic Earth examines greenhouse gas emissions and climate variability. Students engage deeply with *the role of humans in altering ocean ecosystems* and protecting biodiversity.
- GY4708 Global Environmental Change takes a multi-faceted approach, considering the interplay of *climatic, hydrological, and ecological systems*. Students develop a holistic understanding of environmental change and its impacts.
- GY4787 Natural Hazards looks at a range of natural events that, while of relatively low frequency, have very large and serious impacts on human populations. These include extreme weather events, storm surges and flooding.
- Modules such as *Political Geography, Political Ecology*, *Marine Geography*, and *Urban Geography and Planning* challenge students to think critically about sustainable development, justice, and the future of urban spaces.

Postgraduate Programmes: Towards a Future Focus on Sustainability

At the postgraduate level, MIC offers a suite of innovative programmes designed to meet urgent global challenges and cultivate sustainability leaders:

- Master of Education in Education for Sustainability and Global Citizenship: This programme stands as a flagship example of MIC's forward-thinking approach. Designed for educators across all levels, it provides tools to integrate sustainability and global citizenship into teaching and

learning. It empowers graduates to *foster agency* among students, inspiring action for social and environmental justice.

- MA in Climate, Justice & Sustainability: A unique interdisciplinary offering, this programme blends environmental ethics, climate science, and social sustainability. It challenges students to think beyond technical solutions, exploring the moral dimensions of climate action.
- MA/MSc in Environment, Society & Culture: Bridging the divide between Arts and Science, this flexible programme enables students to undertake advanced research on *human-environment interactions* and sustainability challenges.

In the Liberal Arts at MIC, all disciplines – potentially – have significance for the building an increasingly coherent programme offering for learners wishing to understand the emergent focus on climate and sustainability on their lives and careers, with philosophy taking an early lead in this alongside geography by complementing the latter with new paradigmatic approaches such as climate ethics.

Pedagogy

Pedagogy at MIC further enhances the integration of sustainability by adopting innovative and participatory teaching methods. Techniques such as problem-based learning, collaborative projects, and experiential learning deepen students' understanding of complex environmental and social issues. By leveraging these methods, MIC cultivates critical thinking, creativity, and resilience among students, skills that are essential for addressing the uncertainties of a changing world. Additionally, the incorporation of indigenous and traditional ecological knowledge and practices enriches learning experiences by offering diverse perspectives on sustainability.

Learning Technologies

The use of new learning technologies also represents a significant opportunity for MIC to advance its teaching and learning mission in the context of sustainability. Online platforms, virtual simulations, and digital tools facilitate access to global resources and foster collaboration among students, educators, and researchers. For example, MIC uses interactive modules to simulate the impacts of climate policies or enable virtual exchanges with international institutions focused on the SDGs. These technologies not only enhance the learning experience but also reduce the carbon footprint associated with traditional modes of education, further contributing to MIC's sustainability objectives.

Equality, Diversity, Inclusion & Interculturalism

MIC places special emphasis on fostering inclusive and supportive learning environments where all students feel empowered to thrive. By championing the values of diversity and equity, as well as nurturing its learners' openness to the efficacy of collaboration, the College encourages students to embrace their unique perspectives while working toward shared goals. This formative approach to education creates a ripple effect—MIC graduates go on to inspire, teach, and lead others, making significant contributions to society as educators, leaders, and engaged citizens committed collectively to building a more sustainable and equitable future.

Key Roadmap Actions:

1.Full Mapping of SDGs and Further Modular Integration

The SDGs, established by the United Nations, provide a comprehensive framework for addressing global challenges such as poverty, inequality, climate change, and environmental degradation. By embedding SDGs into academic modules, MIC can:

- Enhance students' understanding of global issues and their interconnectedness.
- Foster critical thinking and problem-solving skills related to sustainable development.
- Promote a culture of sustainability and social responsibility within the college community.
- Align MIC's educational practices with national and international sustainability goals.

To effectively integrate SDGs into the curriculum, MIC will utilise the Sustainability Tracking, Assessment & Rating System (STARS) methodology. This framework provides a comprehensive approach to assessing and improving sustainability performance in higher education institutions. The STARS methodology involves the following steps:

1. Creating a Baseline: Conduct an audit of SDGs currently integrated into modules during the Academic Year 2024/25. This will involve reviewing course syllabi, learning outcomes, and teaching materials to identify existing SDG-related content.

2. Performing a Gap Analysis: Compare the baseline data with the desired level of SDG integration. Identify gaps where SDGs are underrepresented or missing in the curriculum. This analysis will help prioritise areas for improvement and guide the development of new modules or the revision of existing ones.

The key components of the plan to integrate SDGs into the curriculum include:

- Curriculum Development: Collaborate with academic departments to revise existing modules and develop new ones that incorporate SDG themes. Provide faculty with resources and training on integrating SDGs into their teaching practices.
- Monitoring and Evaluation: Establish a system for ongoing monitoring and evaluation of SDG integration. Use the STARS framework to track progress and make data-driven decisions. Regularly update the baseline and gap analysis to reflect changes in the curriculum.
- Stakeholder Engagement: Engage students, faculty, and external stakeholders in the process of SDG integration. Create opportunities for collaboration and feedback to ensure that the curriculum remains relevant and impactful.
- Reporting and Communication: Communicate progress and achievements related to SDG integration to the College community and external stakeholders, using the Climate Roadmap process of reporting under the Climate Action Mandate, as well as institutional annual reports, presidents' reports to Governing Authority, AOP reports demonstrating progress on implementation of the institutional strategic plan, committee system reports to the wider College

community and, of course, self-evaluation reports to the HEA under the System Performance Framework.

It will be important to map and track a robust risk management framework against the institutional objectives set out here and, accordingly, a specific risk register, inclusive of risk mitigation actions and relevant internal controls, will be developed. Key risks envisaged include failure to ensure resource identification and deployment, failure to ensure data availability and integrity, failure to mobilise stakeholder 'buy-in,' and failure to maintain consistency in respect of planning and delivery of modules with relevant and appropriate SDG characteristics.

Both the STARS system and the metrics used to deliver GHG reductions within the SEAI reporting dashboard for public bodies ensure that the College has a data collection and management framework. However, this data will be combined (automatically through workflow) with the curriculum management and programme development modules of academic information systems (including the College's SRS) to create a bespoke data analytics module within its own Online Analytics System, e-OLAS.

2. Enhance Teacher Education for Climate Action

- Expand climate change education modules within the Bachelor of Education (B.Ed.) and postgraduate programmes.
- Develop specialist electives for pre-service teachers focusing on outdoor education, energy literacy, and climate justice.
- Design and deliver professional development (CPD) programmes for in-service teachers on teaching climate change and integrating sustainability into primary and post-primary classrooms.

3. Promote Experiential and Place-Based Learning

- Prioritise outdoor and field-based learning in modules to connect students with local ecosystems (e.g., nature reserves, school gardens, coastal habitats). MIC has also created a dedicated outdoor teaching space on its Limerick campus for this purpose and this will be integrated into the College's overall Landscape Masterplan.
- Enhance place-based education by using Ireland's unique geography and biodiversity as a key teaching resource.
- Foster hands-on learning through engagement with community-led sustainability initiatives, such as the Tiny Forest Project and Green Schools Programme.

4. Advance Pedagogical Innovation

- Develop and promote interdisciplinary teaching methodologies that link sustainability themes across subjects.
- Expand the use of project-based and inquiry-based learning to encourage critical thinking, problem-solving, and active citizenship.
- Incorporate digital tools and multimedia resources to support teaching about climate change and global sustainability challenges.

- Be mindful of the risk of enlarging the carbon footprint by inefficient or non-strategic usage of Artificial Intelligence services.

5. Develop New Programmes Focused on Sustainability

- Launch innovative undergraduate and postgraduate programmes with a core focus on sustainability, climate justice, and global citizenship.
- Expand programmes like the M.Ed. in Education for Sustainability and Global Citizenship and MA in Climate, Justice, and Sustainability to attract diverse student cohorts.
- Introduce flexible, micro-credential modules for professionals seeking to upskill in sustainability education.

6. Foster a Culture of Climate Literacy

- Ensure all graduates achieve climate literacy by integrating sustainability knowledge, values, and skills into core learning outcomes.
- Provide opportunities for students to undertake research, projects, and placements focused on climate action and sustainability solutions.
- Promote climate justice awareness through ethical and reflective teaching practices, empowering students to act locally and think globally.

7. Support Staff Professional Development

- Deliver ongoing professional development workshops and training for faculty to integrate sustainability and climate action into their teaching.
- Establish a Sustainability Pedagogy Forum for sharing best practices, tools, and resources among academic staff.
- Encourage interdisciplinary collaboration among faculty to design innovative, climate-focused modules and programmes.

8. Embed Sustainability into Institutional Practices

- Use MIC's campuses as living laboratories for sustainability, integrating energy efficiency, biodiversity projects, and waste reduction into teaching and learning activities.
- Develop student-led initiatives and partnerships to foster environmental stewardship and sustainability leadership on campus.
- Establish student competitions, events, and showcases highlighting climate action projects and achievements.

9. Measure and Showcase Impact

- Embed sustainability learning outcomes into curriculum evaluation processes to ensure ongoing alignment with climate action goals.
- Highlight MIC's leadership in climate education through case studies, publications, and conferences.

- Collaborate with national and international networks to share MIC's best practices in sustainability-focused teaching and learning.

10. Engage Students as Agents of Change

- Promote student-led projects and initiatives, such as the Green Campus Programme, Tiny Forests, and climate action weeks.
- Foster global citizenship education by providing students with the tools to address social and environmental injustices locally and globally.
- Ensure students graduate as empowered advocates for climate action and sustainability, equipped to lead positive change in their professional and personal lives.

Theme 4: Research & Knowledge-Sharing

Research Activity at Mary Immaculate College in the Area of Climate and Sustainability

Building on a rapidly gathering baseline of activity, MIC aims to establish itself as a hub for pioneering research in the areas of climate action, environmental sustainability, and Education for Sustainable Development (ESD). Its research endeavours are guided by a clear mission: to generate knowledge that addresses pressing environmental challenges, inform educational policy and practice, and foster a deeper understanding of the interconnections between people, communities, and the planet. Through collaboration, innovation, and engagement with global frameworks like the United Nations' Sustainable Development Goals (SDGs), MIC has achieved significant breakthroughs in sustainability research, while positioning itself as a leader in this critical area.

Research-Led Contributions to Climate and Sustainability

MIC's research spans an impressive range of themes, including climate change education, sustainable development, social and climate justice, and the interplay between society and the environment. Staff from the Faculty of Arts, Faculty of Education, and interdisciplinary research centres have contributed to major national and international projects that advance our understanding of climate-related issues while driving innovation in teaching and policy development.

1. Climate Change Education and Pedagogical Innovation

At the forefront of MIC's research in sustainability is its focus on climate change education, a critical area that addresses how future generations understand and respond to the climate crisis. Recognising that climate change is a deeply interdisciplinary issue, MIC academics have led initiatives to develop new pedagogical frameworks that integrate environmental education into teaching practice at all levels.

- "Teaching Climate Change in Primary Schools: An Interdisciplinary Approach"

Coordinated by Dr. Anne Dolan, this publication is a cornerstone of MIC's work in climate education. The book offers a comprehensive guide for educators to introduce climate change concepts in primary schools through a cross-curricular, inquiry-based approach. The research underpinning this

work explored strategies to equip teachers with the confidence and tools to address climate change in a manner that is age-appropriate, hopeful, and action-oriented. The project included professional development sessions for teachers and field-based learning trials, ultimately culminating in an accessible and impactful resource for educators.

- Research on Teaching the SDGs in Schools

Another critical success has been MIC's collaborative project, "Teaching the Sustainable Development Goals (SDGs) to Young Citizens." By focusing on Climate Action (SDG 13) alongside themes of equity, justice, and sustainability, the project emphasised the role of schools in fostering global citizenship. MIC researchers explored how embedding the SDGs in education empowers children to think critically and creatively about their role in shaping a sustainable future.

These initiatives have already had far-reaching outcomes, including influencing national policy on ESD and inspiring other institutions to adopt similar frameworks for climate education. In the words of former President of Ireland and Chair of the Elders, Mary Robinson, in her foreword to '*Teaching Climate Change in Schools*, "*the need for climate change education with a clear focus on climate justice is now absolutely essential. In their mission to help student teachers teach about climate change, MIC academics have pooled their expertise in this publication. Informed by the most up to date scientific research and methodological approaches for primary teaching, the book moves from theory to practice in a way that is meaningful for primary teachers. Innovative approaches for teaching climate change are presented through early childhood education, literacy, science, history, geography, religious education, art, drama, physical education and cross-curricular themes. This book makes a coherent argument for climate change education in primary schools. Framed by the Sustainable Development Goals, it provides an overview of climate change including its causes and impacts. It recognises the agency of children and it is written in a spirit of hope*."

2. Research on the Social and Ethical Dimensions of Sustainability

MIC has also led interdisciplinary research projects that examine the broader social, cultural, and ethical implications of climate action. By blending insights from geography, philosophy, and education, MIC has tackled complex questions of climate justice, equity, and sustainable governance.

The MA in Climate, Justice & Sustainability

As a natural outgrowth of MIC's research strengths, this programme represents both a teaching and research success. It was shaped by MIC's extensive work in environmental ethics, climate justice, and the intersection of society and sustainability. The programme addresses key questions such as: *How can climate policies be both effective and equitable? What moral responsibilities do communities have in the fight against climate change?* Research emerging from this programme has provided valuable insights into how climate justice can guide decision-making at local, national, and global levels.

The Aquabalance Project

A major achievement in MIC's research portfolio is its involvement in the €1.3 million Aquabalance Project, led in Ireland by Dr. John Morrissey from the Department of Geography. Funded through the

European Union's Blue Economy Partnership, this project investigates sustainable aquaculture practices to support climate-neutral, productive, and resilient coastal communities. By examining the relationship between environmental sustainability, economic activity, and social equity, MIC's contribution ensures that Ireland's coastal and marine communities benefit from sustainable development practices that do not compromise the health of ecosystems.

Key outcomes of this project will include:

- The development of innovative frameworks for sustainable aquaculture that balance environmental preservation and local economic needs.
- Collaborative policy recommendations that support blue economy initiatives while addressing the challenges of climate change, biodiversity loss, and social equity.

This work has placed MIC at the centre of European discussions on climate-neutral development for coastal communities, showcasing its capacity to lead impactful, solutions-oriented research.

3. Applied Research Informing Policy and Practice

MIC has consistently demonstrated its ability to translate research findings into practical applications, informing both educational policy and practice across Ireland and beyond. Notable examples include:

- The SEAI Schools Programme Review

MIC's collaboration with the Sustainable Energy Authority of Ireland (SEAI) is a testament to its leadership in applied research. Led by Dr. Maeve Liston, the project reviewed SEAI's outreach and education programmes, which aim to inspire students about sustainable energy and climate action. The research assessed the programme's effectiveness in embedding sustainability into school curricula and fostering a culture of energy awareness. The outcomes of this review directly influenced the redesign of SEAI's educational initiatives, ensuring they remain aligned with best practices in ESD.

- STEAM Education and Climate Awareness

MIC has also developed innovative STEAM (Science, Technology, Engineering, Arts, and Mathematics) outreach programmes, such as the Clare Education Centre collaboration. These initiatives focus on building science capital while fostering environmental awareness in primary and secondary schools. A recent €40,000 pilot project involved the design and delivery of STEAM workshops centred on climate change, empowering both teachers and students to engage in proactive climate action.

- SEAI Energy Education Engagement Initiative for Early Years

MIC has been successful in tendering for an initiative of the SEAI, with a project award of €40,000, for the design and development of an energy education workshop to be targeted at children in early years settings which will aim to build a strong foundation for energy and environmental literacy in very young children, utilising professional pedagogical expertise as well as subject and content knowledge dispersed amongst academics who are part of the project design team.

4. Community and Collaborative Research Engagement

MIC's research activity extends beyond the academic sphere to engage communities, policymakers, and industry partners. Through initiatives like the Green Campus Programme and the Tiny Forest Project, MIC has brought its research findings to life, directly contributing to environmental improvement and community development.

- Tiny Forests Initiative: Research into the role of urban green spaces in promoting biodiversity and ecological resilience has culminated in MIC's collaboration with Leaf Ireland to create a *Tiny Forest* on campus. This project serves as a living laboratory for sustainability research and a model for similar initiatives nationwide.
- Outreach and Professional Development: MIC's research directly informs workshops and CPD courses for teachers, ensuring that educators are equipped with the latest evidence-based strategies for integrating sustainability into classrooms. Events such as Climate Action Weeks and Science Week serve as platforms to disseminate MIC's research to a broader audience, including policymakers, educators, and community leaders.

Key Roadmap Actions:

1. Enhance Research Capacity and Collaboration

- Foster interdisciplinary research across departments (e.g., Geography, Philosophy, STEM Education).
- Expand international partnerships, particularly in European programmes like Aquabalance and Blue Economy initiatives, as well as a focus on renewable energy.
- Strengthen collaborations with public agencies (e.g., SEAI, EPA, Taighde Eireann) to address national and regional sustainability priorities (MIC is part of the national SFI Discover Centre Network).

2. Advance Climate Change Education Research

- Continue developing innovative climate change education resources for primary, post-primary, and teacher education.
- Promote *action-oriented research* on the integration of climate justice and SDGs into curricula.
- Support professional development programmes for educators based on cutting-edge research findings.

3. Drive Policy-Influencing Research

- Conduct applied research to evaluate and improve climate and sustainability policies, such as energy education (SEAI programmes).
- Provide evidence-based recommendations for government strategies on ESD and sustainable development.
- Develop scalable frameworks for climate literacy in education systems.

4. Lead in Blue Economy and Sustainability Innovation

- Grow MIC's role in sustainable aquaculture and coastal community research.
- Develop models for climate-neutral practices that balance environmental, economic, and social sustainability.
- Expand research initiatives that tackle biodiversity loss, marine conservation, and ecosystem management.

5. Embed Sustainability in Research Culture

- Establish a dedicated Sustainability Research Hub to coordinate and promote climate-related research.
- Encourage undergraduate and postgraduate dissertations focused on climate action, sustainability, and environmental justice.
- Develop new PhD and postdoctoral research opportunities addressing key climate challenges.

6. Community and Industry Partnerships

- Expand outreach and community-engaged research initiatives, such as the Tiny Forest Project and Green Campus Programme.
- Partner with industry stakeholders to develop innovative STEAM and sustainability solutions.
- Use MIC's campus as a living laboratory for sustainable practices and applied research.

7. Knowledge Dissemination and Impact

- Publish high-impact research outputs on climate change education, sustainability, and global citizenship.
- Organise national and international conferences to share MIC's research findings.
- Develop open-access resources and digital platforms for educators, policymakers, and communities.

Theme 5: Partnership & Stakeholder Mobilisation

Policy Input

Mary Immaculate College (MIC) has played a pivotal role in shaping national education policy in Ireland, particularly in the areas of initial teacher education (ITE) and the professional development of teachers. With a long-standing tradition as a centre of excellence in education, MIC's contributions to policy formation have had a transformative impact on the quality and direction of Irish education.

MIC's role in policy formation (including both curriculum configuration and State examinations reform processes) is amplified through its partnerships and engagement with national stakeholders, including

the National Council for Curriculum and Assessment (NCCA), the Teaching Council, the Department of Education, and various professional bodies. By combining its core competencies in research, pedagogical expertise, and practical insights (generated by a long-standing commitment to working at the vanguard of delivery in schools and in community-based settings), MIC has ensured that national education policies are informed by evidence and grounded in best practices.

This collaborative approach underscores MIC's commitment to shaping an inclusive, dynamic, and forward-looking education system, reinforcing its position as a key driver of educational innovation and reform in Ireland.

Educational Outreach Through Partnerships

MIC delivers structured outreach initiatives that inspire environmental awareness and sustainable practices among children, educators, and the wider public. These initiatives are facilitated through partnerships with *Taighde Eireann* local education centres, and community organisations.

- Tipperary Festival of Science

MIC collaborates annually with *Taighde Eireann* and TUS to organise this festival. Events take place in diverse community venues, including schools, libraries, art galleries, and theatres. Workshops, talks, and seminars focus on themes like Climate Change and Environmental Awareness, engaging schools and families across the region.

- One World Seminar Series

This annual spring initiative raises awareness on sustainability and climate justice through lunchtime seminars open to students, staff, and the public. Supported by the Youth Council of Ireland and *Taighde Eireann*, it reflects MIC's commitment to fostering informed, active citizens.

- DICE (Development and Intercultural Education) Project

Each year, the DICE Project hosts climate change education events targeting primary and secondary school teachers. These events strengthen the link between teacher training and sustainability education, ensuring educators have the tools and confidence to address climate action in the classroom.

Community and Cultural Engagement

MIC's commitment to partnership extends to the cultural sector, where it works with institutions like The Hunt Museum to promote dialogue and action on climate issues:

- Culture and Climate Action Conference 2024

Co-hosted with The Hunt Museum, this conference brought together academics, cultural leaders, policymakers, and the public to explore Ireland's pathways to climate resilience. It exemplifies how MIC mobilises expertise to foster societal awareness and collaborative solutions to climate challenges.

Empowering Future Generations Through Strategic Partnership & Outreach

MIC's ability to mobilise stakeholders for climate action is perhaps most evident in its outreach to children and young people, providing opportunities for meaningful engagement:

- Participation in structured events like Climate Action Week and Science Week ensures that environmental education remains accessible, engaging, and impactful.
- Partnerships with schools for projects like the Tiny Forest Initiative foster environmental stewardship and hands-on learning experiences for young learners.
- Outreach activities through CRAFT (Creative Arts/Future Technologies) engage students in STEAM-based workshops that address sustainability themes in creative, dynamic ways.
- Collaborations with external partners have provided structured professional development for staff, resulting in key resources like *"Teaching the Sustainable Development Goals to Young Citizens"*. These initiatives ensure that MIC's educators remain leaders in embedding sustainability into their teaching.

Key Roadmap Actions:

1 Expand Cultural and Interdisciplinary Initiatives

- Co-develop cultural events and conferences (e.g., "Culture & Climate Action") with municipal cultural and educational partners (like the Hunt Museum) to engage wider audiences on sustainability.
- Strengthen interdisciplinary teaching and research across MIC's faculties, integrating arts, science, and education in climate-related initiatives.
- Mobilise external experts to contribute to events, seminars, and workshops that raise awareness and inspire action on sustainability.

2. Leverage Digital Platforms for Engagement

- Create an online resource hub that shares MIC's research, educational materials, and tools for teaching sustainability and the SDGs.
- Develop multimedia content (e.g., videos, podcasts, and webinars) to engage teachers, students, and the wider public in climate and environmental themes.
- Promote MIC's sustainability efforts and success stories through enhanced communication and digital outreach strategies.

3. Scale Up Community Engagement Strategy with Focus on Climate Action & Sustainability

- Expand the Green Campus Programme across all MIC campuses, integrating students, staff, and community members in sustainable projects and leadership roles.
- Strengthen MIC's role as a community hub for environmental engagement by delivering events like Climate Action Week, One World Seminars, and Culture and Climate Conferences annually.
- Increase outreach through initiatives like CRAFT by offering tailored STEAM-based sustainability workshops for schools, families, and the wider public.

- Partner with public (including hinterland Local Authorities), statutory, private and community-based organisations for 'joined-up' initiatives.

4. Foster Future-Focused Leadership

- Empower students to act as sustainability ambassadors through leadership roles in campus and community projects.
- Support teacher training and student placements that focus on environmental education and outreach in local schools and community organisations.
- Organise annual student showcases to present innovative climate action projects and celebrate MIC's contributions to a sustainable future.

Theme 6: Leadership & Governance

Mary Immaculate College (MIC) recognises that strong leadership and effective governance are essential for driving its ambitious climate action and sustainability goals. Anchored by an institutional commitment to integrate sustainability across all areas—teaching, research, campus operations, and community engagement—MIC has developed a robust governance structure to ensure oversight, accountability, and continuous improvement in its sustainability efforts.

The leadership team at MIC, including the executive management, the Environment and Sustainability Committee, and a designated Climate Champion, provides strategic direction, mobilises resources, and fosters a culture of shared responsibility for environmental action. Through data monitoring, evaluation frameworks, and evidence-based decision-making, MIC ensures that its projects and initiatives deliver measurable outcomes aligned with national and international sustainability benchmarks.

The Governing Authority determines the content and the success of implementation for the two primary vehicles for demonstration of accountability and impact in the higher education system context, including the institutional strategic plan, and the Performance Agreement with the HEA (2024-2030), which contains specific targets and deliverables in respect of curricular integration of the SDGs as well as the decarbonisation goals under the Climate Mandate.

1. Strategic Leadership for Sustainability

The Role of the Executive Team

The MIC Executive Team plays a critical leadership role in embedding sustainability into the college's strategic priorities. They oversee the development of MIC's Climate Action Roadmap 2030, ensuring alignment with national mandates, such as the Irish government's Public Sector Climate Action goals, and global frameworks, including the United Nations' Sustainable Development Goals (SDGs).

Key actions include:

- Ensuring sustainability is a core pillar of institutional planning, resource allocation, and operational decision-making.
- Championing partnerships with key stakeholders to advance research, teaching, and outreach goals.

- Supporting innovative initiatives, such as the Green Campus Programme, and the resourcing of interdisciplinary sustainability-focused academic programmes.

The Environment and Sustainability Committee

The Environment and Sustainability Committee is a cross-functional group of academic staff, operations managers, and executive representatives tasked with ensuring that sustainability is integrated into MIC's teaching, research, and lived campus experience. On behalf of the Executive Team it provides an oversight framework for climate action initiatives and connects academic expertise with operational best practices. See Appendix X for the Committee's terms of reference.

Key Responsibilities of the Committee:

- Oversee and coordinate MIC's climate-related projects, ensuring alignment with institutional goals.
- Monitor sustainability initiatives across the campus, evaluating their progress and impact.
- Develop and implement strategies for resource efficiency, energy conservation, and biodiversity enhancement.
- Provide leadership in designing sustainability-focused professional development for staff and embedding environmental literacy into curricula.
- Foster a culture of collective action by engaging staff, students, and external stakeholders.

The Climate Champion

To strengthen leadership in sustainability, MIC has designated a Climate Champion at Vice-President level. Reporting directly to the College President, the Climate Champion is a key institutional figure responsible for driving climate action and ensuring alignment across governance, operations, and academic activities.

The responsibilities of the **Climate Champion include**:

- Raising awareness about sustainability initiatives among students, staff, and external partners while maintaining MIC's public profile as a leader in climate education.
- Working closely with the Executive Team and Environment and Sustainability Committee to develop climate-focused policies and projects.
- Coordinating with external organisations, such as SEAI, Science Foundation Ireland, and environmental NGOs, to advance MIC's sustainability agenda.
- Overseeing the collection and monitoring of climate-related data and assessing the effectiveness of sustainability projects.

2. Monitoring, Evaluation, and Accountability

To ensure the effectiveness and impact of its sustainability projects and initiatives, MIC has implemented a rigorous system for data monitoring, evaluation, and reporting. These processes ensure transparency, accountability, and continuous improvement:

Monitoring of Available Data

MIC collects and analyses comprehensive data on key performance indicators (KPIs) related to climate action and sustainability. These include:

- Energy consumption and emissions data across campus facilities.
- Metrics on biodiversity projects, such as the Tiny Forest Initiative and campus green spaces.
- Participation rates and feedback from professional development programmes and student outreach activities.
- Tracking progress towards achieving targets in the Climate Action Roadmap 2030 and reporting through the external SEAI Monitoring & Reporting Tool.

Evaluation of Project Effectiveness

MIC employs both qualitative and quantitative evaluation frameworks to assess the impact of its sustainability initiatives. Key approaches include:

- Baseline and Comparative Analysis: Benchmarking progress against established sustainability targets, such as energy reduction and biodiversity enhancement goals.
- Impact Assessments: Evaluating the tangible outcomes of projects like the SEAI Schools Programme, Science Week, and professional development workshops.
- Stakeholder Feedback: Gathering input from staff, students, and community partners to measure engagement, satisfaction, and behavioural changes driven by MIC's initiatives.
- Publication of Results: MIC ensures findings are shared widely through reports, publications, and conferences to highlight successes and inform policy.

3. Accountability and Reporting

MIC prioritises transparency and accountability by producing regular reports that outline progress in sustainability governance and climate action:

- Annual Sustainability Report: A comprehensive document that details MIC's achievements, challenges, and plans for future sustainability initiatives.
- Chief Officer's Annual Report: A section of the Annual Report synopsises key goals and outcomes in respect of climate action and sustainability at the College.
- Climate Action Roadmap Updates: Regular updates on progress towards 2030 targets, including emissions reductions, energy savings, and campus sustainability improvements.
- Impact Reports on Partnerships: Highlighting outcomes from collaborations with SEAI, SFI, Leaf Ireland, and community organisations to demonstrate the success of joint initiatives.

The Role of the Governing Authority

The Governing Authority of Mary Immaculate College (MIC) plays a pivotal role in ensuring public accountability and providing proactive strategic direction in the implementation of climate action and sustainability goals. As the institution's highest governing body, it oversees the alignment of MIC's activities with national and international frameworks, such as the Irish government's Public Sector Climate Action Mandate and the United Nations' Sustainable Development Goals (SDGs).

Key Responsibilities of the Governing Authority Include:

- Strategic Oversight: Providing clear guidance and leadership to ensure that sustainability remains central to MIC's institutional mission, strategic plans, and operational activities.
- Public Accountability: Upholding transparency by overseeing the delivery of measurable progress against climate targets, including emissions reductions, energy efficiency improvements, and community engagement.
- Resource Allocation: Ensuring appropriate financial and human resources are allocated to support MIC's sustainability initiatives, research, and teaching innovations.
- Monitoring and Reporting: Reviewing progress reports, sustainability impact assessments, and Climate Action Roadmap updates to ensure accountability and continuous improvement.
- Risk Management: Identifying and mitigating risks related to environmental and sustainability challenges while fostering innovation in strategy implementation.

4. Key Actions for Implementation

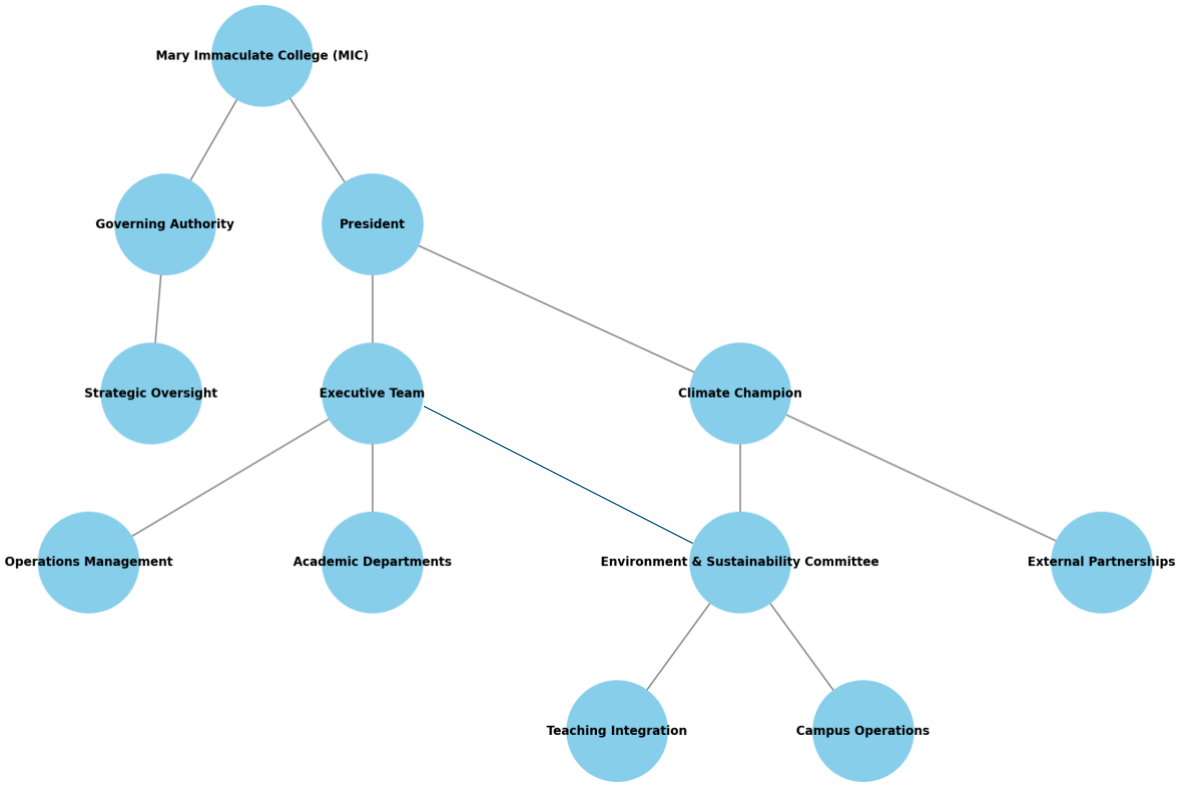
To strengthen leadership and governance in sustainability, MIC will:

- Reconceptualise the role of the Climate Champion with clear deliverables and reporting structures.
- Develop a Sustainability Impact Dashboard to monitor real-time data on emissions, energy efficiency, and project participation.
- Expand the remit of the Environment and Sustainability Committee to oversee all climate-focused initiatives within a decentralised 'hub-and-spoke' system and provide strategic guidance to College stakeholders through this mechanism.
- Establish annual Sustainability Forums to engage staff, students, and partners in reviewing progress and setting priorities.
- Implement a Continuous Improvement Framework that integrates regular evaluation, stakeholder feedback, and adaptive project strategies.

See *Appendix A* for a schematic illustration of the framework for climate action and sustainability governance at MIC and *Appendix B* for the terms of reference and membership pf the Environment & Sustainability Committee.

Appendix A:

Governance of Climate Action & Sustainability Framework at MIC



Appendix B:

Terms of Reference and Membership of MIC Environment & Sustainability Committee

Overall Aim:

To act in accordance with the College's Mission Statement, for mobilisation of institutional knowledge and resources towards timely, impactful, sustainable, just and socially responsible safeguarding of the shared environment, in all of its forms.

Responsibilities:

- To represent, through the Committee's diversity of membership and through its inclusive engagement across the broader communities of interest within the institution, knowledge capital possessed by the College with particular relevance for climate change issues, sustainability, and safeguarding of the environment.
  To act as champions across the College's governance, operational and academic domains, for active promotion of the shared agenda to bring about environmental sustainability.
- To act as an advisory body for College management (and for key functional units) in respect of the necessity of adopting relevant national and international climate protection and sustainability goals and targets, practical methods by which such targets can be reached most effectively, the manner in which implementation outcomes should be reported to internal and external stakeholders, and of institutional policy development.
- To be available as an advisory forum for the MIC academic community, and for other relevant units within the College, towards engagement with climate action and environmental sustainability issues in programme design and pedagogy, peer networking, research, innovation, and external outreach.
- To provide relevant advice and guidance to College representatives with responsibility for meeting institution-level compliance obligations.
- To provide advice and guidance towards formation of College strategy for articulation and achievement of climate protection and sustainability goals relevant to institutional mission.
- To co-ordinate and support relevant College bodies in the application, attainment and retention of Green Flag status.
- To provide advice and guidance towards capital development planned and undertaken by the College.
- To enable the College to influence relevant external policy and legislative formation across all sectors in which the College's mission receives expression.
- To provide appropriate and effective channels of communication and discourse within the College community aimed at knowledge exchange and dissemination in respect of key issues relating to climate change and environmental sustainability.
- To collaborate actively, and as appropriate, with all other committees of the College, in furthering the work of the Committee as out in these Terms of Reference.
- To provide the Executive Team (to which the Committee reports) with an annual report setting out the record of meetings, important developments and achievements.

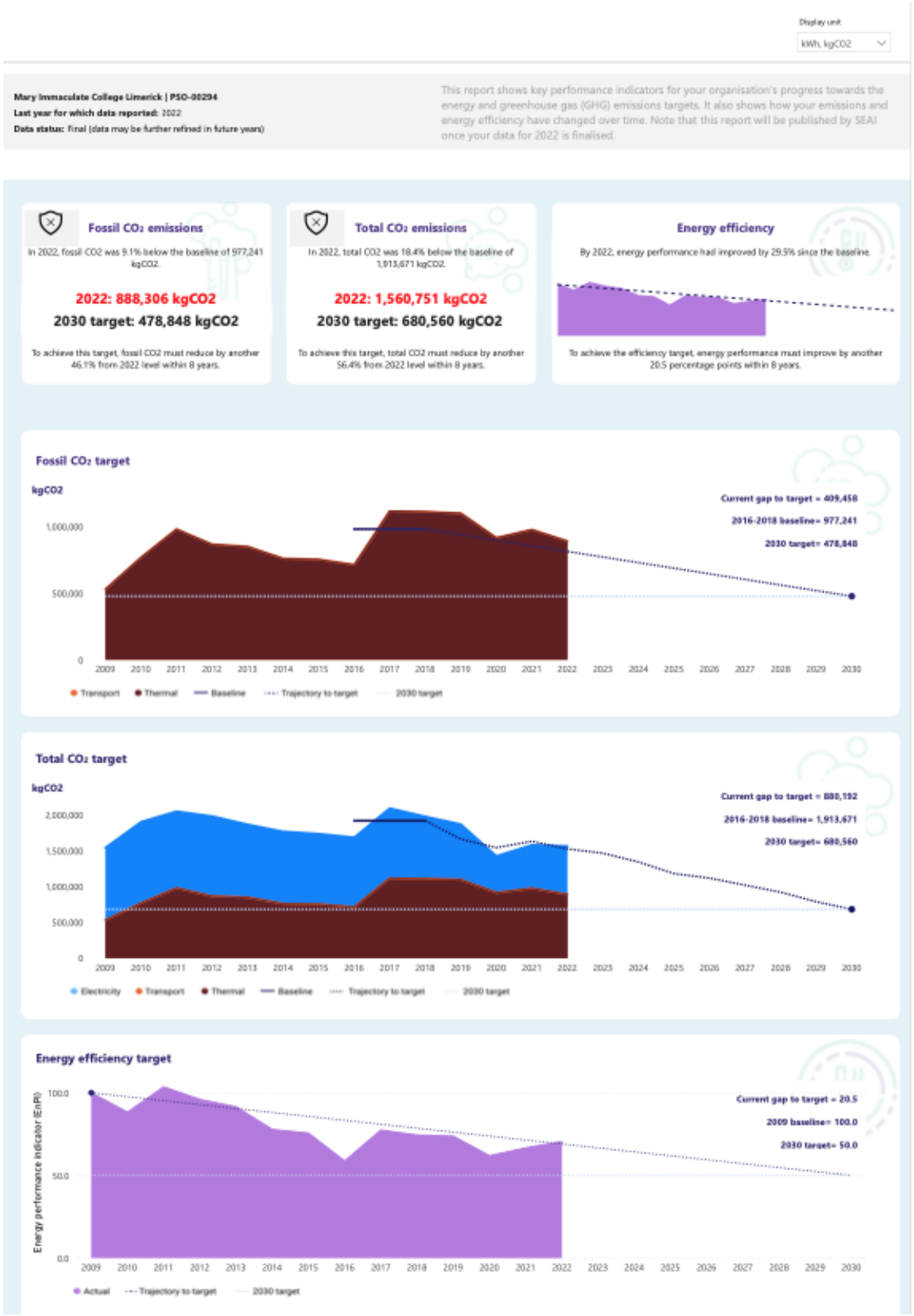
Members (Nominated & Ex Officio)

- **Chairperson (ET Nominee)**
  Gary O'Brien
- **Vice-President Administration & Finance***
  Michael Keane (Climate Champion)
- **Director of EDII***
  Lorraine McIlrath
- **Dean of Arts (or nominee)***
  William Leahy
- **Dean of Education (or nominee)***
  Angela Canny
- **Head of School, MIC Thurles (or nominee)***
  Jennifer Johnson
- **Director of Enterprise & Community Engagement***
  Maeve Liston
- **Director of Teaching & Learning***
  Katherine Whitehurst
- **Director of Estates & Sustainability***
  Rachel Costello
- **Buildings & Estates Manager***
  Ger O'Donoghue
- **RGSO (VPR's nominee)**
  Mary Collins
- **Faculty of Arts (Faculty Board nominees)**
  Deirdre Brady
  Angela Cloke-Hayes
  Vacant
  John Morrissey
- **Faculty of Education (Faculty Board nominees)**
  Anne Dolan
  Brighid Golden
  Tanya de Paor
  Vacant
- **Professional Services Staff (Elected)**
  Caroline Coyne
  Jeanette Ferguson
  Eoin Martin
  Ruth Talbott
- **MIC Student Body (MISU President's nominees)**
  Aisling Knox (MISU President)
  Jimmy Ogwal (MISU Vice President)

**Ex Officio*

Appendix C:

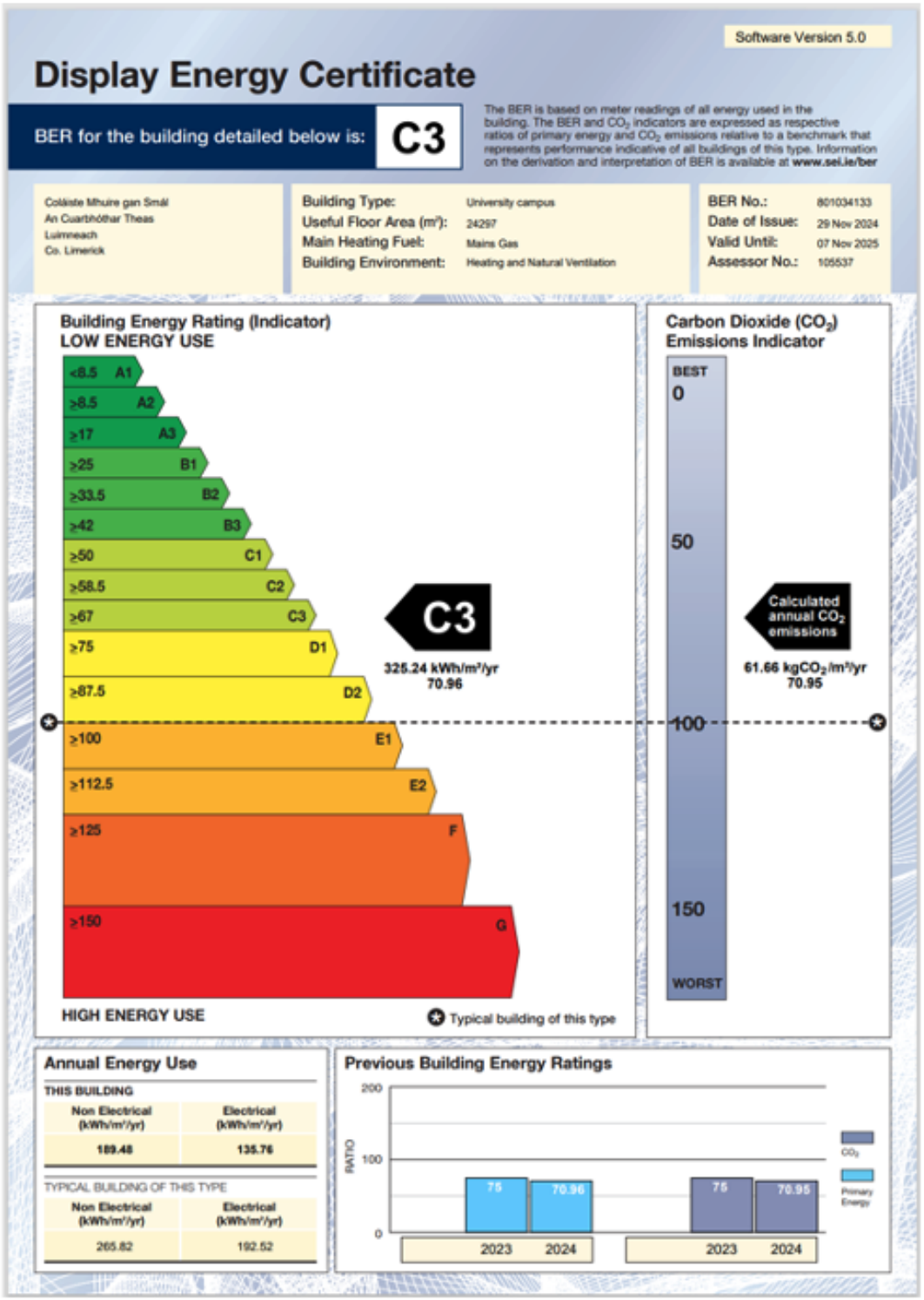
Summary Report on MIC GHG Reduction and Glidepath Performance (2024 SEAI Monitoring & Reporting Tool)



Source: *SEAI Monitoring & Reporting Dashboard*

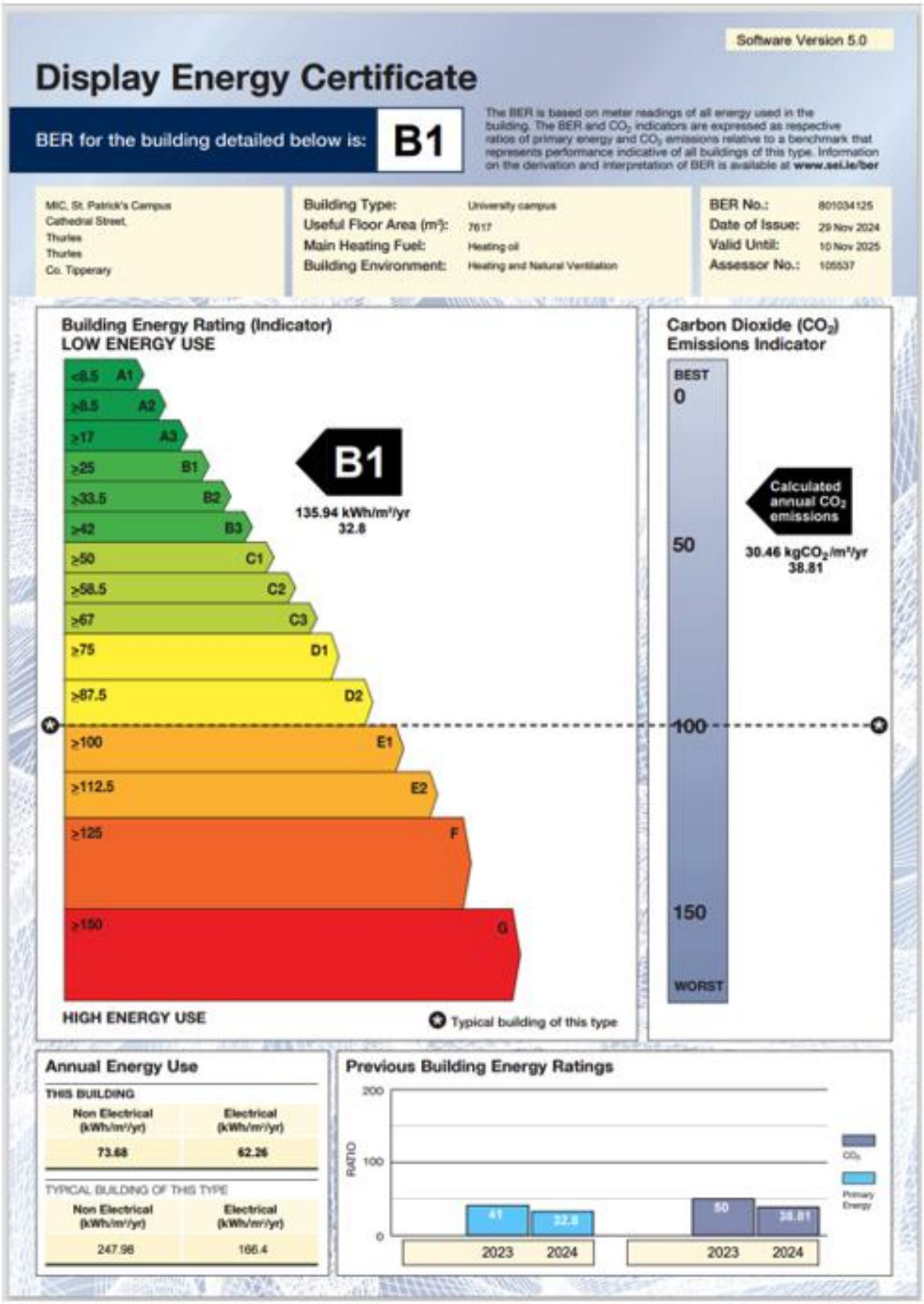
Appendix D:

Display Energy Certificate – MIC Limerick 2024



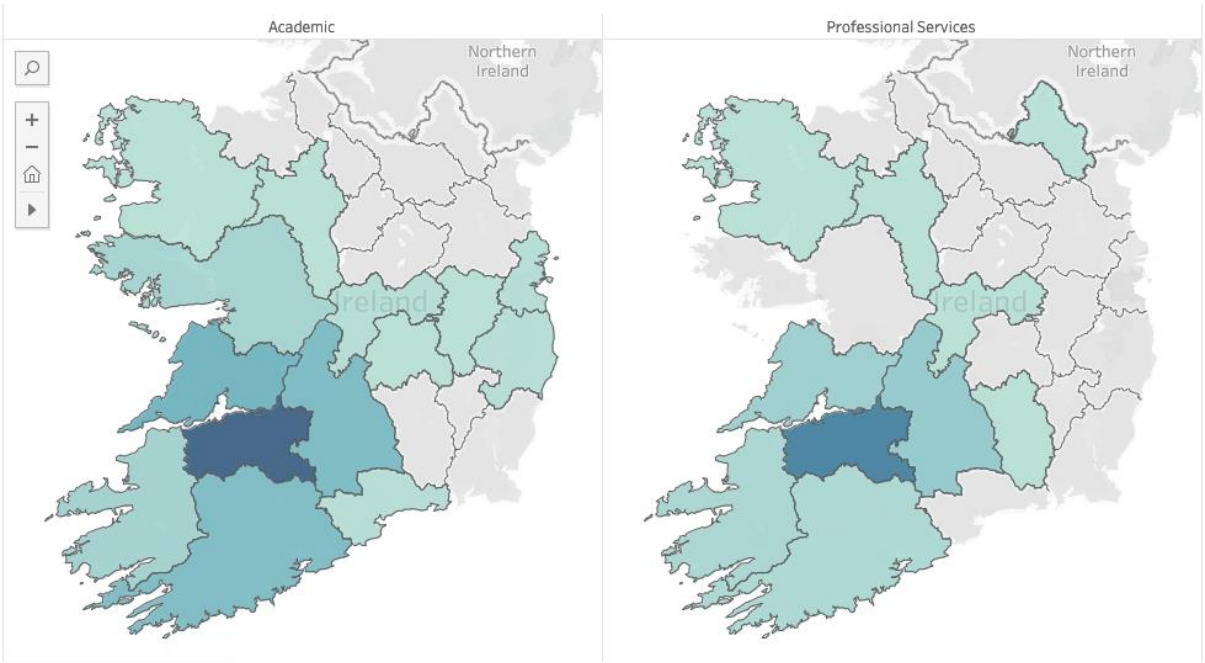
Appendix E:

Display Energy Certificate – MIC Thurles 2024



Appendix F:

Geographical Spread of Domiciliary Residences of MIC Staff



***Source**: MIC Online Analytics System (e-OLAS)*