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NHS Trust



Positive about integrated healthcare



The carbon impact of health services

Using data to inform service design through service-line footprinting

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Introduction

Environmental sustainability implies that we do not deplete or pollute environmental resources at the expense of future generations. Sustainable healthcare requires not only monitoring of carbon and water use but also waste management and limiting the use of natural resources.

In the delivery of clinical services, the inclusion of environmental protection as a key driver alongside cost and quality of care will encourage innovation and ultimately produce a service which is preventive, personalised and efficient. This paper focuses on one element, carbon utilisation, to support work to achieve the carbon reduction target set for the National Health Service (NHS) in the Climate Change Act 2008. To achieve this requires not only knowledge of the carbon impact of the organisation as a whole (through, for example, building utilisation), but also contribution from individual services or teams. If clinicians are to contribute to developing sustainable healthcare, they need to have information on the carbon impact as well as the cost-effectiveness of their service and to be able to compare their service with others in this regard. This information is not routinely available to clinicians at present. This paper aims to explain why it is important to address this and why this needs to be tackled with some urgency. It offers some recommendations for addressing this.

Climate change and the NHS

The NHS has a huge impact on the environment and meeting the government's commitment to an 80% reduction in greenhouse gas emissions by 2050 will not be an easy task. NHS England alone employs more than 1.3 million people, and deals with 1 million patients every 36 hours. The result of all this activity is a very high level of greenhouse gas emissions – currently, over 20 million tonnes of CO₂e per year (NHS Sustainable Development Unit, 2012).

We cannot continue to emit carbon at such a rate if we are to continue to live safely and to be able to provide a good standard of healthcare not only for our generation, but for our children too.

Figure 1 shows the scale of the reduction in carbon emissions required of the NHS in England by law.

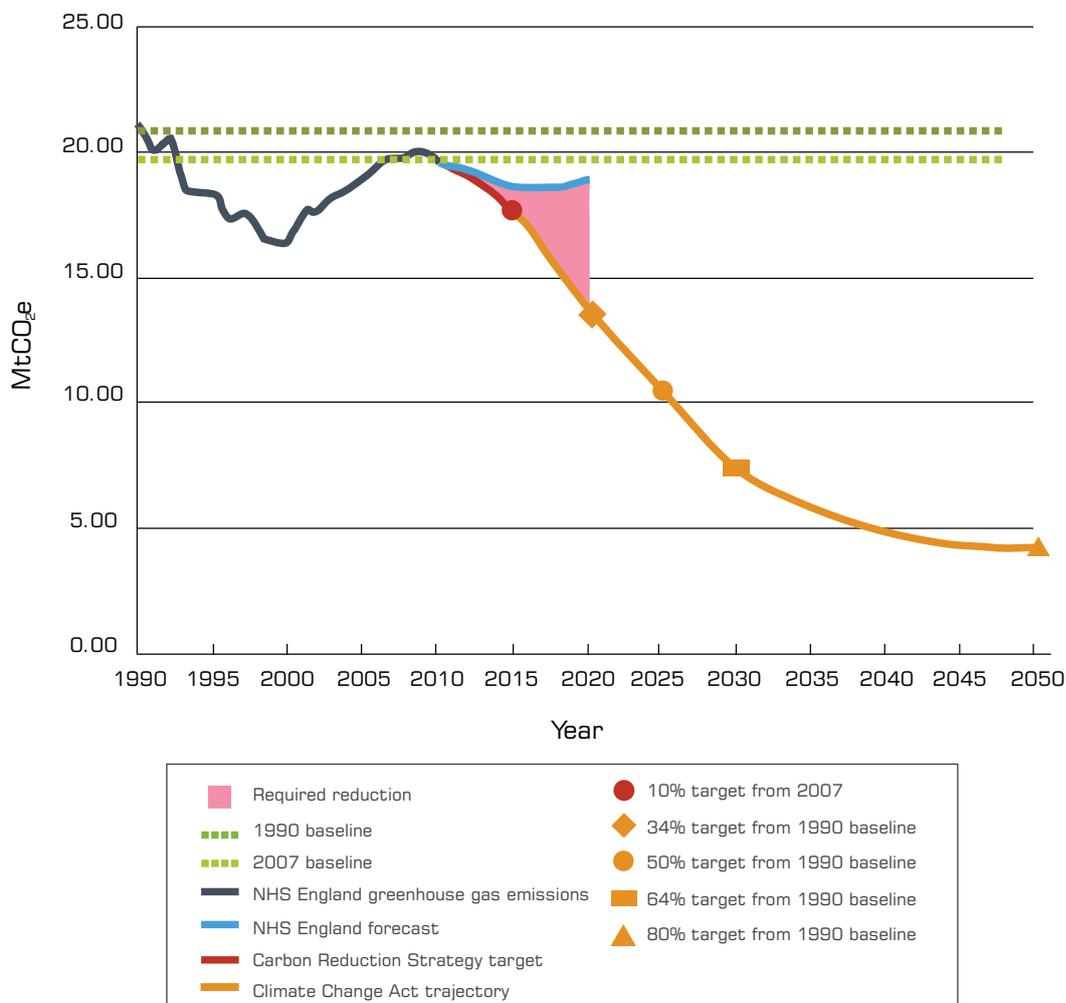


Fig. 1 NHS England CO₂e footprint 1990–2020 with Climate Change Act 2008 targets. Total annual emissions 20 million tonnes CO₂e in 2010. Source: NHS Sustainable Development Unit (2012).

Figure 1 shows clearly that, although efficiencies in direct energy consumption and financial constraint go some way towards reducing carbon emissions, the gap between our current use of resources and our target remains huge.

Whereas most effort goes into measuring and reducing carbon emissions associated with buildings, in fact this accounts for only 19% of the total, with 16% on travel and 65% on procurement (Fig. 2). That procurement is the result of how we run our services and the care we provide to our patients. A third of this segment comes just from pharmaceuticals.

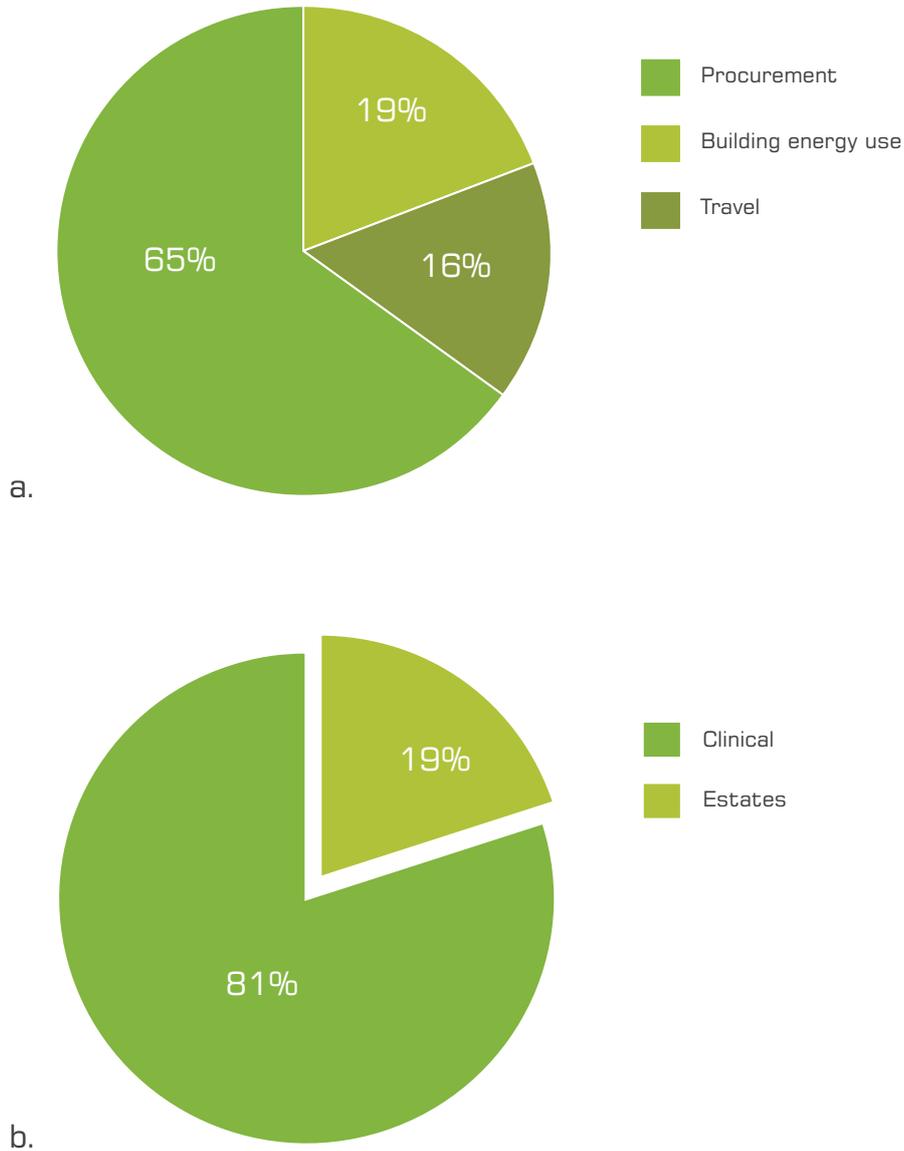


Fig. 2 Carbon footprint, NHS England. Source: NHS Sustainable Development Unit (2012).

Transformation of healthcare for better quality and lower carbon emissions

To achieve the scale of carbon reduction needed to meet government targets will require fundamental changes to how care is provided. This is only possible with clinician engagement. To inform these changes, basic information is needed on the environmental impacts of different care pathways, so that clinicians can make informed decisions on service configuration based on both cost-effectiveness and carbon impact. (In the future this should be extended to include other aspects of sustainability such as water, waste and the use of limited resources.) The first step toward this goal is to determine the carbon footprints of the clinical service lines provided by trusts.

Monitor (2006) describes a service line as the natural 'business unit' of the trust – a distinct unit with identifiable customers, products, revenues and costs that is run as an independent business with its own income and expenditure.

Our basic assumption is that costs should be attached to the services that generate them. Some carbon costs may arise from activities outside the trust, such as patient and visitor travel, but otherwise carbon accounting may be managed in the same way that financial accounting is managed. One important benefit of this approach is that services and costs may be pooled to fulfil reporting requirements much more efficiently and accurately. They may, for example, be aggregated to provide a corporate footprint, or mapped to care clusters for reporting purposes.

Carbon monitoring: the lack of a common methodology

A joint study was agreed between the Faculty of General Adult Psychiatry of the Royal College of Psychiatrists and Nottinghamshire Healthcare NHS Trust to look at carbon monitoring across two mental health trusts, to determine the overall carbon footprint and whether it would be possible to compare the carbon impact of different forms of service configuration. Nottinghamshire Healthcare NHS Trust established a data-set against the three high-level carbon headings – buildings, transport and travel, and procurement – and arranged this against the service lines of the trust. The analysis, carried out by the Centre for Sustainable Healthcare and Nottingham Energy Partnership, found that no meaningful comparison could be made at a clinical service level because of the different approaches for collecting data. A conference held between the Royal College of Psychiatrists and the Health Estates and Facilities Management Association (HefmA) agreed that there is a need for a common approach and that this should be applied across healthcare.

This point is recognised by the Academy of Medical Royal Colleges. In their response to the Sustainable Development Unit consultation on the *Sustainable Development Strategy for the Health and Care System 2014–2020*, they noted that:

'The Academy understands that there is no common methodology for measurement of the carbon footprint of clinical services and this would be essential to enable benchmarking and improvement at service-line level. Measuring at this level also ought to allow environmental impact to be matched to the services that generate them.' (Academy of Medical Royal Colleges, 2013)

Service-line carbon footprinting

Service-line carbon footprinting:

- provides information for clinical decision-making
- allows comparison between different approaches to service delivery
- potentially enables reaching the 80% carbon reduction set by the government
- positively engages everyone in the service, including patients
- bridges the gap between clinicians and managers.

Such reporting is not difficult to achieve. First, it requires knowledge of which buildings or units within a building are used by a given service. (Ideally, the energy use could be collected at the level of the individual units, which might for example be wards or suites of offices.) Similarly, staff would need to be identified according to the percentage time they work in each team for monitoring of travel use.

The ideal approach would be to link the data to individual patients of care pathways, which could then be related to healthcare groups used for payment by results analysis. Ultimately, to achieve such a significant carbon reduction will require a greater understanding of impact of service delivery not only in terms of cost but also carbon use. This is complicated by the need to take into account the complexities of comorbidity as well as the impact of social factors and provision of social care on health status.

Recommendations

It is still early days in NHS carbon management and reporting. Computer information systems for recording CO₂e emissions are not in common use and there is variation in data quality and consistency.

The Centre for Sustainable Healthcare recommends that carbon accounting draws on lessons from financial costing systems in use in the NHS and recommended by the Department of Health, namely use of patient-level information and costing systems (PLICS) and service line reporting (SLR). The main drivers are:

- clinician and staff engagement in sustainability
- data consistency across trusts.

This recommendation follows that of the Healthcare Financial Management Association (HFMA) 2013 clinical costing standards (Healthcare Financial Management Association, 2013a,b).

1 Carbon accounting should use the same principles as those used in financial accounting

'Costs should be matched to the services that generate them and should reflect the full cost of the service delivered. This will be best achieved by... adopting a standardised approach to the apportionment of overheads and indirect costs.' (Department of Health, 2012: p. 4)

2 Use service line designators consistently across data sources or cost pools

The service line is 'the natural "business unit" of the hospital – a distinct unit with identifiable customers, products, revenues and costs that is run as an independent business with its own income and expenditure' (Monitor, 2006: p. 2).

3 Integrate carbon reporting with existing information systems

For example, systems such as Emissions Reporting and Inventory Center (ERIC), Mental Health Minimum Data Set (MHMDS), care clusters.

4 Collect data at patient level wherever possible

The advantage to using patient-level costing is that:

'Once accurate service user cost data is derived, it can be aggregated to provide higher level costs – clusters or service lines – for analysis. But users will always be able to drill beneath these high-level figures to understand how the costs were made up by individual service user interactions.' (Healthcare Financial Management Association, 2013b: p. 2)

A framework for service-line carbon footprinting

- Standard 1 **Defining service lines**
- Standard 2 **Specifying reporting categories**
- Standard 3 **Gathering activity data**
- Standard 4 **Apportioning indirect and overhead carbon emission costs**
- Standard 5 **Calculating greenhouse gas emissions**
- Standard 6 **Aggregating data for reporting**

Next steps

The Centre for Sustainable Health proposes to:

- approach a trust using patient-level information and costing systems and service line reporting to apply lessons learned from Nottinghamshire Healthcare NHS Trust to determine how best to apply these approaches to carbon accounting
- approach companies supplying NHS accountancy systems to determine feasibility of incorporating carbon metrics and reports
- develop higher-level architecture for an NHS carbon accountancy programme.

The problems identified do not just apply to mental health. For this reason the joint meeting of the Royal College of Psychiatrists and HefmA asked the President of the Royal College of Psychiatrists to raise this issue with the Academy of Medical Royal Colleges. The conference considered that a working group of the Academy of Medical Royal Colleges would ensure that the needs of clinicians in ensuring sustainable healthcare were understood and that the involvement of the Health Estates and Facilities Management Association, the Healthcare Financial Management Association, the Department of Health Sustainable Development Unit, the Centre for Sustainable Healthcare and the NHS Confederation would be invaluable.

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