

Innovating towards sustainability

How three universities are embedding sustainability in their education and research



Comparative Case Study for HEInnovate

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January 2023

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1.1 The goal of this comparative case study

This comparative case study for HEInnovate addresses integrating sustainability in higher education institutions (HEIs). In recent years, sustainability has become a priority for higher education institutions – not just in terms of how they organise their operational processes around energy consumption and campus maintenance, but also in the way they educate their students, preparing them for tackling the social and environmental challenges that our societies are facing.

Using the experiences shared by three different European universities, this study presents how the goal of integration of sustainability in HEIs was taken up and what can be learned from those experiences. Each of the three cases is working on embedding sustainability in their institution's portfolio and each is doing this in its own way, and with different degrees of success. Depending on their specific institutional goals and settings, the three cases differ with regard to the policies, tools and structures they employed to realize their goals.

The compared cases in this study are the University of Gothenburg (Sweden), Aalborg University (Denmark), and University College Cork (Ireland). For each we used information from public sources (websites, strategy documents), complementing this with information from interviews held with an institutional representative. The interviews were initially conducted for an Erasmus+ project which goes by the name of [DECODE](#) (Jongbloed & Veidemane, 2021; Jongbloed et al., 2021) and that specifically addresses how deans tackle the goal of integrating sustainability in their academic departments. This case study's author is one of the researchers involved in the DECODE project.

This HEInnovate case study compares the three HEIs' experiences with the integration of sustainability in their institution, focusing on the following questions:

- What are the goals that the HEI wants to achieve?
- What challenges have been identified?
- What policies and other tools are used to embed sustainability throughout the education and research activity in the institution?
- What factors facilitate or obstruct a successful change towards embedding sustainability?

In combination, the answers to these questions provide a number of lessons on what HEIs can do to embed sustainability in their institutions, what approaches may work and what barriers may be encountered.

1.2 Introduction

1.2.1 What is sustainability and why is it important?

Sustainability is made up of three pillars: the economy, society, and the environment. These pillars are often translated as profit, people and planet. Because of the environmental and social problems societies around the world are facing, sustainability is usually defined as the processes and actions through which humankind avoids the depletion of natural resources, the loss of biodiversity and maintains a decent quality of life for all. In 2015 the United Nations (UN) proposed its [2030 Agenda for Sustainable Development](#). The agenda specified seventeen interlinked [Sustainable Development Goals](#), or SDGs (United Nations, 2015). Almost 200 countries subscribed to the SDGs, agreeing to collectively build a better and more sustainable future for all. Since then, the terms *sustainability* and *sustainable development* have gained considerable attention on a global scale. Stakeholders in various sectors, including higher education, have committed to contribute towards the attainment of the SDGs (McCowan, 2019).

The higher education sector is recognised as one of the major players in advancing sustainability through its research, education and societal engagement. This is demonstrated by a vast and growing literature in the field (Cheeseman et al., 2019; Findler et al., 2019; Kordestani et al., 2015; Rivera & Savage, 2020; Sonetti et al., 2020). Interdisciplinary sustainability research can help to identify priority areas and address global challenges in local context (Salvia et al., 2019) while education offered by HEIs is indispensable to create a sustainability culture. Moreover, the European Commission stresses that sustainability should not only be taught but also actively practiced on green campuses (Timmermans & Katainen, 2017). Finally, HEIs are in a position to mobilise stakeholders and networks through their societal engagement activities, thereby pulling together knowledge and resources (Sonetti et al., 2020) to address sustainable development goals and the underlying challenges.

Therefore, sustainability and sustainable development are emerging as important policy priorities in higher education (Global University Network for Innovation, 2017). This reflects growing pressures on higher education institutions (HEIs) to demonstrate how they address the sustainability challenges that societies, industries and economies are facing – challenges around achieving a more inclusive, sustainable society. HEIs are increasingly expected to think about how and what they teach, how they encourage students to become entrepreneurial and engaged citizens, and what research their academic staff carry out around economic, social and environmental sustainability. This means that HEIs are expected to reassess their education and research practices, encouraging their staff and students to collaborate with external stakeholders.

This is where [HEInnovate](#) can be a helpful tool, because HEInnovate urges HEIs to assess their strategies around collaborations and knowledge exchange with external partners, the didactical models and learning goals that lecturers work with and the HEI's enabling frameworks (i.e. the organisational capacity, funding, people and incentives). Although HEInnovate's prime focus is on entrepreneurship and innovation, a focus on sustainability and societal challenges urges HEIs to address the same tools, structures and policies for facilitating change in HEIs.

A focus on sustainability requires more than a central HEI/university strategy alone. All academic units (i.e., faculties, schools, departments) belonging to the HEI, their deans and their students, will have to be engaged when the goal is to embed sustainability in the institution.

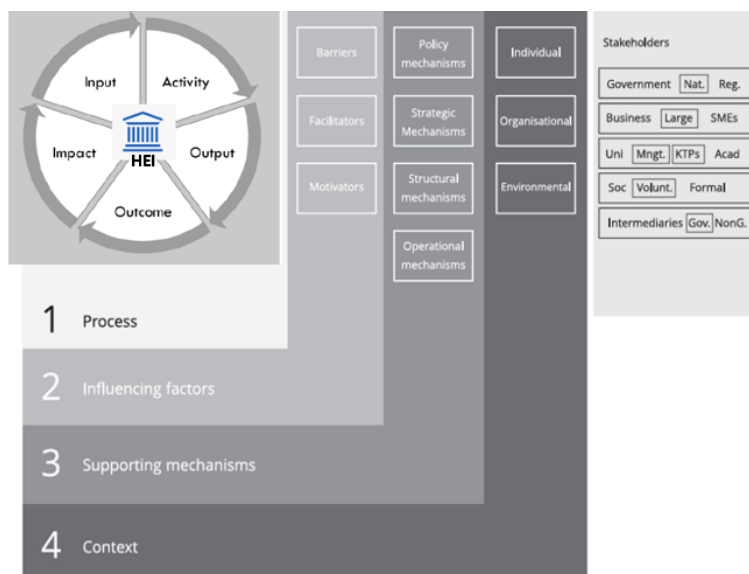
In this comparative case study, we will be focusing on the question of how academic units in three HEIs are managing and encouraging sustainability initiatives. For each of the three universities – Aalborg, Cork and Gothenburg – we focus on a specific department or unit in the

institution, looking in particular at the role of the department leaders in encouraging innovation towards sustainability.

1.3 Our analytical framework

For this comparative study we apply an analytical framework developed by Davey et al. in 2018 (see Figure 1). Originally, the framework was developed to study university-business collaborations, but it can also provide useful categories to describe and understand other change processes in higher education institutions. In the following, the integration of sustainability-oriented goals in the departments' education and research portfolios will be understood as a change process, as this will alter existing practices.

Figure 1: Analytical Framework



Source: Davey, T. et al. (2018), p. 26

The framework includes the various levels, factors, and challenges around implementing change towards a more sustainable and innovative HEI.

Central to the analytical framework is the *process* dimension, which relates to the change process. This process is operationalised as a simple activity chain. It distinguishes between inputs, activities, outputs, outcomes, and impact. The process can be regarded as a cycle because organisational change is usually not just a sequence of different activities, but often its actual outcome and impact will lead to further action in the institution. This dynamic process is embedded in three further dimensions (or layers) the *influencing factors* at the second level, the *supporting mechanisms* on the third level, and the *context* - on the fourth level.

The second layer of influencing factors signifies the immediate environment in which the process takes place. At this level, various barriers, facilitators, and motivators influence the activity chain and pull it in one or the other direction. The (third) level of supporting mechanisms relates to the institution's enabling environment that includes the policies that frame rather than directly influence the steps in the change process. Finally, the fourth dimension stands for the wider context in which the process is situated. It includes factors that are not under the institution's direct control, such as the individual characteristics and preferences of the actors involved or circumstances in the socio-economic environment of the HEI. In addition, the framework also looks at different categories of stakeholders that can have a role in the change process. Stakeholders are linked to very different organisations in the institution's environment.

1.4 Description of the cases

1.4.1 Institutional characteristics

For this study, we conducted interviews with two deans: one from Gothenburg University (Sweden) and the other from the University of Aalborg (Denmark). We also interviewed the sustainability officer from University College Cork (Ireland). Inspired by our analytical framework (Figure 1), we asked our interviewees questions about the challenges and initiatives around embedding sustainability in their institution – the supporting mechanisms they employ and the factors influencing the change towards integrating sustainability. The responses to the interview questions were combined with information collected from official documents and the websites of the three institutions.

In table 1, we provide some background information on the three institutions we compare in this comparative case study.

Table 1: Institutional characteristics

	University of Gothenburg (UG)	Aalborg University (AAU)	University College Cork (UCC)
mission	The University of Gothenburg (UG) meets societal challenges with a wide range of knowledge. Strong research and appealing study programmes attract scientists and students from around the world. UG is environmentally certified and works actively for sustainable development. With new knowledge and new perspectives, its students and researchers contribute to a better future.	For AAU, being a mission-oriented university means that it is guided by a meaningful purpose that goes beyond its own organisation and that it contributes to the sustainable development of the world. AAU lifts society with competences for the future and provides the labour market with entrepreneurial graduates capable of cooperation and who strengthen competitiveness and innovation.	Creating, understanding and sharing knowledge and applying it for the good of all. UCC strives to facilitate a world class student experience, incorporating high quality teaching, learning and research and a rich and dynamic range of opportunities for students to engage in activities outside the curriculum. It prioritises impactful research and innovation that is curiosity driven, seeking breakthroughs that will address global societal grand challenges including the UN Sustainable Development Goals.
Number of students	49,000	19,400	23,000
Foundation year	1891	1974	1845
Organisation	Eight faculties; 38 departments	Four faculties; 18 departments/institutes	Four colleges (previously: 7 faculties); 23 academic schools
website	http://www.gu.se/english	http://www.en.aau.dk/	http://www.ucc.ie

In the case of Aalborg University (AAU) our focus in this case study is on the Department of Architecture, Design and Media Technology, which is part of the Technical Faculty of IT and Design. For Gothenburg University (GU), an interview was held with the head of the Faculty of Education, which consists of four departments. In the case of University College Cork (UCC), we learned about the University's sustainability policies through an interview with UCC's sustainability officer.

1.5 Strategy, structures and supporting mechanisms

1.5.1 Introduction: leading questions

One of the layers in the analytical framework refers to the supporting mechanisms affecting the uptake of sustainability in the higher education institution (HEI). It addresses the policies, strategies, structures and operational mechanisms that were put in place to embed sustainability in the HEI. A key element that drives sustainability is the HEI's strategy and its leadership, as it is the strategy and vision that precedes the policies and structures that the HEI has implemented to integrate sustainability throughout the institution.

Strategy and vision is the first of the eight [HEInnovate dimensions](#). It is also the first of the policy tools identified by Schneider and Ingram (1990) in their list of policy levers. These authors state that the strategy and vision expressed by the leadership of the institution is crucial to developing a sustainability culture within an HEI. Many HEIs these days refer to sustainability and the SDGs in their mission statements (see also the above table), but the question is how sustainability is embedded throughout the entire institution.

For this comparative case study, we revised the original HEInnovate statements replacing the term 'entrepreneurship' by sustainability. The revised statements are shown in the box below.

1. Sustainability is a major part of the HEI's strategy.
2. There is commitment at a high level to implementing the sustainability agenda.
3. There is a model in place for coordinating and integrating sustainability-oriented activities across the HEI.
4. The HEI encourages and supports faculties and units to act sustainably.
5. The HEI is a driving force for sustainability in its regional, social and community environment.

1.5.2 Strategy & leadership

With respect to the first and second statement in the above text, we have asked our respondents in the three case study institutions about their university's strategy they have committed themselves to for addressing sustainability in their university in general and their department in particular.

UCC, Cork

In the case of the University College Cork, the [sustainability strategy](#) was developed in 2016 in response to the need to better coordinate the University's sustainability activities. However, sustainability work in UCC had already commenced in 2006, but at that time it was less coordinated. In UCC, the model in place for coordinating and integrating sustainability-oriented activities across the HEI is the [Green Campus programme](#). It began in 2007 and UCC received its first recognition as a green campus in 2010.

The sustainability strategy was born out of student activism and UCC wants to try and keep student activism at the centre of its sustainability strategy. Its sustainability strategy is student-led, research-informed and practice-focused and goes across all of the aspects of the University. So everything from its estates and infrastructure and how it operates behind the scenes, its management and administration, through to its research priorities and into teaching and learning.

The UCC has a [Green Campus Forum](#) that draws its members from across the college community and includes staff and student representatives, and key personnel with

responsibilities in relation to the sustainability strategy. The forum is chaired by the UCC President and meets regularly to drive forward the Green Campus project and sustainability within UCC.

The idea is that through UCC's Green Campus programme UCC creates a learning environment through which students learn how to be sustainable in the future, how to take that back into the world as graduates, how to be activists and to be global citizens. The mission of the Green Campus programme is that all UCC's activities are 'student led, research informed and practice focused'.

UCC very much benefited from having some very committed leaders – university presidents and some influential academics in various departments – who were interested in the sustainability project as bottom-up activism only gets you so far. The UCC experienced that buy-in from the top is essential.

UG, Gothenburg

The University of Gothenburg (UG)'s mission is expressed in its strategy document entitled '[Vision 2021-2030: A University for the World](#)'. It states that the University strives to be an international higher education institution that assumes responsibility for societal development, while helping to build a sustainable world. In close cooperation with a variety of agents in society, on local, regional, national, and international levels, the University pursues the improvement and innovation in society at large. By way of constant development in education and research, the University tries to meet society's long-term need for competences and knowledge, while preparing students for their future working lives. The University will step up its contribution towards the sustainable-development goals (SDGs) articulated by the United Nations' General Assembly in its Agenda 2030.

In 2014, the University of Gothenburg won an international award for its climate strategy. The prize was awarded by the Network International Sustainable Campus Network ([ISCN](#)), looking at the categories buildings, campus, integration, and student leadership. ISCN's goal is to incorporate sustainability into teaching, research and campus operations.

AAU, Aalborg

Aalborg University (AAU)'s strategy goes by the title '[Knowledge for the World 2022-26](#)'. It places the world's great challenges at the centre. The global demands for quality of life are affecting the earth's resources and creating challenges for future welfare, and the University wants to address these by creating knowledge and take responsibility by addressing the complex global challenges and contribute to sustainable change. AAU wishes to be known as a mission-oriented university. AAU educates students by providing them with in-depth, discipline-specific knowledge and a focus on holistic thinking. In that way, its graduates can contribute to - and collaborate on - solving present-day and future challenges.

1.5.3 Structures supporting sustainability

Looking at the structures and other supporting mechanisms put in place by the three universities for embedding sustainability we encountered very different initiatives undertaken for supporting the institution's focus on sustainability.

UCC, Cork

UCC has appointed a Sustainability Officer, working at the central level of the University. Since 2015, this [person](#) is responsible for implementing the University's sustainability strategy and coordinates the efforts of UCC in this area. The officer brings the sustainability strategy to every department in the University, asking them to embrace the strategy and support its delivery.

One of the key departments in the University in this respect has been the [buildings, estate and procurement office](#). If decisions by building managers, energy managers and procurement officers related to the physical infrastructure of the University are incorporating sustainability concerns, then this will also ensure other departments take notice and embrace the strategy. The idea is that if you influence where and how you spend the money then you also influence others in the University.

Another crucial department in UCC is the Centre for the Integration of Research, Teaching and Learning ([CIRTL](#)). This centre supports staff and students who are engaged in teaching, and demonstrates academic leadership in the scholarship of teaching and learning. CIRTL is at the core in the University in terms how UCC coordinates what it teaches and how it teaches, aligning it with UCC's strategy. It also seeks to align UCC's education with its research priorities and how this research is reflected in UCC's community and civic engagement and it impacts society. UCC's sustainability officer works very closely with CIRTL in supporting academics in teaching sustainability.

AAU, Aalborg

The didactical model used by AAU is [problem-based learning](#) (PBL). PBL actually is Aalborg's unique selling point. The problem-based learning model is internationally recognized as the Aalborg Model. It implies that AAU's education is always based on real problems. So is its research. This means that almost half of AAU's education activity in a semester is focused on a problem – a project. Each project has specific goals that the students have to address, with some of the goals focusing on sustainability. For instance, students have to make an assessment of a technique in their project work and do that from the perspective of SDG goals. In the future, a reflection on SDGs will increasingly become an integral part of the AAU curriculum. This means that students actually have to address sustainability and will also be examined on those questions.

UG, Gothenburg

Gothenburg University allows its departments to appoint vice deans with an explicit responsibility for sustainability. In the case of the [Faculty of Education](#) there is a [vice-dean for Third-cycle Education, Internationalization and Sustainability](#). This vice -dean makes sure that sustainability is included in the education, research and the communication activity of the department. In addition, this Faculty has appointed a coordinator for environment and sustainability. This coordinator has about 20% of her time available to work and coordinate these activities at the faculty level.

There are regular meetings every month with the vice dean, a representative from each of the four departments in the faculty and this coordinator. In this meeting, different activities are discussed and learnings are shared about different issues regarding sustainability in the research and education of the faculty. The Faculty is supported by the central level of the University. The central level provides advice on policy and strategy. One of those strategies that GU works with is an activity list for sustainable development, based on its sustainability strategy and consisting of various activities regarding sustainability that are addressed during a year. This list is followed up twice a year and checked every year to evaluate whether GU has accomplished it. The list helps the faculty move forward in this perspective. The [activity list](#) has five areas: research, education, student collaboration, travel and purchasing. The sustainability coordinator acts as a facilitator for collegial development, e.g. through dialogue with teams on sustainability work within courses.

1.5.4 Policy tools and resources for integrating sustainability

In this chapter, we focus on the facilitating mechanisms and some other motivating tools put in place for embedding sustainability in the University.

UG, Gothenburg

Since 2006, Gothenburg University has been labelling its degree programmes in terms of their emphasis on sustainability. Programmes are marked as being [sustainable-focused or sustainability-related](#), with the first category expressing a higher emphasis on sustainability. If the programme is sustainable-focused it addresses a lot of sustainability issues in the curriculum. This is a policy that is implemented all over the University. The initiative is part of the University's focus on increasing the proportion of sustainability-labeled courses and programmes across the entire university.

For instance, programme directors in the Faculty of Education express this in their preschool teacher programme and in the (re-)developing of [programmes](#). For example, one initiative is the food and catering leadership development programme for school leaders and managers working in hospitals and health care. The programme stresses the importance of nutrition and healthy living, which is one of the SDGs. In that same faculty there is also a programme in health promotion that is sustainable-related.

By marking programmes as sustainability-oriented, the University highlights the importance of addressing sustainability issues in education. It is used as a marketing tool towards students and the outside world.

Another policy tool used by GU is the provision of advice to academics and managers in the University about working with/on sustainability. In addition, there are public seminars from time to time where the latest knowledge on some topic related to sustainability or sustainability-related research is presented to the community. For instance, on how to reduce the environmental impact of the University's actions – its footprint. The goal is also to listen to staff members and collect ideas on how they think the University's footprint can be reduced before 2020.

Finally, GU is encouraging their academics to engage in partnerships and other forms of collaboration where researchers from different countries are exchanging ideas and carry out research on topics related to sustainability. There can also be GU-internal networks between researchers where academics from different faculties collaborate in multi-disciplinary research, for instance in the Center for Environmental Science Research. An example of an international partnership is the Transnational dialogue and Research in Early Childhood Education, where sustainability is one of the focus areas.

AAU, Aalborg

With Aalborg University's problem-based approach to research, researchers help solve challenges and achieve new insights across traditional disciplines with the common objective of creating a sustainable world. To underline this, AAU has a website highlighting its sustainability-related research. The same holds for AAU's education. AAU's students work with the UN Global goals on sustainability and examples of this work ([Bæredygtighed på AAU](#)) are shown on AAU's YouTube [playlist](#). AAU students can participate in so-called mega projects and work with the 17 SDGs. [Megaprojects](#) at AAU consist of semester projects. Students from across the whole university contribute with expertise and knowledge from their own disciplinary field in an interdisciplinary collaboration. All megaprojects are based on global problems as formulated in the UN's 17 Sustainable Development Goals. Thus, students upgrade their skills and knowledge through input from other disciplines and build up competencies in interdisciplinarity, sustainability and collaboration. Each megaproject is organised in up to three

focus areas that serve as overall themes. The focus areas are broken down into topics relevant to the megaproject; they are problem-oriented with a focus on the UN 17 Sustainable Development Goals. Each focus area contains up to two challenges. The challenges are made by supervisors, researchers or coordinators and are qualified by researchers from other disciplines. A challenge is typically made in collaboration with one or more external stakeholders, such as companies and institutions.

A testament to the ongoing work with sustainability and the Sustainable Development Goals is the fact that AAU ranks 6th overall among over 1200 universities across 98 countries in the [Times Higher Education Impact Ranking](#) focused on SDG performance in 2021. More specifically, AAU ranks 1st on SDG 4 – Quality Education and 2nd on SDG 6 – Clean Water and Sanitation.

AAU also annually publishes a [Sustainability Report](#), highlighting its achievements in sustainability performance. The sustainability report for 2021 consists of 24 pages and presents numerous examples and stories of how Aalborg University contributes to each of the 17 SDGs through its research, teaching, engagement and operations. The stories and examples involve contributions from each of the five faculties at AAU, Campus Service and AAU Innovation. Thus, the report presents the overall 'Sustainability profile' of AAU. It also presents selected examples of AAU's contribution to Covid-19 research.

AAU prioritises both research and cooperation activities with companies and other organisations that contribute to the green transition. It has multiple research communities that are highly specialised in climate and environmental challenges. As such, it has more than 400 researchers involved in energy research in one way or another. This has led to the fact that 15% of the University's research articles are within the field of green research, which is significantly above the average for other universities.

Almost 90% of AAU's researchers in the field of green research have collaborated with a company or a public authority in recent years, and more than 60% of these collaborations have led to green innovation in the company. AAU has always tried to make the link between research, education, innovation and the regional business community and international partners. It therefore strives to contribute to sustainable solutions in the world, locally, nationally and internationally.

UCC, Cork

As part of its Sustainability Strategy, UCC is focusing on nine [key areas](#), with specific objectives and KPIs ('metrics') under each theme. These categories mirror those of the Green Campus Programme (see above). UCC aims to streamline sustainability management in the University.

UCC is now ranked 8th in the world for impact as measured by [Times Higher Education World University Impact Rankings 2021](#). UCC is ranked 9th globally in the UI Green Metric World University Ranking of sustainable universities and was the first higher education institution in the world to achieve ISO 50001 certification for energy management. UCC was the first university in the world to be awarded a Green Flag. It also was the first to successfully renew its Green Flag twice, and to achieve ISO 50001 accreditation for energy management. UCC aims to maintain its strong standing in global metrics of Green Universities. In 2018, UCC was the first university outside of North America to be awarded a Gold Star from the Association for the Advancement of Sustainability in Higher Education (see: [STARS](#)).

UCC has an active research community working on multiple aspects of sustainability. 15% of all researchers in UCC are engaged in research that is directly related to the SDGs. This research takes place throughout the University and its multidisciplinary institutes, such as the Environmental Research Institute (ERI), Institute for Social Sciences in the 21st century (ISS21), Tyndall National Institute, MaREI Institute, APC Microbiome Institute and more. In excess of €20m is secured annually for environmental and sustainability research.

In January 2019, UCC's [Green Campus Living Laboratory Seed Fund](#) was established under its Green Campus Living Laboratory Programme. The programme regularly invites proposals for research masters projects (up to €28,000) and demonstration projects (up to €10,000). A "Living Laboratory" utilises the knowledge and research capabilities of students and staff to solve issues. Projects undertaken within the local community are also welcome, provided an appropriate partner has been identified.

1.5.5 *Obstacles (and overcoming them)*

From the interviews we conducted and the documents we consulted the following factors and barriers emerged as standing in the way of a successful integration of sustainability in the University's education, research and campus activities.

- Lack of time
- Lack of resources
- Bureaucracy and administrative barriers
- Academic silos and disciplinary boundaries

Many academics have to deal with multiple demands when carrying out their academic work. They have to distribute their available time across education, research and management duties and many experience a high workload. For many academics, the integration of new topics in their teaching and education work will be perceived as an additional burden. The same holds for the need to engage in new – often multidisciplinary – research areas with new colleagues. As mentioned by our respondents, a reprioritisation will be required if academics are to respond to new demands and additional challenges. The way this is done in the case study institutions is primarily by persuasion and having meetings and conversations in committees or boards such as the UCC Green Campus Forum.

The lack of resources is also cited as a barrier preventing innovation towards sustainability. To address this, HEIs will try and point their academics to funding sources located either in the external environment of the institution – such as research councils or private foundations – or in the institution's internal environment. For instance, at UCC, a research programme focusing on sustainability was initiated: the [UCC Futures](#) programme and the UCC Green Campus Living Laboratory Seed Fund (see above). Through these initiatives, HEIs try to prioritise and steer research towards new directions. This will need to be coupled with a proper academic recruitment strategy to attract researchers who will work on new areas of strategic importance.

In many of the initiatives around sustainability, the voice of the student is essential. Students in the case of UCC were the ones taking the initiative in the Green Campus programme. Through involving students in the working groups that discuss the strategy of the University or the departments/ schools is therefore essential in letting students have a say in the sustainability strategy.

Another way of overcoming barriers is awareness building among staff and students. For instance, labelling academic programmes as sustainability-focused (UG), or publishing a sustainability report (AAU). Some initiatives can also be taken by the leadership of the department – at the decentral level. They can make staff aware of funding opportunities in the area of sustainability research or encourage them to collaborate with others, outside of the department. In AAU, the identification of new funding opportunities is supported by external consultants, who help department staff find subject areas where the department can go for consortia with external partners for research on sustainability-related topics. Some of these consortia are supported by European Commission funds (e.g., Erasmus +, European University Initiative, [European Institute of Innovation & Technology](#)).

Many efforts towards integrating sustainability will take time. Introducing new regulations will require going through a series of procedures in the institution. Sometimes this will be a somewhat bureaucratic and time-consuming activity. One cannot always easily change the curriculum because there are regulations and accreditation standards to be observed. These topics have to be discussed in committees with various stakeholders who each have their preferences.

Academic departments are usually quite autonomous and researchers to a large extent can decide for themselves what the research topics are that they will work on. For some academics, research on sustainability topics will require them stepping out of their comfort zone and engaging in multidisciplinary work. Not all academics will be prepared to do this and some prefer to stay in their disciplinary research community. Others may feel they lack the multi- (or trans-) disciplinary research skills to participate in sustainability-related research. In the case of the Department of Architecture, Design and Media Technology of AAU, there is no such barrier as design work is naturally linked to topics around sustainability – liveable cities and energy use are very much at the forefront of the department's academics. In other disciplinary areas, such as humanities, the likelihood to work on sustainability-related topics may be less high and it will take more of an effort to make the academics come out of their disciplinary silos.

1.6 Lessons learned

Integrating sustainability across the entire HEI can take place through various ways and means and it will also encounter some obstacles. The three case study institutions all have made various efforts towards building a sustainability culture in their institution.

Some of the lessons that can be learned from this comparative case study are:

- The importance of leadership and strategy: having a sustainability strategy with concrete targets and communicating this across the entire institution through meetings, committees, policies, resourcing and reporting on it in, for instance, sustainability reports
- Having dedicated persons working on implementing the sustainability strategy (for instance: a sustainability officer, a vice dean with a responsibility for sustainability)
- Involving the University community in agreeing on a sustainability strategy and giving a voice to students. Giving an opportunity to all academics to self-report which of their modules they feel have addressed sustainable development goals meaningfully and potentially express this in the way degree programmes and module contents are communicated to potential students
- Providing seed money for engaging in sustainability research or set up transdisciplinary research centres where researchers from different departments and disciplines collaborate. These centres can act as flagships for sustainability research and sometimes have a large potential to bring in external funding
- Having a centre in place where innovations in teaching and learning, including efforts to emphasise sustainability-related learning outcomes, can help embed a sustainability awareness in the institution.

1.7 How HEInnovate can help in furthering the sustainability agenda

The [statements](#) in the original HEInnovate [self-assessment survey](#) can be transformed rather easily to make them relevant to the goal of innovation towards sustainability. Where the HEInnovate self-assessment addresses entrepreneurship and innovation, such a revised sustainability-oriented self-assessment addresses initiatives and outcomes related to sustainability and the SDGs.

The table below provides some of the statements that HEIs might use for assessing their sustainability culture. In the right-hand column we show examples from the three universities included in this report.

Table 2: Adapted HEInnovate self-assessment statements and examples

Adapted HEInnovate Dimension	Self-assessment statement (adapted from HEInnovate)	Example from this comparative case study
Leadership & Governance	Sustainability is a major part of the HEI's strategy	University of Gothenburg's strategy document 'Vision 2021-2030: A University for the World'.
Organisational Capacity: People, Resources, Incentives and Rewards	Rewards, incentives and recognition in career progression are given to staff who actively support the sustainability agenda of the HEI.	UCC's Green Campus Living Laboratory Seed Fund
Sustainability-oriented Teaching & Learning	The HEI provides diverse formal learning opportunities including the use of flexible learning pathways to develop sustainability-oriented mindsets and skills	Gothenburg University is labelling its degree programmes as being sustainability-focused or sustainability-related
Preparing and supporting sustainability-oriented entrepreneurs	The HEI increases awareness of the value of sustainability and stimulates the entrepreneurial intentions of students, graduates and staff to start-up a business or venture oriented at sustainability.	Multiple AAU researchers have collaborated with a company or a public authority working on green innovation in the company
Digital Transformation	The HEI actively uses open educational resources, open science and open data practices to improve the performance of the institution and increase its impact on contributing to the SDGs	AAU's YouTube playlist shows examples of its students participating in mega projects related to the 17 SDGs
Knowledge exchange and Collaboration	The HEI creates effective collaboration and enhances synergies with its ecosystem and networks to foster sustainability.	UCC's Green Campus Living Laboratory Seed Fund supports research masters projects to solve issues undertaken with local community partners
The internationalised institution	The HEI reflects on global trends, societal and ecological challenges in its sustainability agenda.	Gothenburg involved in Transnational dialogue and Research in Early Childhood Education
Measuring Impact	The impact of the HEI's sustainability oriented activities is regularly assessed across all its activities.	AAU annually publishes a Sustainability Report

Source: author

1.8 References

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