

The University of Nottingham

Carbon Reduction

NOTT Carbon!

About the project

Summary

The University of Nottingham has established a carbon management plan since 2010 and has invested in a range of technologies to deliver real reductions in carbon emissions. This case study highlights the interventions made, the achievements and the important lessons learned.

Project partners

The University of Nottingham has used a range of partners to deliver the schemes. These include Schneider Electric, Cogenco, Mellor Bromley, A Pollard, J Tomninson and Calder controls.

The results

The problem

The University of Nottingham has continued to grow over the period 2010-15 and significant investment has been needed to achieve its corporate carbon emission targets and to reduce energy consumption and costs.

The approach

The University has taken a mixed approach to reducing its carbon emissions through a range of efficiency measures to improve the performance of existing infrastructure and the replacement of existing infrastructure with energy efficient equipment, e.g. boilers, air handling units, speed drives as well as fabric improvements. Alongside that we have invested in a smaller number of large scheme investments in chiller plant, solar thermal and photovoltaic, heat pumps and combined heat and power.

In 2014/15 investments of £2.1m have covered a range of technologies and buildings, including plant replacement (boilers and chillers), lighting upgrades including main campus LED street lighting project, and the continuation of insulation and double glazing projects.

There has also been targeted action at the Medical School (responsible for 18% of total energy consumption) with projects to replace parts of the large centralised chilled water production and reduce the ventilation losses through service void areas between the user floors. Significant work has continued to explore campus wide low carbon energy solutions including a mixed renewable generation solution for Sutton Bonington. A large Photovoltaic (PV) array of 1000m² has been installed on the Vet School Clinical wing and is now operational. A



The University of
Nottingham

UNITED KINGDOM • CHINA • MALAYSIA

Profile

- HEI
- 43,893 students (includes our China & Malaysia campuses)
- 7569 staff
- Urban and rural

Category supported by



project to install a 800kW combined heat and power (CHP) scheme is now being installed which will save £275K on energy costs and cut carbon emissions by 1250 TCO₂

Our goals

There are five primary objectives in our carbon management overall and for each project:

- 1) Absolute carbon reduction – we invest in projects that will make an absolute reduction in carbon emissions
- 2) Enhanced resilience – we seek to improve our resilience to failure to support teaching and research
- 3) Cost reduction – we aim to deliver sound business cases and projects that reduce cost
- 4) Student experience – we aim to enhance the student experience through our investments
- 5) Income generation – we identify opportunities where schemes can generate revenue for future investment.

Obstacles and solutions

Identifying opportunities for investment	We have used both internal and external resources to identify opportunities and prepare outline business cases for investment. We have used external technical expertise to test out our ideas and prepare robust business cases for the University's Finance Committee to support and sign-off.
Securing funding from University Executive Board	Drafting clear, concise and accessible business cases with the buy-in and support of colleagues in procurement, finance, HR and the wider academic community has been key.
Integration of programme of works with other campus developments	Many of the elements in the carbon management plan impacted on different user groups at different times of the year. Carefully programming projects and working with key stakeholders has been key to smooth implementation.

Performance and results

- Overall carbon reduction of 10,679 tonnes since 2010
- Income generation from the export of electricity generated through the solar PV array on the Vet School.
- Improved user comfort and student experience through greater reliability of heating, cooling and ventilation in residences, energy intensive laboratory spaces, etc.
- Positive engagement with both staff and students directly affected and benefitting the work programme (including professional services, academic, support staff, students and visitors).
- Enhanced resilience to mechanical and electrical failure and improved fabric and insulation.

The future

Lessons learned

The projects we have invested in have shown that to make a real difference we need to focus on some transformational projects – and whilst 'low hanging fruit should always be picked the real step changes in

performance involve more complex, complicated and expensive investments. We also recognise that a blend of different measures is needed to ensure visible changes, e.g. solar PV as well as invisible changes (boiler plant and new heat networks) are important. We have targeted our high carbon areas through the use of our own data from meters, our building management system and local monitoring to establish priority areas for investment across the estate. Unsurprisingly, these tend to fall in the areas of science, research and medicine.

Sharing your project

We have communicated the programme overall and the projects specifically internally through reports to our Executive Board, the University's Council, Environment Committee and the Finance Committees. We have used our internal newsletter 'Sustainable Nottingham' as a vehicle to disseminate the information as well as our social media (facebook, twitter). We also share these projects through induction programmes to the University and in special sessions to students through their academic work. We have also commissioned videos to showcase the projects. This, combined, has helped raise awareness of the University's environmental impact but, crucially, the things we are doing to reduce it too. As a result we've been shortlisted for a number of awards.

What has it meant to your institution to be a Green Gown Award finalist?

"Being a finalist in the Green Gown Awards, alongside other respected universities and colleges is fantastic recognition for the staff and students involved in the carbon management plan here at The University of Nottingham. We continue to strive for ever improved performance and to be seen as one of the leading institutions is a boost to us all."

Further information

Web: www.nottingham.ac.uk/sustainability

Facebook: <https://www.facebook.com/UoNSustainability>

Email: sustainability@nottingham.ac.uk

Telephone: 0115 951 3600

Twitter: @uonsustain