

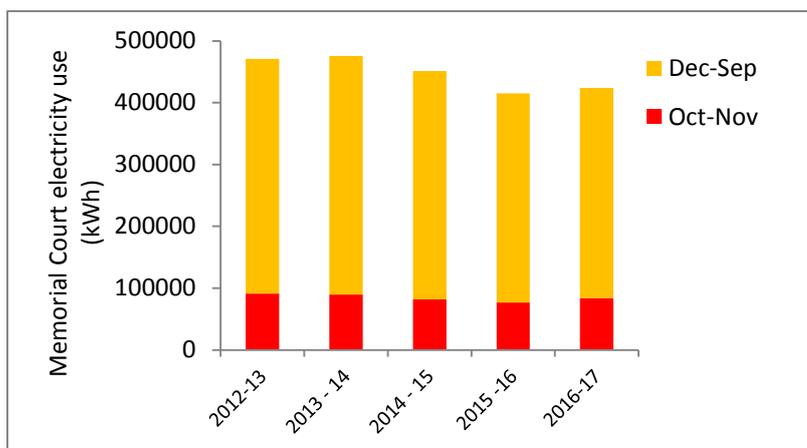
The Environment Committee was set up in Michaelmas Term 2011 and aims to bring together expertise, energy and ideas from staff, students and fellows to help reduce the College's environmental footprint. Clare's environmental performance has continued to improve on several fronts in 2016-17, though some important challenges remain. The College has maintained recent progress in waste reduction and in some areas of energy use. Our MCR Rep has worked with the gardens team on an innovative biodiversity project in the College grounds, and Clare has once again excelled in the cross-University Green Impact awards scheme. However, the Committee is concerned by a recent rise in College-wide energy use and, on food, by Clare's sustained high consumption of meat and dairy products. Tracking progress and understanding recent trends has also been made difficult by the loss of administrative support for the Committee.

Buildings

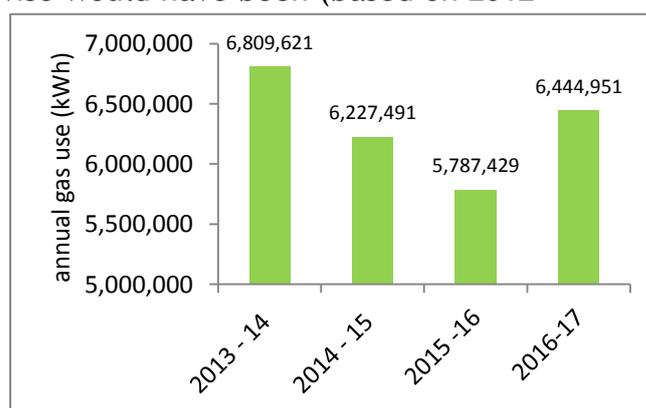
1. Buildings Manager Deborah Hoy and her team have continued rolling-out the installation of energy-saving equipment around Clare. They have replaced conventional light fittings with LEDs and PIR controls on staircase B of Castle House as well as on K, L and M staircases in Memorial Court. New energy controls have been installed on K, L and M staircases, with all the College's larger buildings now controlled in a similar way.

2. Accommodation Manager Jackie Searle and her team have worked with UCS Green Officer Nancy Wilson on our third Michaelmas Term energy-saving competition across Memorial Court. This involves bedders recording lights and appliances left on unnecessarily and heating left running with the windows open; the staircase that wasted least energy won free tickets to the Michaelmas Green Formal Hall. Once again the competition generated impressive results, with the Memorial Court electricity bill for October and November more than £600 less than it otherwise would have been (based on 2012-13 consumption). Since the scheme started, annual Memorial Court electricity use has fallen by nearly 9%, saving College over £3500 per year (compared with 2012-13).

3. Data on other aspects of energy use are less encouraging. Preliminary data on



Memorial Court electricity use (in kWh). The Michaelmas Term staircase competition began in 2014-15, and is linked with annual electricity use falling by an average of 9%.



Annual College gas consumption (in kWh), 2013-17.

College-wide gas consumption suggest this rose substantially in 2016-17, to its highest level since 2013-14. We do not yet understand the reasons behind this - it wasn't a cold winter, for example - but the pattern was mirrored in Old Court electricity use, which also appears to have been unusually high.

4. The buildings department has invested extra time this year on addressing water consumption. Together with students and the housekeeping team they have worked to improve early detection of malfunctioning cisterns and dripping taps. They are also now trialling the use of aerated showerheads in Castle Brae. If this proves successful the project will be rolled out across the College.

5. The redevelopment of St Regis has now reached the planning stage. This scheme will have a large impact on both electric and gas consumption as the existing buildings have extremely poor thermal properties and 35 ageing gas boilers. In addition approximately half of the flats run on electric heating. The new student rooms will be provided with both hot water and heating from a centralised boiler. The buildings will be constructed to modern thermal standards and have green roofs on all single-storey areas. The College is also working with the design consultants to understand and try to limit the embedded carbon in the construction materials - a hitherto overlooked element of Clare's footprint.

Waste

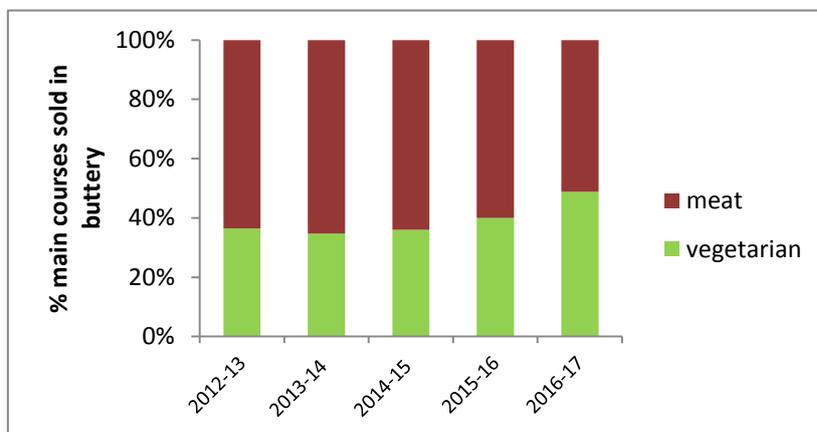
6. Jackie Searle and her team have worked to maintain the College's already impressive record of recycling waste. For the second year in a row Clare recycled just over half its waste in 2016-17 (compared with just 12% in 2010-11). Because collection charges are considerably lower for recycled waste, this effort saved College approximately £13,200 this year (compared with the cost if we had produced our 2016-17 level of waste but recycled at 2010-11 levels).

7. Jackie's team have also continued promoting the British Heart Foundation's end-of-term scheme for collecting and re-using student's unwanted household items. This year 93 bags of unwanted books, clothes and household items went for re-sale in BHF shops, rather than to landfill. Jackie has championed the uptake of this initiative across the University, which collectively this year raised a staggering £123,760 for British Heart Foundation.

Catering

8. Catering manager Lee Corke has worked with the UCS Rep to host one Green Formal Hall this year, which as always proved very popular.

9. Lee has provided encouraging data on the uptake of vegetarian food in the buttery, which has increased from around 36%

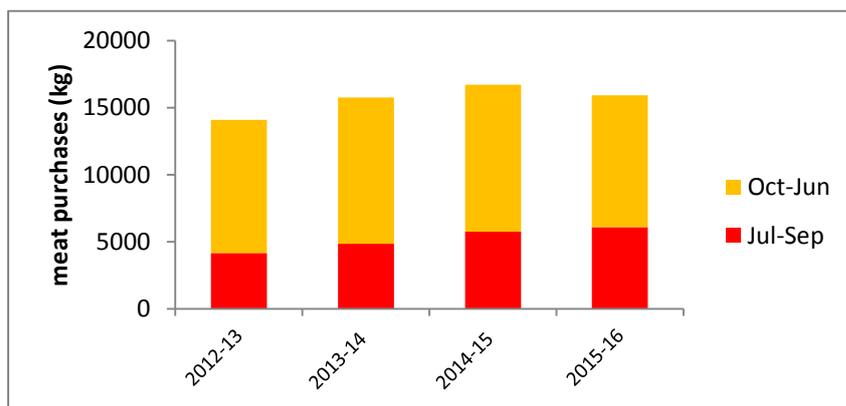


Uptake of meat vs vegetarian main courses in the Clare Buttery. Note that data for 2016-17 are still incomplete.

of main courses sold in 2012-13 to nearly 49% so far in 2016-17. This is substantially above typical figures for other colleges, which run at 20-30%.

10. Despite this, college-wide consumption of meat and dairy products continues to be a serious concern to the Committee. To put this in context, meat and dairy account for more of the average US or European family's greenhouse gas emissions than does air travel (Jones & Kammen 2011 *Env. Sci. Technol.* 45:4088). Beef and lamb are a particular concern because they come from ruminant animals which belch methane, with the greenhouse gas footprint per serving of beef or lamb around 6 times that of poultry or pork and ~100 times that of most vegetable proteins (Tilman & Clark 2014 *Nature* 515:518). Rough calculations by committee member Andrew Friend suggest the environmental footprint of the food served in Clare is equivalent to half that of all the energy used by College.

11. Lee's detailed system for tracking Clare's purchases of meat suggest that meat use is remaining substantially higher than it was in 2012-13, when data gathering started. The rise has been driven very largely by increased meat-buying during the conference season, with July-Sep purchases increasing by almost 50% over 3 years, to the point where they are now 86% higher (per month)



College purchases of meat, 2012-16. On average more 90% more is bought during Long Vacation months than in termtime months.

than purchases in the rest of the year. We currently lack the data to see whether these trends are explained simply by differences in numbers of meals prepared, or reflect differences in the food that is served. Unravelling these patterns is an important first step in tackling this key aspect of Clare's footprint.

Biodiversity

12. MCR Rep Jacqueline Davis has been working with Head Gardener Steve Elstub on an innovative method of surveying and disseminating information about biodiversity in Clare Gardens. She has deployed 360° cameras at five locations around the grounds, creating real-time video data which can be viewed on the web. In addition Jac and Steve have installed a nest box containing a video camera. This wasn't occupied this spring but we remain optimistic that a nearby pair of blue tits will take up residence in 2018.



photo: Steve Elstub

Clare's newest accommodation, complete with video relay.

13. Steve has also continued to work to improve the value of the College gardens for native species. One example is sowing yellow rattle - a native annual which parasitizes the roots of grasses - to help keep more aggressive species from dominating the “wild area” of the garden.



photo: Steve Elstub

External recognition

14. The College has again received very encouraging external recognition of its work on the environment. In June 2016 it won more awards than any other college or department in the University’s Green Impact competition. Clare received a Gold Award (the highest overall rating) for the third year running. Amy Carmichael and her team’s work on greening the 2016 Clare May Ball won an Award for Excellence. Amy also won a Special Award for Student Leadership, and Deborah won the Environmental Improvement Award for her work on the College Heating Policy.

Flowering yellow rattle, a native species which has successfully kept aggressive grasses from taking over the “wild area” of Clare Gardens.

15. During the year Deborah and Andrew were invited to give presentations on the work of the Committee to two other colleges - Trinity Hall and Caius.

16. We have just heard - ahead of the 2017 Green Impact ceremony - that Clare has received a Platinum Award. This is the first year this has been awarded, and Clare was the highest-scoring of all college teams and one of only two colleges to receive this exceptional distinction. As always, huge thanks are owed to Paula Yardy Saban who has coordinated all our Green Impact work.

Committee members, 2016-17

- Andrew Balmford (Chair)
- Lee Corke (Catering Manager)
- Jacqueline Davies (MCR Representative)
- Steve Elstub (Head Gardener)
- William Foster (Fellow)
- Andrew Friend (Fellow)
- Deborah Hoy (Buildings Manager)
- Sam Sanalidro (Staff Representative)
- Jackie Searle (Accommodation Manager)
- Nancy Wilson (UCS Green Officer)
- Nigel Woodcock (Fellow)
- Paula Yardy Saban (outgoing Committee Secretary)