



Integration of SDGs in

- Institutional governance/strategic level
- SDGs in research
- SDGs in campus operations
- SDGs in curriculum development
- SDGs in student engagement activities
- SDGs into community activities
- SDGs at a whole-institution level

Focus on

- Goal 1 - No poverty
- Goal 2 - Zero hunger
- Goal 3 - Good health and wellbeing
- Goal 4 - Quality education
- Goal 5 - Gender equality
- Goal 6 - Clean water and sanitation
- Goal 7 - Affordable and clean energy
- Goal 8 - Decent work and economic growth
- Goal 9 - Industry, innovation and infrastructure
- Goal 10 - Reduced inequalities
- Goal 11 - Sustainable cities and communities
- Goal 12 - Responsible consumption and production
- Goal 13 - Climate action
- Goal 14 - Life below water
- Goal 15 - Life on land
- Goal 16 - Peace, justice and strong institutions
- Goal 17 - Partnerships for the goals

Summary

Energy and carbon-efficient upgrade of Áras de Brún, a teaching and research facility.

NUI Galway is a leader in the Energy Efficiency and Decarbonisation Pathfinder Programme (EEDPP) for the higher education sector. EEDPP is a key climate action measure, which supports higher education institutions in Ireland, in making progress towards 2030 targets of a 50% improvement in energy efficiency and 51% reduction in greenhouse gas emissions.

The Áras de Brún building is located at the heart of the NUI Galway Campus. The building primarily houses the Centre for Mathematics, with the Botany & Plant Science Research space located on the upper floor. The project's overarching vision is that Áras de Brún will achieve a Nearly Zero Energy Building (NZEB). It will achieve at least a B2, Non-Domestic Building Energy Rating (BER) and an A rated Display Energy Certificate (operational level BER). The project will build evidence and capability in the sector, and inform decisions for future larger-scale programmes.

By implementing a number of measures, as follows: -

- 1) Active engagement with the building users; to eliminate waste and energy malpractice, and whenever practicable, allow the users to utilise the energy systems and building design features.
- 2) Installation of new Air to Water 200kw Heat pump as primary energy source for heating.
- 3) Lighting system upgrade carried out using LED lighting and photocells for daylight and presence detection.
- 4) Natural cross flow ventilation system design aspects, re-instated at upper levels.
- 5) Installation of a comprehensive 30kw roof top photovoltaic electrical generation system that includes a battery back-up system, with a shared energy performance platform; to enable building optimisation methodologies.
- 6) Energy, ambient and other data is recorded on an online platform, for the purposes of teaching, learning and research.
- 7) Results are shared through case studies and open days; so that other public sector organisations may benefit from this project

SDG Accord Reporting 2022 CASE STUDY

Outline the benefits of integrating this theme:

1. The project enables NUI Galway to develop a strategy to decarbonise its existing building stock, moving away from fossil fuel heating systems and towards new renewable sources of heating. The Áras De Brún project is a template for future decarbonisation projects.
2. The project will facilitate the sharing of energy, ambient and other data among students, researchers and public sector bodies developing future pathways and insights into the selection of heat pumps.
3. The project will position NUI Galway to become a leader in decarbonisation of large-scale campuses, away from fossil fuels and towards renewable energy sources. This will be achieved through fabric upgrades and the installation of solar photovoltaic (PV) and LED lighting within our buildings.

Outline the barriers or challenges encountered in integrating this theme and how you overcame these:

1. The project was delayed due to COVID-19, this has hampered the project starting.
2. Installation of an air to water heat pump system requires an increase in the Maximum Import Capacity (MIC) for the building to ensure capacity for the heat pump. Remedial works and adjustments to the main electrical panel are required. Research data on large heat pumps is required to ensure that learnings are made available to other bodies.
3. Installing Solar PV requires planning permission, it is essential to seek planning permission before installation begins.

Conclusions and recommendations

NUI Galway Pathfinder project will allow us develop strategies for decarbonising the campus, thereby reducing our primary dependency on fossil fuels. Our [Climate Action Plan](#) sets targets for all public sector bodies in Ireland to meet; through deep retrofitting and the electrification of our heating system we will be in a better position to meet these targets. We anticipate that we will achieve a saving of at least 50% in our overall energy efficiency i.e. kWhs. As we are utilising 550 m.2. of roof space for the installation of a photovoltaic system, we anticipate that we will reduce our carbon footprint by at least 30%. We will improve the energy rating of this building to a B2 BER, or better.

Secondly, the project will allow our students, researchers and staff to utilise the project as a learning tool. The project will deliver a comprehensive set of energy usage, energy generated, energy stored, ambient and additional user profile data that will be collected and made available to advance NUI Galway’s research strategies in collaboration with the Energy Systems Programme in the College of Engineering. Additionally, learning outcomes will be shared through case studies and open days; so that other public sector organisations may benefit from this project.

Proposed Building Management system screen for operating of the new systems.

