Carbon Management Plan 2012-2020

Final Progress Report October 2021

Introduction

The Carbon Management Plan (CMP) created in 2012 included a target for carbon reduction and forecasted progress up to the end of the 2020/21 academic year. This report summarises the University's carbon emission savings and performance against the targets contained within this CMP up to that end date.

Further progress will be made on reducing the University's carbon emissions as outlined in the University Sustainability Plan published in Oct 2021.

Final progress against target

There have been many developments since the creation of the 2012 CMP, and even more so since the CMP target baseline year of 2005/06, both in terms of the energy sector and in the University itself. The University has increased in size by 49% (compared to the 2005/06 baseline), including the construction of the new Campus East, and has nearly doubled staff and student numbers, with 11,723 more people than in 2005/06.

Despite these increases we have achieved significant carbon emission savings, whether through behavioural change initiatives or energy efficiency improvements, including examples such as:

- Green Impact and Student Switch Off initiatives
- Extensive metering implementation enabling ongoing improvements
- Optimising building controls
- Installation of Biomass Boiler
- Extensive LED lighting upgrades
- Replacing calorifiers with heat exchangers for hot water

The main target set within the CMP was to achieve carbon emission reductions of 48% compared to the 2005/06 baseline year. Despite the University undergoing significant expansion this target was an absolute tonnes of CO2e emissions target. For 2020/21 (the final year covered by the CMP) the University achieved a reduction in absolute carbon emissions of 15% against the 2005/06 emissions.

The carbon management plan originally forecast the installation of at least one wind turbine and a biomass powered energy centre. Planning and technical constraints prevented the development of these schemes, significantly reducing projected carbon savings.

However, as planned a large number of the projects have been undertaken to reduce electricity consumption, as these were originally predicted to achieve significant reductions in carbon emissions. These included lighting upgrades, IT

server upgrades, installation of a single biomass boiler, building management optimisation, freezer and growth cabinet replacements, among others. But, whilst energy savings have been made, the national grid electricity carbon factor has reduced since 2012 by 53%. With this reduction in the carbon factor, the carbon emission savings from these same projects has been lower than was originally predicted.

The CMP has also introduced long term initiatives, now being expanded to deliver carbon savings, including the implementation of an extensive metering network that is now used to undertake detailed analysis to identify and target carbon saving opportunities.

When expansion of campus is factored in, the University has achieved savings of 57% per FTE staff and students, with reductions of 43% per m^2 of building floor area compared to the baseline year, as indicated in the Table 1.

Emissions metric	**2005/06 (tCO2e)**	**2020/21 (tCO2e)**	**% reduction**
University scope 1 & 2 (incl electricity, gas, oil, biomass, vehicle fleet) emissions - tonnes CO2e	**23,465**	**19,962**	**-15%**
Carbon emissions kg/FTE staff and students	1,938	838	-57%
Carbon emissions kg/m2	105	60	-43%

Table 1: Reduction in Carbon Emissions from 2005/06 to 2020/21

Progress over the plan duration

A mixture of steady and stepped improvements have been made over the years since the creation of the CMP (2012), as shown in the Figure 1.

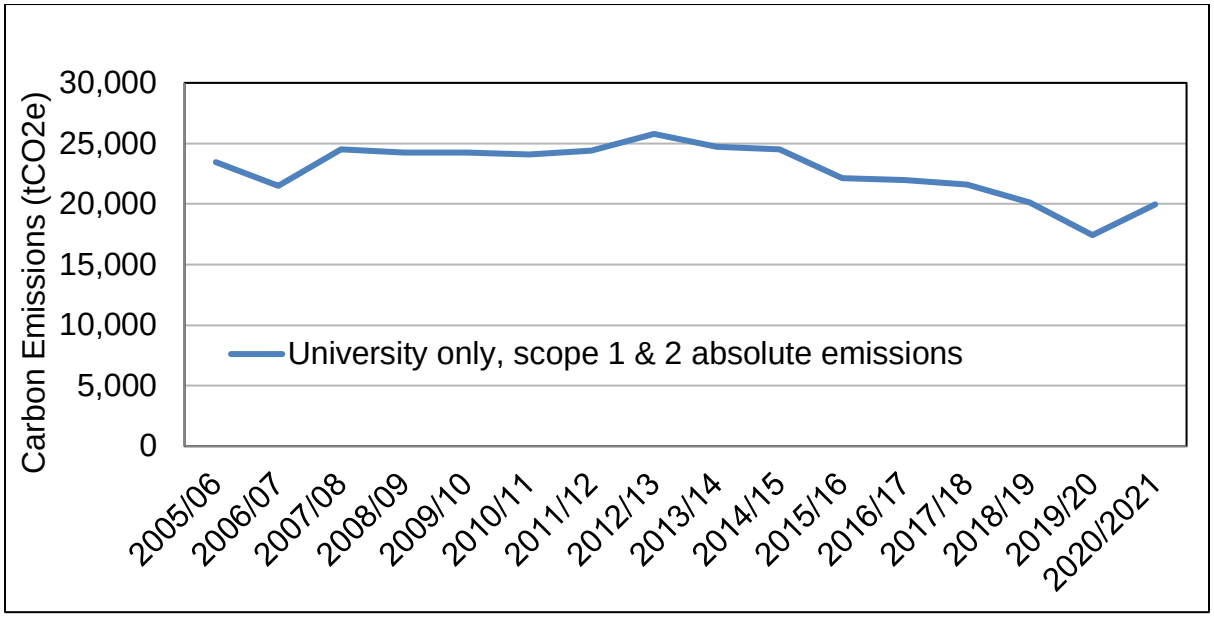

Figure 1: University Carbon Emissions 2005-2021– 2020/21 value represents 15% reduction on 2005/06 baseline

Progressive reduction has been achieved in total carbon emissions since the creation of the CMP in 2012. There was a steeper reduction in 2019/20 due to the effects of Covid-19 in reducing campus occupancy, but then an increase in 2020/21 (to circa 2018/19 levels) as campus occupancy increased again and Covid-19 safety requirements leading to significantly increased mechanical ventilation rates, and associated heating.

The University has continually increased its intake of students, along with increasing its staffing levels, resulting in close to double that which were using the campus in 2005. Figure 2 shows the carbon emissions when these increases in campus users have been factored in.

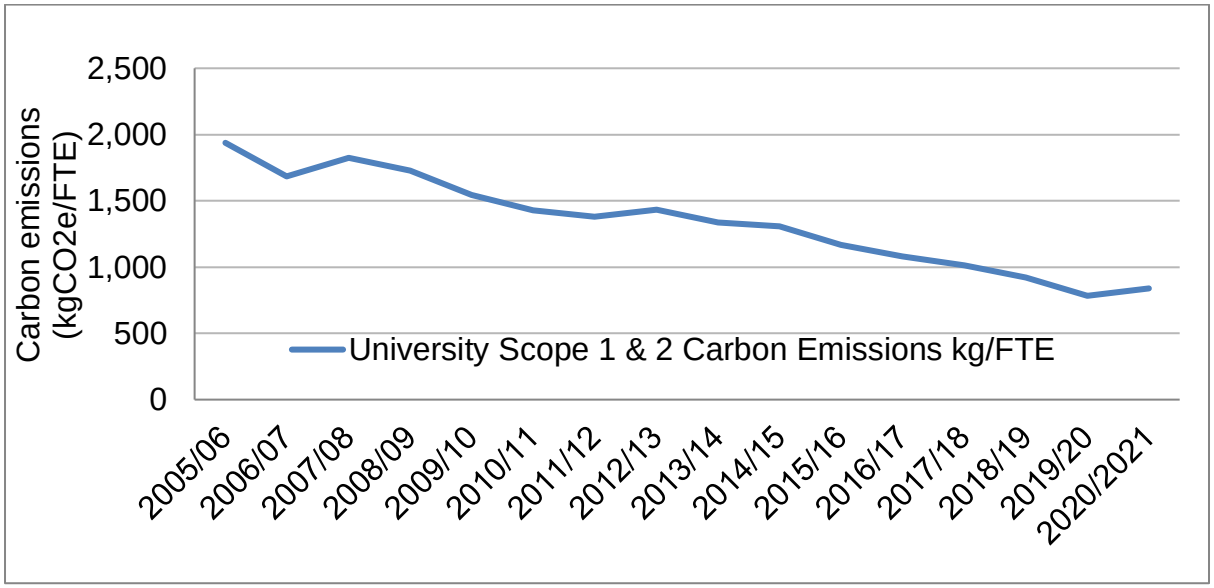

Figure 2: Scope 1 & 2 carbon emissions per full time equivalent (FTE) staff and student – 2020/21 represents a 57 % reduction against 2005/06 baseline.

The University has vastly expanded the number of buildings that it operates over the years, all of which require energy to heat, power, and light etc. Figure 3 indicates that even when these increases are factored in, the University has achieved an improvement in the carbon efficiency of our buildings.

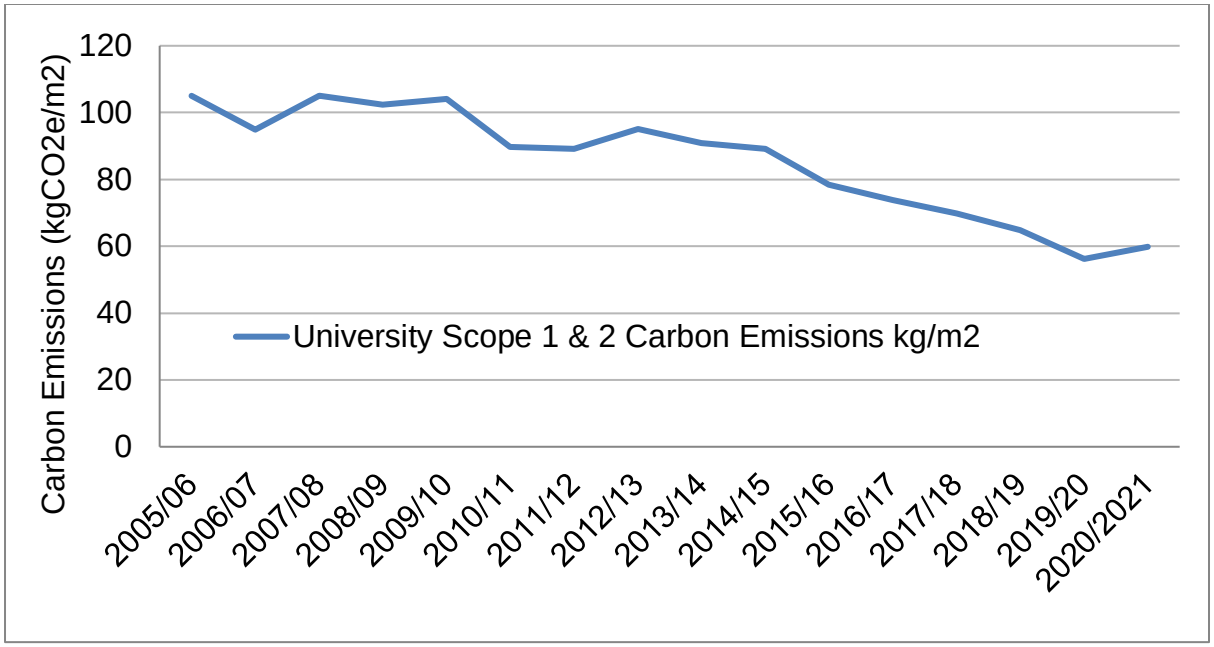

Figure 3: Scope 1 and 2 carbon emissions (kg/m^2) - 2020/21 shows a 43% reduction against 2005/06 baseline.

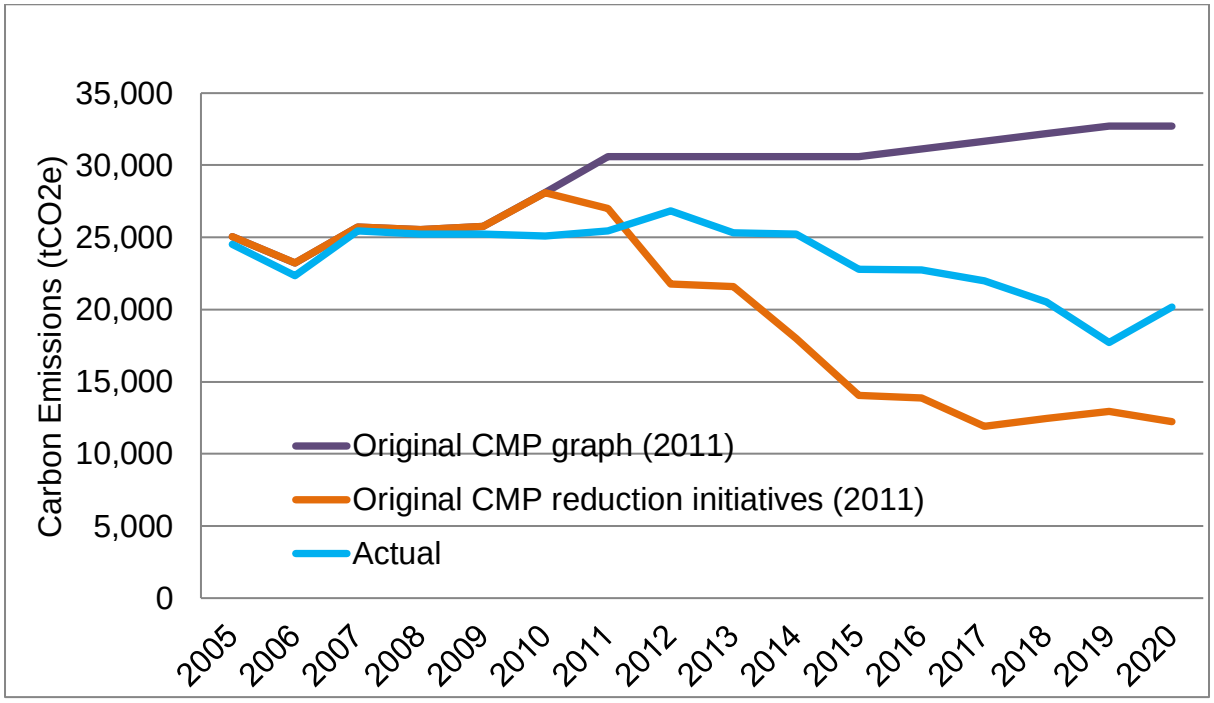

Figure 4: Forecast and actual carbon emissions with and without reduction initiatives

Figure 4 compares the original forecasted emissions for the “no carbon saving interventions” scenario, against the scenario of predicted emissions under the original plan initiatives, with the middle line showing the actual absolute carbon emissions. There have been several scenarios not included in those original forecasts, including a significant expansion of the University.

The future for carbon management at the University of York

The Sustainability Plan for 2021-2030 will include new carbon targets for 2030 and beyond. Progression has already been made on identifying a pathway for achieving these targets and these will be detailed in a new version of the Carbon Management Plan.

The new carbon targets will go above and beyond those laid out in the 2012-20 Carbon Management Plan, both in terms of its level of ambition and the sources of carbon emissions; covering not only scope 1 and 2 carbon emissions from campus operations but also including indirect emission sources (University’s scope 3 emissions e.g. travel, supply chain, waste and water). Progress towards the new targets will be periodically reported publicly.