SDG Accord Case Study

OXFORD BROOKES UNIVERSITY

The SDG Accord

The University and College Sector's Collective Response to the Global Goals

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

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Summary:

Addressing innovative approaches to decarbonising our heating and cooling systems is key to delivering our decarbonisation strategy, our net-zero 2040 target and deliver our SDG climate action commitments. Due to the high building density of our Headington Campus site, space for deploying traditional heat pumps is very limited. We formed an early partnership with Black Mountain Developments, the UK's delivery partner for the Erda deep coaxial borehole system. This patented system utilises vertically splayed boreholes (>200 meters deep) that fit within a very small footprint. The boreholes are operated independently, maximising efficiency and allowing support of both cooling and heating systems simultaneously. Each borehole is linked to our energy centre via flow-lines, the scheme will deliver a total of 14 boreholes attached to two heat pumps, delivering a 500kW

Geo-Exchange Heating and Cooling System analysis has showed that our tri-generation heating, cooling and power system is now outmoded, like many combined heat and power plants this transitional technology will become more expensive and more environmentally damaging. The Erda geothermal system will maintain capacity when the tri-generation system is decommissioned, whilst decarbonising heat.

This £2.3m project is on schedule to be completed at the end of May 2022. We will be the first university to have an operational system.

This project is predicted to reduce our Headington campus emissions by some 20%. Thus delivering a significant contribution to our carbon reduction strategy, 2040 net-zero target and delivering long-term financial savings to the institution. Energy and carbon reduction will be continually measured, monitored and reported in accordance with our ISO14001 and EMR requirements.

Outline the 3 key benefits of integrating this theme:

1. The projects contribution towards our net zero target

2. The project has delivered teaching & learning opportunities within the university community. the wider city of Oxford and the HE sector.

3. The system is capable of providing near zero carbon heating and cooling in the long term.

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

1. The project was initially rejected for funding through the Governments £1billion Public Sector Decarbonisation Scheme, however, the robustness of the proposal and the importance of decarbonising heat led to funding being awarded based on the schemes merits and the supporting delivery team.

2. There have been real barriers and risks faced from delivering a complex project in extremely short timescales. We have built a team with the right leadership, PM skills and experience in delivering the project to a required level of project assurance and the establishment of a project panel, let by a senior

3. There are also many technical lessons that have been captured - for example, integrate of heat pumps into existing buildings, performance requirements, future proofing, optimisation, measuring, monitoring and reporting.

Conclusions and recommendations to others

Oxford Brookes will be the first University to deploy this patented system. It's deployment will demonstrate a way forward for other organisations with constrained sites to deliver decarbonisation of their heating and cooling systems. This initiative is one of the first hybrid heating and cooling systems deployed in the UK - there will be important lessons to be learnt on how heat pumps and boilers can work together efficiently and what modifications need to be undertaken to existing buildings to allow this. We will be treating this project as a 'Living lab' to benefit both the education and research community and wider adoption across the sector.