

Advice to Oxford City Council on Carbon Budget Targets

Background

The UK target for the date at which to reach net zero carbon emissions is 2050. This is now a legal target under an amendment to the Climate Change Act. The target was based on the advice of the Climate Change Committee, which concluded it is consistent with the UK's commitments under the Paris Agreement, whilst being challenging.

The Oxford Citizens Assembly, by a large majority, was keen for Oxford to be a leader in climate change mitigation and make more rapid progress.

I have been asked to advise on the feasibility of a target date earlier than 2050, and in particular on a 2040 date.

Oxford's emissions

Current emissions from the city have been analysed by Anthesis and are shown in Figure 1. These are 'scope 2 emissions', i.e. emissions due to direct emissions in the city and from the use of fossil fuels to generate electricity that is used in the city.

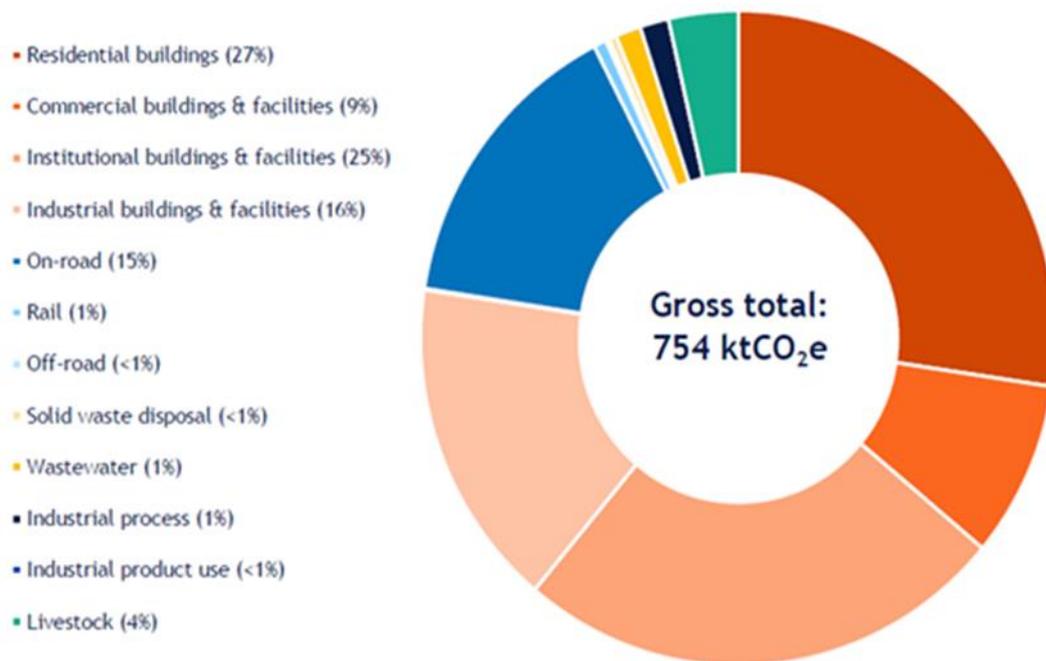


Figure 1. Greenhouse gas emissions from the city of Oxford

Key emissions sectors for Oxford are from buildings – homes, institutional buildings, commercial buildings, industrial buildings - and road transport.

Oxford in the UK Context

This pattern of emissions is not representative of the UK as whole, for which industrial processes, agriculture, aviation and shipping play a significantly larger role. It is therefore reasonable to ask whether the different pattern of emissions points towards different targets.

There is now a lot of evidence (in the UK and internationally) on the relative difficulty of decarbonising different activities and sectors. Broadly speaking, sectors are easier to decarbonise in which energy efficiency can be improved more easily and fossil fuels can be

substituted by electricity. Sectors for which decarbonisation is difficult, and therefore projected to be slow, are: aviation, shipping, heavy road freight, industrial processes and agriculture. These are all under-represented (by UK standards) in Oxford.

Sectors in which progress by 2040 is easier are electricity, light vehicles (car and vans) and buildings. These are the sectors to which Oxford’s emissions are strongly weighted. Oxford also has strong public support for early action and a greater capacity to innovate in this area than many other places due to very high research capacity, many innovative businesses and well-established low carbon community action organisations. It is therefore a reasonable conclusion that Oxford’s targets should include earlier action, and a faster descent to an earlier net zero than for the UK as a whole.

On the other hand, Oxford is strongly connected to the rest of the UK. Densely populated cities cannot generate the whole of their own energy use. Like water and food, much has to be imported from rural areas. Decarbonisation will therefore rely on the availability of low carbon energy from elsewhere, which is largely outside the control of the City Council and other actors in the city. Seeking to reduce emissions at a very different speed from the UK as a whole is therefore not advisable. Oxford’s proposed targets do not, of course, have the force of law and will be easier to amend if external factors change.

Oxford’s proposed targets

The proposed targets for Oxford, compared to the UK targets are shown in Figure 2.

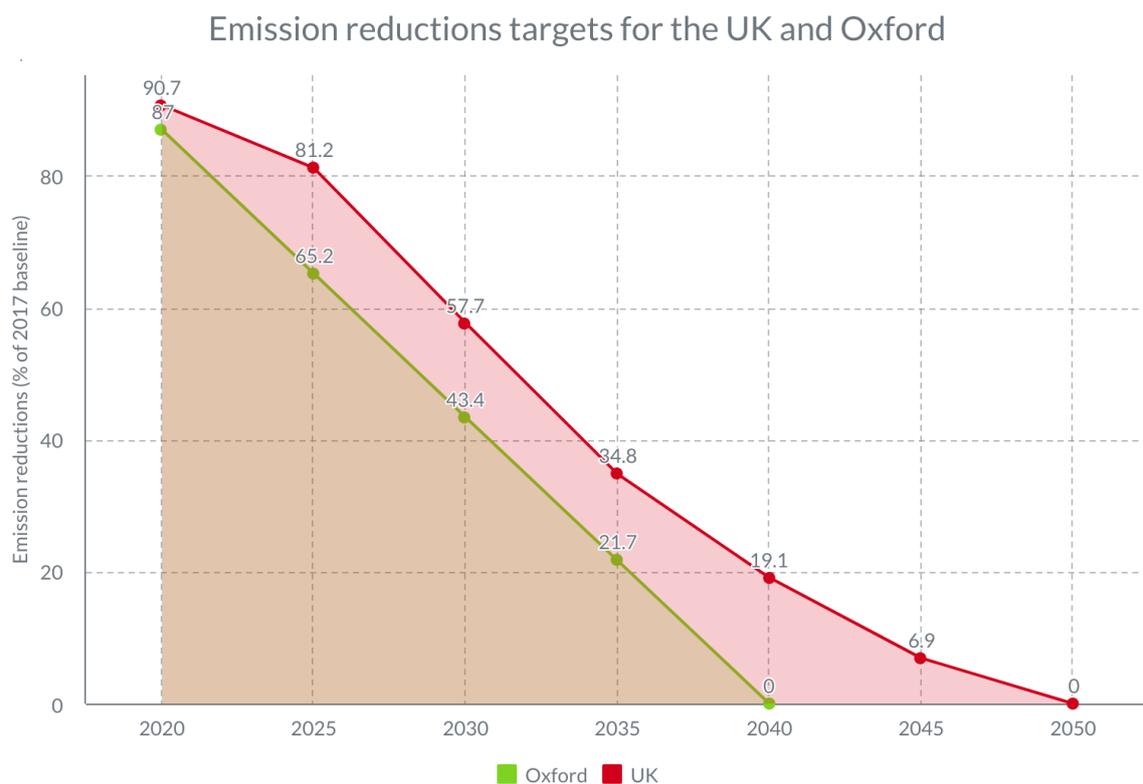


Figure 2. Oxford’s proposed targets compared to UK targets

The proposed targets compared to national targets have greater early action, then follow a similar shape in the period 2025-2035 with a less gradual end, reaching net zero in 2040.

My advice is that these targets are ambitious, but technically feasible provided that there is strong buy-in from key partners in the city and that national changes to electricity generation continues to proceed quickly.

Delivering these targets will need commitment and resources to enable Oxford to reduce energy demand for buildings and transport faster than elsewhere. The decision on appropriate targets is therefore ultimately political rather than scientific.

The proposed focus of Oxford's goals is emissions from the city and this is appropriate. However, Oxford is a centre for innovation globally and, with partners, it may be useful to think about other ways in which Oxford can assist in global decarbonisation as well.

Summary

- Oxford can decarbonise more easily than the UK as a whole. An earlier net-zero target than 2050 is therefore appropriate.
- Decarbonising Oxford will rely on progress elsewhere, especially for decarbonisation of electricity.
- The 'in city' focus needs to be on reducing energy demand, including through electrification.
- My advice is that a net zero 2040 target is ambitious, but technically feasible.
- Long term uncertainties at a city level are high, and therefore periodic reviews of later targets would be sensible.
- A 2040 target will require Oxford to move more quickly than the national average on reducing energy use in buildings and transport, and therefore requires resources and commitment.
- Exact targets are therefore a matter of political priorities and judgement.

Nick Eyre
February 2021

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