An Analysis of the Performance of Irish Higher Education Institutions Against Global Sustainability Ranking Systems

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Abstract
The escalating global climate crisis necessitates an urgent and transformative shift towards sustainability across all sectors of society, demanding both immediate action and long-term commitment. As part of the international response, global frameworks such as the United Nations Sustainable Development Goals (SDGs) have called upon Higher Education Institutions (HEIs) to leverage their unique position to address environmental, social and economic challenges. However, the extent to which Irish HEIs are responding remains relatively unclear. This article analyses their performance against three leading international sustainability ranking systems: the QS World University Rankings; Sustainability, the Times Higher Education *Impact Rankings and the UI GreenMetric World University Ranking. Analysis reveals notable variation in Irish HEIs' sustainability performance, with some institutions gaining strong international recognition while others remain less visible or absent from global rankings.*

To explore the reasons behind this variation, this article examines the methodologies underpinning these ranking systems and investigates internal barriers within HEIs that may be limiting progress. Drawing on international literature, the review examines commonly reported barriers, including the complexity of sustainability, lack of senior management support, financial constraints and institutional resistance to change. In response, the article outlines strategic pathways to advance sustainability in Irish higher education, emphasising the need for long-term, collaborative approaches that can both support underrepresented institutions and sustain momentum in those already progressing. These findings contribute to broader conversations about how sustainability can be effectively embedded and measured across diverse Irish higher education contexts.

Keywords: sustainability in higher education; global university sustainability rankings; Irish higher education institutions (HEIs); barriers and opportunities; sustainable development goals (SDGs)

1.0 Introduction

In the last century, human activities have dramatically altered natural processes and significantly impacted social-ecological systems, contributing to the current environmental crisis (Ruiz-Mallén and Heras,

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2020). The accelerating effects of climate change pose potentially irreversible consequences for the planet, underscoring the urgent need to integrate sustainability across all sectors of society (Fehlner, 2019). There is a growing societal expectation for Higher Education Institutes (HEIs) to take a leading role in driving sustainable development (Berchin *et al.*, 2021). Within this context, HEIs play a critical role in addressing global environmental, social and economic challenges, serving as key agents in educating future leaders who will contribute to the successful implementation of the United Nations Sustainable Development Goals (SDGs) (Žalėnienė and Pereira, 2021). HEIs are embedding sustainable practices across teaching, research, operations and governance. This article adopts the widely recognised definition of sustainability as meeting the needs of the present without compromising the ability of future generations to meet their own "needs" (World Commission on Environmental and Development, 1987, Part 1, Chapter 2, Section 1, para 27).

Focusing on the QS World University Rankings: Sustainability (QS Sustainability), the *Times Higher Education* (*THE* Impact) Impact Rankings and UI GreenMetric World University Rankings (UI Green Metric), three prominent world university sustainability ranking systems, this article evaluates how Irish HEIs are represented, highlighting disparities in performance and examining barriers that limit wider recognition. To contextualise this analysis, the study first examines the international and national policy frameworks shaping the sustainability agenda in Irish higher education. Key global frameworks, including the 1972 Stockholm Declaration, the 1987 Brundtland Report, the 1992 Earth Summit and the 2015 United Nations SDGs, have driven higher education institutions to embed sustainability within their core missions (Christou *et al.*, 2024). In Ireland, this global momentum is mirrored by national legislation, including the Environmental Protection Agency Act (1992), the Climate Action and Low Carbon Development (Amendment) Act (2021), reinforced by the latest Climate Action Plan (2025), which broadens requirements for HEIs beyond emissions and energy efficiency to encompass areas such as leadership, procurement, transport, waste and organisational culture (Government of Ireland, 2025). Given these developments, Irish HEIs now operate within legal and institutional

frameworks mandating the integration of sustainability into their core functions.

This article begins by examining the evolution of sustainability in Irish higher education through key international and national policy frameworks that shape the sector's environmental and social responsibilities. It then critically evaluates the ranking systems above and uses them as methodological tools to assess the sustainability performance of Irish HEIs. Findings reveal notable variation: some Irish HEIs perform relatively well, while others rank significantly lower or are entirely absent. This raises important questions about both the capacity of global sustainability ranking systems to accurately reflect institutional sustainability efforts and the extent to which some Irish HEIs may be encountering challenges in embedding sustainability in a meaningful and measurable way.

Global university rankings have been a prominent feature in higher education for the past two decades. More recently, a subset focusing specifically on environmental sustainability and SDGs has emerged, including the QS Sustainability Rankings, the *THE* Impact Rankings and the UI GreenMetric Ranking, reflecting the increasing expectation for HEIs to be recognised as active contributors to global societal challenges (Calderon, 2023). These rankings provide important mechanisms to enhance visibility, accountability and competition among institutions striving to improve their sustainability performance. In this context, the article critically examines these sustainability-focused rankings as frameworks through which the sustainability efforts of Irish HEIs can be assessed and compared. While these rankings offer valuable comparative insights, they also have notable limitations, including the significant resources required for participation, a predominant focus on quantitative metrics and insufficient consideration of qualitative factors, such as community engagement and institutional culture (Lauder *et al.*, 2015; Horan and O'Regan 2013). They often overlook important contextual variables like institutional size, age, financial capacity, infrastructure and regional disparities (Calderon, 2023). To gain a more comprehensive understanding of universities' sustainability commitments, rankings must incorporate both measurable outcomes and contextualised, process-based indicators (Horan and O'Regan, 2021; Bullock and Wilder, 2016).

Despite their limitations, global sustainability rankings still offer a useful means to compare the performance of Irish HEIs. Analysis of these rankings

shows that Ireland's long-established universities generally perform strongly. University College Dublin (UCD) is the highest-ranked Irish institution in the QS Sustainability 2025, placing 49th globally. The University of Galway (NUIG) is Ireland's top performer in the *THE* Impact Rankings 2025, ranking 64th worldwide. University College Cork (UCC) also leads nationally in the UI GreenMetric Ranking, where it holds the highest Irish position.

Technological University Dublin (TUD) is the only Technological University (TU) to appear in two of the three ranking systems analysed, placing 538th in the QS Sustainability Rankings and within the 201–300 band in the *THE* Impact Rankings. No other TUs, Institutes of Technology (IoTs), or specialised institutions such as Mary Immaculate College (MIC) or the National College of Art and Design (NCAD) feature in any of the rankings. The limited presence and varied performance of Irish HEIs in global sustainability rankings raises important questions about whether these methodologies fully capture the complexity of institutional sustainability practices and may also reflect broader challenges in embedding sustainability comprehensively across the sector.

There is extensive research on barriers to sustainability in higher education, highlighting key challenges widely acknowledged across the sector globally. These core challenges, while broadly applicable, provide a critical framework through which this article examines the Irish higher education context, exploring how they shape and influence institutional sustainability progress in Ireland. These include the complexity of sustainability, requiring the balancing of environmental, social and economic dimensions (Žalėnienė and Pereira, 2021), and persistent financial constraints that limit the scope and ambition of institutional initiatives (Elliot and Wright, 2013). A lack of support from senior management, crucial for the long-term success of sustainability initiatives, often results in their failure due to insufficient investments and administrative backing (Ávila *et al.*, 2017). Furthermore, cultural and institutional resistance to change, alongside a lack of support for fostering a sustainability-oriented culture, slows the green transition (Lozano *et al.*, 2013a).

Addressing these internal barriers is critical to mitigating disparities between established universities, newer technological universities and

smaller or specialised institutions in Ireland. Without coordinated, long-term strategies to overcome these challenges, such disparities may persist or even widen, potentially hindering Ireland's collective progress toward urgent sustainability goals.

2.0 International and National Policy Frameworks Driving Sustainability in Irish Higher Education

To contextualise the sustainability performance of Irish HEIs, it is important to examine both international and national policy frameworks.

2.1 International Policy and Frameworks Driving Sustainability in Higher Education

This section highlights key initiatives and milestones that have shaped sustainability in HEIs, beginning with the 1972 United Nations Conference on the Human Environment in Stockholm, a major international effort to define sustainable development. The resulting Stockholm Declaration called for balancing economic growth, environmental protection and social equity, principles that shaped sustainability education in HEIs. It stressed improving quality of life while ensuring sustainable use of resources for future generations (Berchin *et al.*, 2021). Findler *et al.* (2018a) note that since the 1972 UN Conference on the Human Environment, higher education institutions have increasingly undertaken active measures to contribute to sustainable development.

Globally, key milestones advanced sustainability in higher education. In 1975, the Belgrade Charter, issued by UNESCO, identified education as central to addressing environmental challenges. It emphasised fostering a population capable of managing ecosystems sustainably (Berchin *et al.*, 2021). Building on this, the Tbilisi Declaration (1977) reinforced the role of environmental education in HEIs and encouraged integrating sustainability into education systems (Berchin *et al.*, 2021). The Brundtland Report (1987), also known as *Our Common Future*, defined sustainable development and this widely cited definition has shaped global sustainability efforts, with universities among the institutions actively implementing its principles and goals (Leal Filho *et al.*, 2024). Following this, the Talloires Declaration (1990) encouraged universities to commit to sustainability across institutional activities (University Leaders for a Sustainable Future, 1990).

In 1992, the United Nations Conference on Environment and Development (UNCED), or Earth Summit, produced Agenda Twenty-One, urging institutions, including universities, to integrate sustainability into operations, curriculum and research (United Nations, 1992). This emphasised the role of HEIs role in shaping sustainable development at local, national and global levels.

The United Nations Decade of Education for Sustainable Development (2005–2014) promoted sustainability education at all levels, encouraging HEIs to integrate sustainability across curricula, partnerships and campus initiatives (Avvaru and Narayana, 2023). This marked a shift from theory to action, emphasising transparency and accountability in sustainability practices (Findler *et al.*, 2018b). It coincided with a global movement toward transparency in environmental and sustainability reporting (Žalėnienė and Pereira, 2021). In 2012, the United Nations Conference on Sustainable Development (Rio+20) reaffirmed commitment to sustainable development, urging HEIs to prioritise sustainability strategies, enhance teaching and report on climate action and social sustainability progress.

2.2 National Policy and Frameworks Driving Sustainability in Irish Higher Education

While global frameworks shaped sustainability education worldwide, Irish environmental legislation began evolving in the 1990s. The Environmental Protection Agency (EPA) Act 1992 established the EPA, which played a central role in shaping sustainability policies in Ireland. This encouraged Irish HEIs to align their sustainability efforts with national environmental goals and regulations.

In 1997 Climate Action Programme and the 2005 Climate Change Programme influenced national sustainability efforts, focusing on reducing greenhouse gas emissions and aligning Irish policies with global frameworks like the Kyoto Protocol, adopted in 1997 (Government of Ireland, 1997; Government of Ireland, 2005). These programmes paved the way for Irish universities to acknowledge their role in climate action through research, environmental management and education.

Ireland introduced its first National Strategy on Education for Sustainable Development (ESD), covering the period 2014–2020 (Government of Ireland, 2014). This strategy aimed to integrate ESD across the entire education system. Building on this foundation, Ireland launched

its second strategy, titled ESD to 2030, in 2022. This new strategy aligns with UNESCO's Framework for ESD for 2030 and outlines five key priority action areas: advancing policy, transforming learning environments, building capacities of educators, empowering and mobilising young people and accelerating local-level actions. These interconnected areas reflect a comprehensive approach to embedding sustainability throughout Ireland's education system (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2024).

The 2015 Climate Action and Low Carbon Development Act set binding targets for greenhouse gas emissions and reaffirmed Ireland's commitment to the UN Framework Convention on Climate Change (UNFCCC). Along with the UN Sustainable Development Goals (SDGs), it encouraged Irish HEIs to integrate sustainability practices. The SDGs highlighted education's critical role in global sustainability, positioning HEIs as key players in research, climate action and curriculum development (Fehlner, 2019).

A key development in Ireland's sustainability framework for HEIs is the Climate Action and Low Carbon Development (Amendment) Act 2021, which establishes statutory targets to reduce greenhouse gas emissions by 51% by 2030 and achieve net zero by 2050 (Government of Ireland, 2021). Building on this, Ireland's updated Climate Action Plan (CAP25) further reinforces the country's commitment to sustainability through legally binding emissions-reduction targets and expanded reporting requirements across operational areas including green public procurement, sustainable construction, organic food production, waste reduction, ICT and paper use, limits on single-use materials, water management and improving the energy efficiency and decarbonisation of buildings and vehicles (Government of Ireland, 2025).

Under the Public Sector Climate Action Mandate, HEIs are required to publish annual Climate Action Roadmaps and to report on their energy use and carbon emissions, which are monitored through SEAI's reporting system (Government of Ireland, 2025; SEAI, 2025). Furthermore, Irish HEIs are aligning with the United Nations SDGs by integrating sustainability into curricula, research and governance, operating within comprehensive legal and institutional frameworks that mandate sustainability integration in their core functions.

3.0 Evaluating Sustainability Rankings: Context, Methodologies, and Institutional Performance in Irish Higher Education

This section offers a critical evaluation of key international sustainability ranking systems applied to HEIs, focusing on the QS Sustainability Rankings (2025), the *THE* Impact Rankings (2025) and the UI GreenMetric Rankings (2024). Each ranking employs distinct methodological frameworks to measure institutional sustainability performance, combining policy indicators, quantitative metrics and reputational assessments. These systems offer HEIs both benchmarking tools and strategic incentives for aligning institutional priorities with sustainability goals, particularly those set out in the United Nations SDGs. However, recent research highlights significant structural differences, methodological limitations, and challenges in the validity of such rankings, emphasising the need for a critical and context-sensitive approach to their use **(**Galleli *et al.*, 2022). This section outlines each system's methodological architecture and profiles the participation and performance of Irish HEIs. A more critical interrogation of their structural and conceptual limitations follows in Section 4.

Two other sustainability frameworks worth noting are the Sustainability Tracking, Assessment and Rating System (STARS) and Ireland's Green Campus Programme. STARS is a comprehensive, self-reporting framework that assesses sustainability performance across multiple institutional areas and encourages continuous improvement (AASHE, 2025). Ireland's Green Campus Programme focuses on student-led initiatives to embed sustainability culture at the campus level (An Taisce, 2025).

Universities worldwide are increasingly encouraged to contribute to the UN SDGs through various ranking systems. These rankings provide platforms for institutions to showcase their sustainability efforts and drive continuous improvement. By benchmarking sustainability performance, rankings motivate universities to enhance their practices and align with international standards. Beyond fostering healthy competition, they encourage institutions to take their sustainability responsibilities seriously, prompting the development of innovative strategies to address identified gaps (Abo-Khalil, 2024).

3.1 QS World University Rankings: Sustainability 2025

The QS Sustainability Rankings, introduced in 2022, evaluate the social and environmental impact of universities, considering their roles as centres of education and research and as large employers facing the sustainability challenges of complex organisations (QS, 2025). The framework assesses institutions across three overarching categories: Environmental Impact (education, research, environmental sustainability), Social Impact (employability, equality, health and well-being, impact of education, knowledge exchange) and Governance (good governance). Together, these nine thematic lenses form the structure of the rankings and are assessed using fifty-two discrete indicators. QS draws its data from a combination of institution-submitted data, reputation survey responses and third-party sources, including UNESCO and the World Bank.

In the 2025 edition of the QS Sustainability Rankings, 1,745 institutions were assessed globally, with nine Irish HEIs participating. Within the Irish cohort, UCD achieved the highest position at 49th globally, followed by UCC (127th), NUIG (140th), Dublin City University (DCU) (174th) and the University of Limerick (UL)(224th). Trinity College Dublin (TCD)(265th), TUD (538th), Maynooth University (MUI) (677th) and Royal College of Surgeons Ireland (RCSI) (ranked within the 921st–930th band) completed the group (See Table 1).

Higher Education Institution	QS World University Ranking: Sustainability 2025	UI GreenMetric Ranking 2024	*Times Higher Education* (*THE*) Impact Ranking 2025
Traditional Universities			
Dublin City University	174	11	101–200
Maynooth University	677	398	401–600
Royal College of Surgeons	921–930	—	201–300
Trinity College Dublin	265	—	401–600
University College Cork	127	4	101–200
University College Dublin	49	—	—
University of Galway	140	—	64
University of Limerick	224	19	76
Technological Universities			
Atlantic Technological University	—	—	—
Munster Technological University	—	—	—
South East Technological University	—	—	—
Technological University Dublin	538	—	201–300
Technological University of the Shannon	—	—	—
Specialist and Other Core-Funded Institutions			
Carlow College, St. Patrick's	—	—	—
Dundalk Institute of Technology	—	—	—
Dun Laoghaire Institute of Art, Design and Technology	—	—	—
Marino Institute of Education	—	—	—
Mary Immaculate College	—	—	—

Higher Education Institution	QS World University Ranking: Sustainability 2025	UI GreenMetric Ranking 2024	*Times Higher Education* (*THE*) Impact Ranking 2025
Specialist and Other Core-Funded Institutions			
National College of Art and Design	—	—	—
St Patricks Pontifical University, Maynooth	—	—	—

Table 1: Performance of Irish HEI Across Three Prominent Ranking Systems
Note: "—" indicates Unranked or ranking unavailable.

UCD achieved the highest global position among Irish HEIs at 49th, while RCSI ranked lowest, in the 921st–930th band. The other institutions fell at intermediate positions, illustrating a wide range of outcomes. Only one Technological University, TUD, and one institution described here as specialised, RCSI, were ranked. No other TUs, IoTs, or smaller or specialised institutions such as MIC and NCAD participated in the QS sustainability rankings. The rankings rely on a combination of institution-submitted data, reputation surveys and third-party sources to calculate overall scores. The way these data are collected and weighted, together with the reporting requirements, may influence which institutions participate and how they perform. Additional factors affecting institutional participation and outcomes will be discussed in the following section.

3.2 Times Higher Education (THE) *Impact Rankings 2025*

THE Impact Rankings, introduced in 2019, evaluate university performance through alignment with the seventeen United Nations SDGs (THE 2025). Alongside the overall ranking, results for each individual SDG are published in seventeen separate tables. Key criteria fall across four pillars of evaluation: research, stewardship, outreach and teaching. Institutions must submit data on SDG 17 (Partnerships for the Goals) and at least three additional SDGs of their choosing. Overall institutional scores

are calculated using a 22% weighting for SDG 17 and 26% for each of the top-performing three other SDGs, meaning universities effectively secure their strongest three SDG results plus partnerships to compute their final ranking score. This approach means different universities are scored based on varying sets of SDGs depending on their focus. The overall score is an average of the past two years' total scores.

The *THE* Impact Rankings obtain research data primarily from Elsevier's Scopus database, which tracks publications and citations. Additionally, universities submit their own institutional data, which *THE* verifies. Thus, the rankings combine external bibliometric data with self-reported institutional data to assess research performance related to the SDGs.

In the 2025 edition, 2,526 institutions from 130 countries were assessed. Eight Irish HEIs participated. Among these, the NUIG ranked 64th globally, UL placed 76th, while UCC and DCU ranked within the 101st–200th band. RCSI and TUD, appeared within the 201st–300th band, followed by MUI and TCD in the 401st–600th band (See Table 1).

Among Irish HEIs, it is the same as the QS Rankings—TUD is the only TU ranked and no IoTs participated. RCSI is the only specialised institution represented and no other smaller or specialised institutions, such as MIC and the NCAD, took part. Participation and performance may be influenced as much by capacity to engage with the ranking methodology as by actual SDG-related impact. *THE* Impact Rankings, which accommodates institutional diversity and mission focus but can create challenges for comparability, because each institution may select different SDGs and metrics may overlap, cross-institutional comparisons become difficult and potentially misleading.

3.3 UI GreenMetric World University Rankings 2024

The UI GreenMetric Rankings, established by Universitas Indonesia in 2010, focus on assessing how sustainably universities operate their physical campuses (UI GreenMetric, 2024). They base their instruments on a broad philosophy that encompasses the three pillars of sustainability: environmental, social and economic. The 2024 edition evaluates institutions using fifty-two indicators across six key categories: Setting and Infrastructure (11), Energy and Climate Change (10), Waste (6), Water (5),

Transportation (8) and Education & Research (12). This framework places strong emphasis on operational and resource-use metrics, reflecting practical sustainability efforts in day-to-day campus management. The rankings rely primarily on self-reported data submitted by universities via detailed online questionnaires covering policies and operational metrics within these categories. Although some verification is performed, the methodology depends heavily on the accuracy and completeness of institutional submissions and does not use third-party bibliometric or citation data.

In the 2024 edition, 1,477 institutions participated. Four Irish HEIs are ranked, UCC 4th globally, DCU (11th), UL (19th) and MUI (398th) (See Table 1). This is a notable achievement, with three Irish universities ranked in the global top twenty, highlighting their operational and infrastructural sustainability strengths. By contrast, MUIs position at 398th underscores the variation in performance levels among Irish HEIs. Notably, no TUs participated and similar to the QS Sustainability Rankings and the *THE* Impact Ranking no IoTs or smaller or specialised institutions participated, which may reflect the resource-intensive nature of the ranking process and the methodological emphasis on extensive physical infrastructure.

The UI GreenMetric methodology's strong emphasis on physical infrastructure and resource use can disadvantage institutions with smaller, specialised, or more urban campuses and the rankings' reliance on extensive self-reported data requires significant time and resources to prepare, which may explain both the under-representation of smaller or specialised HEIs and the high performance of larger, well-resourced universities.

3.4 Sustainability Tracking, Assessment and Rating System (STARS) and An Taisce's Green Campus Programme

Alongside the rankings above, STARS is a widely recognised global sustainability assessment framework for HEIs (STARS, 2025). STARS evaluates academics, engagement, operations, and planning and administration, with an additional component for innovation (Horan and O'Regan, 2021). Participants select relevant credits from five categories (Academics, Engagement, Operations, Planning and Administration, and Innovation and Leadership) and collect data from campus stakeholders, allowing institutions to tailor their participation based on capacity and

priorities. It supports long-term sustainability goals for high-achieving institutions while also providing entry points for those taking initial steps toward sustainability. A recent study found that SDGs 1 and 17 are less accurately predicted and categorised by the system, while the other SDGs show a reasonable degree of alignment to modules and courses using the Association for the Advancement of Sustainability in Higher Education (AASHE) criteria (Lemarchand *et al.*, 2023). Although STARS participation is voluntary and involves extensive data submission, which may affect direct comparability across institutions, STARS offers valuable opportunities for internal benchmarking and strategic reflection, making it a useful tool for institutional learning.

The Green-Campus Programme is delivered in Ireland by An Taisce, the country's member organisation of the Foundation for Environmental Education (FEE). This international environmental education initiative provides structured, measurable pathways for educational campuses to integrate environmental issues, innovation and research into the daily management of campus operations. The programme actively involves students, academic staff, non-teaching staff and the wider campus community to embed sustainability into everyday campus life and aligns with established environmental management frameworks, including the Eco-Management and Auditing Scheme (EU EMAS) and ISO 14001 standards (An Taisce, 2025). It uses a seven-step process for ongoing improvement. Campuses address several thematic areas, beginning with the mandatory Litter and Waste theme. Other key themes include Energy, Water Conservation and Protection, Transport and Travel, Biodiversity, and the emerging Green Information and Communications Technology (ICT). Additional themes such as Procurement, Air Quality, Climate Change and Climate Justice may also be incorporated to broaden environmental efforts.

Institutions that meet the programme's requirements are awarded the Green Flag, a mark of sustained environmental commitment, reassessed every three years. Many Irish universities have achieved this recognition, with UCC being the first to receive a Green Flag. Other institutions awarded include DCU, TCD, Maynooth University, TUD and RCSI. Beyond environmental performance, the programme supports student

learning, research projects, community engagement and fosters a national and international sustainability network among campuses.

3.5 Summary

These ranking systems provide Irish HEIs with tools to frame and benchmark their sustainability efforts within global discourses. While they differ significantly in scope, method, and emphasis, each system shapes strategic decision-making and public accountability. However, as discussed in Section 4, these rankings also introduce important structural and epistemological limitations that may obscure or distort institutional sustainability profiles.

4.0 Limitations of Global Sustainability Rankings in the Irish Higher Education Context

Global sustainability rankings are often positioned as neutral tools for benchmarking institutional sustainability performance, yet their assumptions and frameworks embed standardised conventions that shape how sustainability is understood and reported, which may not fully capture local or institutional differences. As Lauder *et al.* (2015) note, "under scientific scrutiny, no ranking can be free from at least some shortcomings". In doing so, these rankings frequently reproduce reputational hierarchies and resource inequalities, privileging large, research-intensive institutions in specific geopolitical contexts.

A key limitation is the misalignment between the resource demands of these frameworks and the structural capacities of Irish HEIs. Participation requires extensive quantitative and qualitative data collection across a wide range of activities, creating significant administrative and logistical burdens. In recent years, many of Ireland's IoTs have merged to form new TUs as part of national policy reforms initiated by the Technological Universities Act 2018. For these newer TUs, still undergoing structural consolidation, resources are likely directed towards integration and internal development, potentially limiting engagement with international ranking frameworks. This may create a form of cyclical exclusion, where institutions without sufficient resources are left out of rankings that could enhance their visibility and strategic leverage. Further research is needed

to examine how these structural transitions shape institutional engagement with rankings.

Another limitation is the lack of sensitivity to geographical, socio-economic and policy contexts. As Calderon (2023) argues, it is spurious to compare HEIs across regions with vastly different geopolitical and historical settings. This matters not only for how Irish universities are positioned against global counterparts but also for recognising regional variations within Ireland itself. Differences in infrastructure, institutional footprint and the planning priorities of individual County Councils can either facilitate or hinder sustainability implementation, yet such factors are rarely reflected in global rankings.

A further issue is the overemphasis on quantitative indicators, such as emissions, energy intensity, or waste diversion, which are easier to measure and therefore dominate these systems. Qualitative dimensions, including staff and student engagement, cultural change and ethical governance are harder to quantify and often excluded (Lauder *et al.*, 2015; Horan and O'Regan, 2021). This bias favours institutions with advanced data systems and technical capacity, while undervaluing those whose strengths lie in community partnerships, participatory governance or embedded cultural values. In the Irish context, differences in size, strategic focus and reporting capacity mean some impactful initiatives risk being overlooked when assessed against standardised global metrics.

The design of the *THE* Impact Rankings introduces particular challenges for comparison and interpretation. As already noted, Institutions are required to report on SDG 17 (Partnerships for the Goals) and three additional Sustainable Development Goals of their choice. While this design allows for institutional autonomy, it introduces problems of comparability. Calderon (2023) notes that HEIs are not scored on a uniform set of SDGs and significant overlap between indicators leads to potential double counting. For instance, the proportion of first-generation students contributes to both SDG 4 (Quality Education) and SDG 10 (Reduced Inequality), while citation-based metrics related to clean energy may appear under both SDG 7 and SDG 13. This structural feature inflates institutional scores and obscures the actual extent of sustainability progress.

In contrast, the QS Sustainability Rankings evaluates universities across three categories through nine lenses using fifty-two indicators, drawing

from a combination of institutional submissions, bibliometric databases and third-party sources such as QS reputation surveys. The inclusion of reputational indicators inherently favours long-established, research-intensive institutions with strong global visibility. This emphasis on institutional prestige can disadvantage smaller or newer universities whose sustainability contributions may be significant at local or regional levels but are less likely to be captured by international reputation metrics.

The UI GreenMetric Ranking focuses heavily on campus operations but presents notable design limitations. Ragazzi and Ghidini (2017) and Bullock and Wilder (2020) both criticise the absence of minimum scoring thresholds, which allows universities with low sustainability performance to be ranked, and note the lack of scoring bands or validation mechanisms, contributing to volatility and reducing transparency. The ranking's relative scoring system is highly sensitive, so small changes in performance or other universities' data can cause significant fluctuations, making results difficult to interpret over time. Although the framework includes some education and research metrics, its primary orientation toward environmental dimensions may not fully capture institutional sustainability in a holistic way. As part of their proposed indicator framework, Horan and O'Regan (2021) highlight similar concerns with UI GreenMetric and STARS, noting their reliance on narrow and occasionally problematic metrics, such as vegetation cover or efficiency measures, which can skew comparisons between institutions with different local characteristics. Rather than providing a comprehensive view, these tools often present only a partial perspective, making fair benchmarking between institutions more challenging.

In sum, global sustainability rankings provide valuable visibility and benchmarking but are shaped by assumptions and technical frameworks that can produce uneven representations of institutional performance. This often disadvantages newer, smaller or specialised Irish HEIs, as well as those prioritising cultural change over purely data-driven metrics. Addressing these challenges requires a multifaceted approach: enhancing resources and capacity for institutions to engage meaningfully with global rankings, while also exploring complementary assessment models tailored to the Irish context. Such models should integrate quantitative and qualitative indicators, allow for flexible and transparent consideration of

contextual factors and prioritise capacity-building alongside fair competition. By combining strategic use of global rankings with more context-sensitive frameworks, Irish HEIs can better support institutional learning, inclusivity and accountability across the sector.

5.0 Barriers Affecting Sustainability Performance in Irish Higher Education: Insights from International Research

To advance sustainability in higher education, it is essential to identify and understand the most common barriers to implementation. While global rankings show some Irish universities performing strongly, they also reveal variation across the sector, indicating that some institutions may face greater challenges in progressing their sustainability agendas. This article draws on well-established barriers to sustainability implementation identified in global higher education research to explore potential challenges faced by Irish institutions. These internationally recognised barriers provide a useful framework for understanding common obstacles that may also be relevant within the Irish context. Drawing on this literature, four major, consistently identified barriers are examined here: complexity of sustainability, lack of financial resources, lack of management support, and cultural and institutional resistance to change (Žalėnienė and Pereira, 2021; Elliott and Wright, 2013; Ávila *et al.*, 2017; Lozano *et al.*, 2013a), and are supported by Alhazmi and Zain's (2023) comprehensive review of barriers in HEIs, which similarly highlights these factors as key challenges hindering sustainability implementation.

Among these barriers, the inherent complexity of sustainability poses a foundational challenge, as it requires simultaneously addressing environmental, social and economic dimensions (Žalėnienė and Pereira, 2021). Alhazmi and Zain (2023) found that across the international literature, complexity was often linked to higher education leaders lacking sufficient sustainability knowledge, difficulty operationalising broad sustainability goals, and inconsistent application across academic and administrative domains. This complexity demands interdisciplinary approaches and systems thinking, which involves recognising the elements, interconnections, and a goal or function of a system (Arnold and Wade, 2015). Universities must undergo fundamental change, using the SDGs as a spark to reposition themselves in education and research and to address pressing societal and global challenges (Gual, 2019). Successfully

embedding sustainability often requires significant shifts in academic practices, with interdisciplinary collaboration and a systems-thinking approach being crucial to address the interconnected nature of environmental, economic and social factors. Sustainability education also faces difficulties due to limited awareness of global crises, ineffective learning methods and the need to embed skills like problem-solving and anticipation throughout curricula (Richardson, 2019). Moreover, a lack of comprehensive and integrated sustainability strategies at institutional levels often results in fragmented and inefficient efforts, as many institutions struggle to align sustainability with core operational and strategic goals. Without addressing these factors, institutions struggle to integrate sustainability deeply into their core missions.

International frameworks like the UN SDGs provide a vital global mandate for sustainability, emphasising its importance across all sectors, including higher education (Leal Filho *et al.*, 2018). Yet despite such guidance, universities face a major barrier in the form of limited financial resources, which restrict investment in sustainability initiatives and necessary infrastructure. In a study by Elliott and Wright (2013), twenty-seven Canadian student union leaders identified a lack of financial resources as the primary barrier to advancing sustainability in universities. Insufficient funding limits universities' capacity to invest in sustainability initiatives, including infrastructure improvements and operational changes necessary for embedding sustainable practices. Similarly, Ávila *et al.* (2017) found that limited financial resources are a widespread barrier across universities globally, often resulting in sustainability efforts being underfunded, reliant on volunteer work and unable to achieve long-term impact. Alhazmi and Zain (2023) also identified funding constraints as one of the most persistent global barriers, limiting HEIs' ability to invest in infrastructure, long-term strategies or cross-disciplinary initiatives. Lack of financial support means sustainability initiatives often rely on a few committed individuals, raising concerns about their long-term durability (Leal Filho *et al.*, 2018). This highlights that stable funding is essential to develop strong skills and foster sustainable growth, enabling lasting progress in higher education sustainability.

Lack of support from top management, particularly senior leadership, exacerbates the challenge of embedding sustainability in higher education.

Sustainability initiatives often struggle to gain the necessary backing for long-term success without active commitment and leadership from the top (Ávila *et al.*, 2017). In Alhazmi and Zain's (2023) review, leadership engagement was identified as critical, but they found that even when senior leaders voiced support, weak institutional frameworks and lack of follow-through often prevented sustainability visions from translating into sustained organisational change. Without this support, sustainability policies face significant obstacles in effective implementation and sustained maintenance. According to Alhazmi and Zain (2023), the absence of strong leadership support can prevent sustainability from becoming embedded in institutional culture, even where sustainability strategies exist on paper.

Moreover, cultural and institutional resistance to change remains a significant barrier. The deep-rooted academic culture within HEIs often prevents the integration of sustainability into core institutional practices, resulting in a fragmented approach where sustainability efforts are treated as isolated projects rather than being embedded as the 'Golden Thread' or 'Leitmotiv' throughout the entire university system (Lozano *et al.*, 2013b). This lack of coordination and failure to implement multi-disciplinary and trans-disciplinary strategies leads to inefficiencies and hinders progress toward systemic change. Building a sustainability-oriented culture requires gradual, cross-departmental collaboration and empowerment of university leaders, faculty and students to catalyse and implement new paradigms. However, the absence of well-defined sustainability strategies and proper academic recognition further complicates this process. Many institutions continue to treat sustainability as a series of isolated initiatives rather than embedding it within their broader governance and policy frameworks, which is essential for accelerating societal transformation and sustainable development (Lozano *et al.*, 2013b). Alhazmi and Zain (2023) also highlight cultural and institutional inertia as a barrier, noting that resistance to new systems and ways of thinking can significantly undermine progress. Additionally, limited awareness and understanding of global crises, including climate change, among both staff and students can undermine institutional support for sustainability initiatives, emphasising the need for deep cultural and educational shifts across the university community.

6.0 Navigating the Path Ahead: Charting Pathways to Sustainability in Irish Higher Education

Analysis of global sustainability rankings reveals that while some Irish HEIs demonstrate strong performance, and even excel, significant disparities exist between established universities and TUs, IoTs, and smaller or specialised institutions in their presence and recognition within these rankings. As discussed in Section 3, established universities often lead in rankings, while TUs, IoTs and smaller or specialised institutions are frequently underrepresented. This gap does not necessarily indicate weaker sustainability efforts but may result from methodological constraints, as discussed in Section 4. Beyond ranking limitations, these disparities may also reflect deeper, systemic challenges faced by some HEIs in embedding sustainability effectively.

The inherent complexity of sustainability poses a significant barrier for HEIs globally. This complexity stems from the need to integrate the interconnected dimensions of people, planet and profit, requiring recognition of their dynamic relationships and the risk of unintended consequences when tackled in isolation (Leal Filho *et al.*, 2018) (see Section 5.0; Žalėnienė and Pereira, 2021; Alhazmi and Zain, 2023). Addressing this complexity demands embedding systems thinking approaches that foster holistic planning, interdisciplinary cooperation, and the identification of leverage points to simultaneously address environmental, social and economic sustainability challenges across the sector (Arnold and Wade, 2015; Gual, 2019).

Financial constraints are widely recognised internationally as a major barrier to sustainability initiatives (see Section 5; Elliott and Wright, 2013; Ávila *et al.*, 2017; Alhazmi and Zain, 2023; Žalėnienė and Pereira, 2021), as without adequate funding, meaningful progress on sustainability initiatives becomes nearly impossible. Essential investments in infrastructure, technology and programmes rely on sustained financial support to drive lasting change. Navigating these challenges requires access to targeted support programmes, which can be limited and competitive. While Ireland's Sustainable Energy Authority (SEAI) administers the Energy Efficiency and Decarbonisation Pathfinder Programme (EEDPP) which support public bodies including HEIs in implementing energy upgrades, funding opportunities remain limited and highly competitive.

The programme couples SEAI's expertise with HEIs' capacity to test and demonstrate innovative energy upgrade techniques. However, given that applications are submitted annually and only a limited number of projects are selected, institutions managing multiple campuses or aging infrastructure may struggle to secure sufficient funding to meet the 2030 climate targets within the necessary timeframe. To overcome this constraint, expanding the availability and frequency of such targeted funding programmes, alongside developing complementary financial mechanisms, will be critical to enabling comprehensive and timely sustainability upgrades across the sector. Even with sufficient funding, coordinating multiple energy upgrade projects across institutions may create practical capacity challenges, given the finite pool of qualified contractors and skilled personnel available to deliver such work simultaneously. This challenge could be alleviated by revisiting public procurement rules to encourage broader contractor participation and by scheduling work during academic terms or off-peak periods to better distribute workloads and accelerate project completion.

Lack of leadership support is widely recognised internationally as a major barrier to advancing sustainability in higher education (see Section 5; Ávila *et al.*, 2017; Alhazmi and Zain, 2023). While the responsibility for embedding sustainability lies primarily with individual institutions, a coordinated sector-wide strategic approach is essential to ensure consistent progress. Recent national legislation, including the Climate Action and Low Carbon Development (Amendment) Act 2021 and the updated Climate Action Plan 2025 (CAP25), further reinforces Ireland's commitment to sustainability through legally binding emissions-reduction targets and expanded reporting requirements covering a broad range of operational areas. Ongoing expansion in scope and ambition of the Climate Action Plans (CAPs) will be essential to drive continued improvements in sustainability across Irish HEIs

Institutional reporting on sustainability across the Irish higher education sector remains fragmented. Developing a more integrated national framework, building on existing CAP mandates, could align reporting standards and broaden their scope to cover curricula, research, governance and leadership, critical dimensions for transformative change. Prioritising tailored guidance and resource support for smaller or specialised

institutions and where needed for newly merged institutions, can help ensure equitable sustainability progress across the sector.

Cultural and institutional resistance is widely recognised internationally as a significant barrier to embedding sustainability in higher education (see Section 5; Lozano *et al.*, 2013a; Alhazmi and Zain, 2023). To embed sustainability effectively, institutions must adopt more integrated, multidisciplinary approaches that transcend conventional boundaries. This includes fostering collaborative teaching and learning models, developing shared sustainability curricula accessible across all academic units and promoting interdisciplinary projects. These strategies can cultivate a unified institutional culture around sustainability, equipping students and staff with the holistic understanding and skills needed to tackle complex, interconnected sustainability challenges.

Achieving lasting sustainability in Irish higher education requires a fundamental shift in academic practices, embracing interdisciplinary approaches and systems thinking to address the complex interplay of environmental, social and economic challenges (Žalėnienė and Pereira, 2021). By fostering innovation, enhancing collaboration and implementing coordinated institution-wide strategies, HEIs can accelerate meaningful transformation and improve their sustainability performance (Christou *et al.*, 2024). This holistic approach is essential not only for advancing Ireland's green transition but also for positioning Irish HEIs as leaders as leaders in the global sustainable development agenda.

7.0 Conclusion

This study reveals considerable variation in sustainability performance across Irish HEIs in the three global sustainability rankings. Established universities generally achieve strong positions, while TUs, IoTs and smaller or specialised institutions often rank lower or do not appear at all. Global rankings provide valuable insights but are constrained by methodological limitations and may not fully reflect institutional context or capacity. Taken together with sectoral patterns and barriers identified in this study, these findings highlight the need for coordinated, nuanced pathways that advance sustainability across Irish higher education, ensuring progress is both meaningful and enduring. Further research into the specific barriers faced by Irish HEIs, potentially through detailed case

studies, would help deepen understanding and inform more effective sustainability strategies

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