



# Delivering greener, more sustainable and net zero mental health care

Evidence review  
and resources

## Purpose of this document

This document accompanies [Delivering greener, more sustainable and net zero mental health care: guidance and recommendations](#). It contains a more detailed account of the research findings and the processes and methods undertaken to develop the recommendations. This document also contains links to useful resources and further reading.



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# Introduction

This document, prepared by the National Collaborating Centre for Mental Health (NCCMH) accompanies [Delivering greener, more sustainable and net zero mental health care: guidance and recommendations](#).

It contains a detailed account of the research findings and the processes and methods undertaken to develop the recommendations.

Following definitions of the terms used across all of the research activities that underpin the guidance ([Section 1](#)), this document presents the methods, findings and limitations for the three main research components:



**The literature review**  
([Section 2](#))



**The call for evidence**  
([Section 3](#))



**The review of NHS Green Plans**  
([Section 4](#)).

[Section 5](#) presents how information about the carbon impact of the mental health care pathway was gathered and visualised.

The research findings are then summarised narratively in [Section 6](#) under the four principles of low carbon and sustainable care, developed by Greener NHS. This section also contains a table setting out the challenges and facilitators associated with implementing greener, more sustainable and net zero approaches.

[Section 7](#) provides links to useful resources and further reading.

[Section 8](#) lays out the process for developing and selecting the recommendations, and, lastly, [Section 9](#) presents the Equality Impact Assessment of the project, which was carried out by the NCCMH Equality Advisory Group.

# 1. Terms used across research activities

[Table 1](#) outlines the terms and categories that were used to structure findings across research activities undertaken in the development of the guidance and recommendations.

**Table 1: Terms used to structure findings across research activities**

1. Overall type of intervention or approach	
<b>Sustainability intervention</b>	Interventions to conserve natural resources and protect ecosystems or the natural environment
<b>Net zero effort</b>	Efforts to reach target of completely negating the amount of carbon emissions produced by services, to be achieved by reducing emissions and implementing methods to mitigate impact
<b>Public and preventive health care</b>	Efforts to prevent the use of services and/or action taken to reduce incidence of mental health problems especially those that require the most resource-intensive care








2. Areas of focus <sup>a</sup>
Buildings/estates
Mental health care pathways
Staff and workforce
Treatment/care practices







<sup>a</sup> Interventions and approaches reported across Green Plans were also categorised according to workforce and system leadership; sustainable models of care; digital transformation.

### 3. Low carbon care principles

### 4. Type of intervention or approach

\* = primary principle, – = Additional principle (when more than one principle was applicable, subsequent analysis and description was performed according to the primary principle)

Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems and workforce	
* 				<p><b>Preventive mental health care</b></p> <p>Opportunities for public and preventive mental health care (this can include prevention, early diagnosis, early detection and interventions to prevent deterioration or progression and use of acute services)</p>
	* 			<p><b>Patient engagement</b></p> <p>Patient engagement activities on the topic of mental health care provision and sustainability, or any patient-led initiatives aimed at making mental health care provision more appropriate and environmentally sustainable</p>
	* 	– 		<p><b>Efficiency measures</b></p> <p>Methods to improve efficiency between and across health care services and staff involved in them (such as adaptations to pathways and routes into care, joined-up working, etc.)</p>
	* 	– 		<p><b>Alternative approaches to treatment</b></p> <p>Alternative approaches to traditional mental health care provision (e.g., use of technology, digital and telehealth)</p>
		* 		<p><b>Carbon footprint reduction: supply chains</b></p> <p>De-carbonising supply chains (e.g., locally sourcing food to reduce shipping and air miles, reducing the use of single-use products)</p>

Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems and workforce	
		* 		<b>Carbon footprint reduction: energy consumption</b> Reducing energy consumption (e.g., electricity efficiency efforts, improving insulation, solar panelling)
		* 		<b>Carbon footprint reduction: transport/travel</b> Initiatives such as carpool, electric mental health response vehicles, etc.
		* 		<b>Carbon footprint reduction: waste management/reduction</b> Recycling and waste management (including reducing food waste on wards)
		* 		<b>Carbon footprint reduction: low carbon/green treatments/care</b> Low carbon care, treatments and settings (e.g., green social prescribing, low carbon community care models)
		* 		<b>Carbon footprint reduction: medication/prescription practices</b> Changes to medication and prescription practices
			* 	<b>Training and education</b> E.g., staff training on sustainable practice



## 2. Literature review



### 2.1 Overview

We conducted a rapid review of literature on the topic of net zero mental healthcare. The following research question was posed:

**What interventions, approaches and initiatives can be used to work towards achieving net zero mental health services in the UK?**

The following principles were applied to the development of the research question and approach to reviewing the literature:

- A focus on studies and reports that outline interventions or approaches that could be used to reach net zero mental health care, in addition to studies where the approach has been evaluated and outcomes have been measured
- Studies do not necessarily need to include an assessment of success or impact of interventions or approaches but will be used where provided
- Exploration of net zero approaches used across wider health care reduces the limits of looking solely at mental health care, however, the inclusion of non-mental health care specific approaches and interventions applies only to studies where the primary focus of the intervention is generalisable to mental health care

- A focus on studies and reports of healthcare across Organisation for Economic Co-operation and Development (OECD) countries, rather than just the UK.

Searches were conducted across electronic databases PubMed (National Library of Medicine search engine for references and abstracts) and HMIC (Healthcare Management Information Consortium, via Ovid) in addition to limited searches conducted using Google. Search terms included those for: net zero, sustainability, health care and mental health care.

Predetermined criteria were used to include or exclude records based on relevance to the research question. Interventions, approaches and initiatives implemented to try and work towards net zero or to improve sustainability in healthcare included:

- Carbon emission reduction (including reducing pollution)
- Carbon footprinting/reducing a service's carbon footprint
- Waste management, waste reduction and recycling
- Reducing frequency of single-use products
- Green initiatives intended to improve sustainability and mitigate the effects of climate change
- Environmental sustainability measures
- Energy-saving measures
- Implementation of efficiency processes.

## 2.2 Method

### Literature review protocol

#### Review question(s)

*What interventions, approaches and initiatives can be used to work towards achieving net zero mental health services in the UK?*

#### Research question development

Focuses on studies that outline interventions or approaches that could be used to reach net zero mental health care, in addition to studies where the approach has been evaluated and outcomes have been measured.

Studies do not necessarily need to include an assessment of success or impact, but, if they do, we can extract this data from those studies.

The scoping searches indicate that a search strategy inclusive of wider health care would be better than one limited to mental health care, which significantly limits the data.

While we will consider inclusion of non-mental health care approaches and interventions, we may exclude studies where the primary focus of the sustainability intervention is not applicable or generalisable to mental health care (for example, studies of sustainability interventions that are intended for niche or subject-specific health care practices, such as dentistry or surgery, and that cannot be generalised to other forms of health care provision).

<sup>b</sup> This date was selected because it was when the Climate Change Act 2008 was introduced in the UK.

### Searches

The electronic databases PubMed and HMIC (Healthcare Management Information Consortium, via Ovid) will be systematically searched. Limited searches will also be conducted using Google.

#### Search terms:

**Ovid:** (terms for) net zero OR (terms for) sustainability AND (terms for) health care OR (terms for) mental health care OR (terms for) sustainable health care NOT (terms for) climate anxiety OR (terms for) illness prevention OR (terms for) disaster management OR (terms for) natural disasters

**Limits:** Humans, English Language, 2008–March 2023

**Google:** net zero sustainable healthcare *filetype:pdf*

Search in private browser (i.e., incognito mode)

The first 100 search results will be exported for screening

**Limits:** 2008–March 2023

**Date of publication:** January 2008<sup>b</sup>–March 2023

**Country:** OECD countries

### **Types of study to be included:**

**Include:** Peer-reviewed literature: all study designs, qualitative and quantitative studies, systematic reviews, meta-analyses and literature reviews, commentary pieces and editorials; and grey literature: guidance and standards documents, reports, protocols, presentations, conference abstracts or proceedings, theses/dissertations, presentations.

**Exclude:** News articles, blogs, forums, NHS Green Plans

### **Condition or domain being studied:**

**Include:** Net zero and sustainability approaches or interventions in health services and pathways<sup>c</sup> in OECD countries

**Exclude:** Net zero and sustainability in non-health care services; mental or physical health impact of climate change and environmental disasters; illness prevention interventions and impact on service use; illness prevention training and education for staff

### **Intervention(s), exposure(s):**

Interventions, approaches and initiatives implemented to try and work towards net zero or to improve sustainability in healthcare,<sup>c</sup> including:

- Carbon emission reduction (including reducing pollution)
- Carbon footprinting/reducing a service's carbon footprint

- Waste management, waste reduction and recycling
- Reducing frequency of single-use products
- Green initiatives intended to improve sustainability and mitigate the effects of climate change
- Environmental sustainability measures
- Energy-saving measures
- Implementation of efficiency processes
- Main outcome(s).

Given the breadth of publication types to be included in this review, not all of the included studies will involve an assessment of sustainability measures and outcomes. Where studies do provide an assessment or evaluation of outcomes, these should include quantifiable indicators of success or failure of the initiative or approach, such as:

- A measured reduction in carbon emissions, waste or single-use products
- An improved carbon footprint
- A measured saving of energy and so on.

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<sup>c</sup> While we intend to include non-mental health care-specific approaches and interventions, we will exclude studies where the primary focus of the sustainability intervention is not applicable or generalisable to mental health care. This refers to studies of sustainability interventions intended for niche or subject-specific healthcare practices (such as dentistry or surgery practices) that cannot be generalised or applied practically to other forms of healthcare provision sustainability efforts.

## **Data extraction (selection and coding):**

Records retrieved via Ovid and Google searches will be exported to Rayyan for de-duplication and screening.

Data selection will be completed in the following steps:

1. De-duplication of records (using Rayyan duplication detection mechanism)
2. Random selection of ten records, which will be independently screened by title (and abstract, if available) according to inclusion criteria by two to three researchers to check for consistency in decision-making – any discrepancies will be resolved through discussion
3. Further screening of titles/abstracts will be completed independently by two to three researchers, with each researcher taking responsibility for screening a sample of the records
4. Ten per cent of titles/abstracts from each sample will be screened blindly by another researcher for consistency – any discrepancies will be resolved through discussion
5. The research team will screen included records at full text – at this stage they may exclude further records as necessary
6. After the first screening, included records will be rescreened to further ensure that included studies meet criteria. If sufficient literature is identified, inclusion criteria will be updated to add a narrower focus, as follows:
  - Excluding studies that focus on niche physical health settings, for example dentistry, surgery, accident and emergency departments (A&E)/ambulances (unless 'crisis admittance' is mentioned), geriatrics medicine and so on (labelling speciality), which are unlikely to provide sufficient evidence that can be generalised to mental health settings in addition to the information provided in more relevant studies
7. Excluding studies on healthcare focusing on care outside of usual practice, for example prescription of inhalers, incontinence care and so on, as above
8. Excluding commentaries, opinion pieces.



Data extraction will be completed in the following steps:

1. Data from records included at full text<sup>d,e</sup> will be extracted using Microsoft Excel
2. Another researcher will check a random ten per cent selection of extracted records to verify that the data has been extracted correctly and completely.
3. The following data will be extracted:
  - Study reference (author/publication year)
  - Publication type (published journal article, grey literature)
  - Study design or report type (systematic review, cohort study, feasibility study, commentary/opinion piece, report, thesis, guidance document and so on)
  - Participants, including number of participants (if applicable)
  - Country/region (OECD only)
  - Health service or pathway type (for example, mental health service – community mental health team; mental health service – inpatient; mental health service – psychological therapies; general health service – primary care; general health service – surgery; general health service – inpatient and so on)
  - Any other relevant information.

#### **Outcome data for synthesis:**

- Intervention or approach type
- Intervention or approach details
- Health care service type
- Outcome data (if applicable)
- Other relevant information might be extracted for synthesis.

#### **Risk of bias (quality assessment):**

Not applicable (N/A)

#### **Strategy for data synthesis:**

Data will be synthesised using a narrative approach. We will initially categorise and summarise the types of sustainability/net zero interventions or approaches described in studies, including a summary of outcome data, where applicable.

We may explore the use of tables and other data visualisation approaches to present the findings of the review, depending on the availability of studies and data.

#### **Type and method of review:**

Literature review

#### **Anticipated or actual start date:**

March 2023

#### **Anticipated completion date:**

November 2023

#### **Funding sources/sponsors:**

Greener NHS

Conflict of interests:

None to declare

#### **Language:**

English

#### **Country:**

OECD

<sup>d</sup> Where primary studies were identified in systematic reviews included in the review, they were not independently extracted

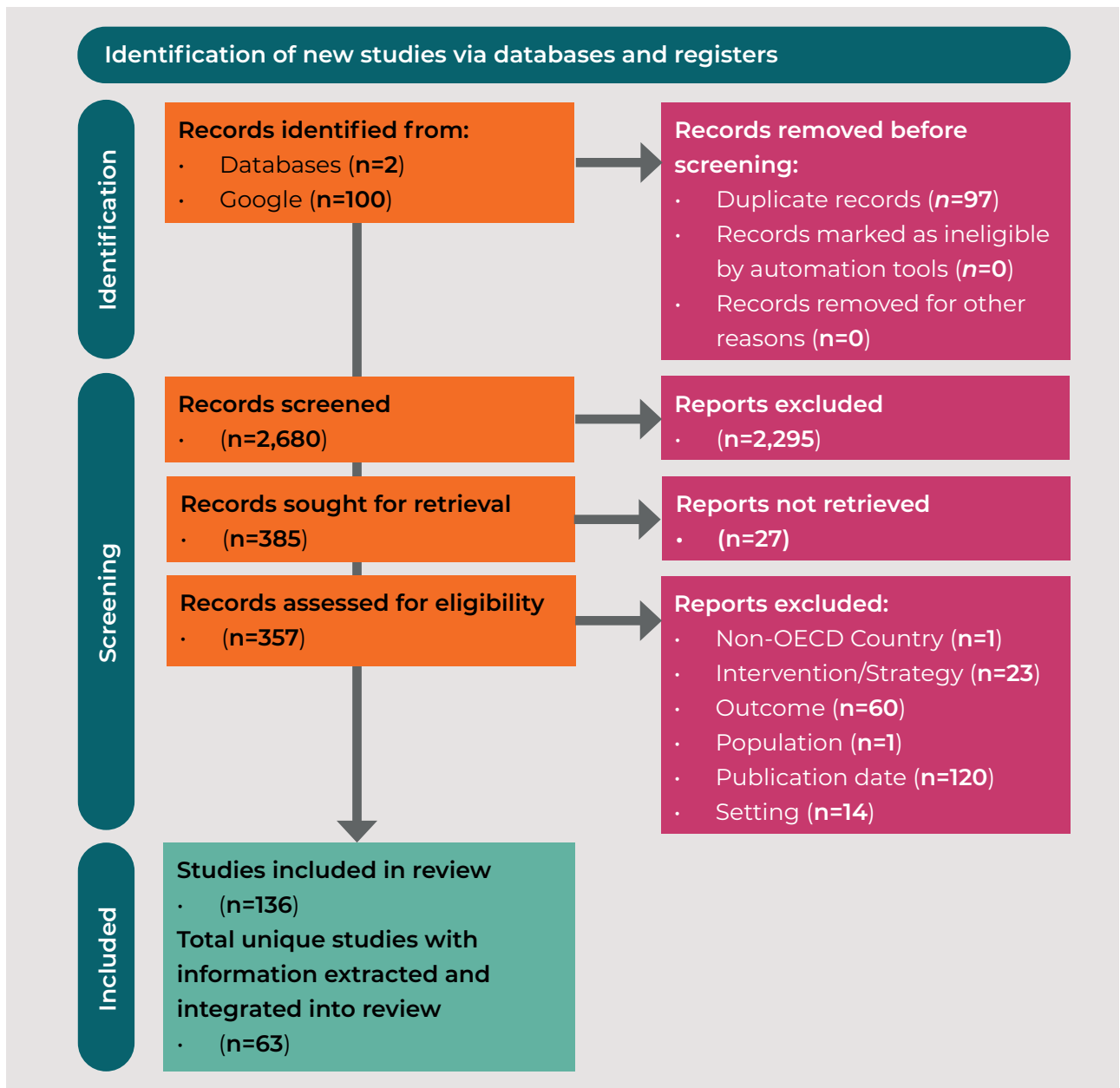
<sup>e</sup> In the interest of managing the review efficiently, only systematic reviews, primary studies, and non-systematic reviews with mental health sector specific strategies were extracted

## 2.3 Findings

### Database searches

One hundred and thirty-six studies met inclusion criteria. Of these, data from sixty-three<sup>f</sup> records were extracted included in the literature review (primary studies that were also included in systematic reviews were not extracted independently).












Figure 1 shows how records were screened for inclusion. Table 2, Table 3 and Table 4 show the Greener NHS principles of low carbon care addressed in each study. Table 5 provides study characteristics of the included records.



**Figure 1: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart showing the process for identification of records for inclusion in the literature review**

<sup>f</sup> One systematic review comprised two publications, one primary study comprised two publications, and another primary study comprised three publications – for these, extraction of study publications was combined. Six primary studies were included in identified systematic reviews and were not individually extracted.

**Table 2: Systematic reviews included in the literature review and the principles of low carbon care addressed in each study**










First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Brown (2012) <sup>1</sup>	The energy burden and environmental impact of health services.				
Drew (2022) <sup>2</sup>	HealthcareLCA: an open-access living database of health-care environmental impact assessments.				
Dupraz (2021) <sup>3</sup>	Role of health professionals regarding the impact of climate change on health – an exploratory review.				
Lange (2022) <sup>4</sup>	A transparency checklist for carbon footprint calculations applied within a systematic review of virtual care interventions.				
Lattanzio (2022) <sup>5</sup>	Waste management and the perspective of a green hospital – a systematic narrative review.				
Lokmic-Tomkins (2022) <sup>6</sup>	Assessing the carbon footprint of digital health interventions: a scoping review.				
Lopez-Medina (2019) <sup>7</sup>	Competencies on environmental health and pedagogical approaches in the nursing curriculum: a systematic review of the literature.				

First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
McGain (2014) <sup>8</sup>	Environmental sustainability in hospitals – a systematic review and research agenda.				
Naylor <sup>9</sup> (2012, 2013) <sup>9,10</sup>	Sustainable health and social care: connecting environmental and financial performance; Environmentally sustainable health and social care: scoping review				
Purohit (2021) <sup>11</sup>	Does telemedicine reduce the carbon footprint of healthcare?: a systematic review				
Schmidt (2022) <sup>12</sup>	Planetary health and hospitals' contribution – a scoping review.				
Sergeant (2022) <sup>13</sup>	Identifying opportunities for greenhouse gas reductions and cost savings in hospitals: a knowledge translation tree.				
Wyns (2022) <sup>14</sup>	A review of sustainable healthcare				









<sup>9</sup> Study comprised two publications; each title is listed.




























**Table 3: Primary studies included in the literature review and the principles of low carbon care addressed in each study**

First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Andrews (2013) <sup>15</sup>	Carbon footprint of patient journeys through primary care: a mixed methods approach.				
Aronsson <sup>h</sup> (2022, 2020) <sup>16,17</sup>	Sustainability in clinical practice: a cross-national comparative study of nursing students in England and Sweden; Student nurses exposed to sustainability education can challenge practice: a cohort study.				
Bajgoric (2014) <sup>18</sup>	Sustainability in clinical skills teaching.				
Bozoudis (2022) <sup>19</sup>	Action plan for the mitigation of greenhouse gas emissions in the hospital-based health care of the Hellenic Army.				
Brand (2021) <sup>20</sup>	“I teach it because it is the biggest threat to health”: integrating sustainable healthcare into health professions education.				
Charlesworth (2019) <sup>23</sup>	Healthcare in a carbon-constrained world.				
Charlesworth (2013) <sup>24</sup>	Environmentally sustainable health care: using an educational intervention to engage the public health medical workforce in Australia.				









<sup>h</sup> Study comprised two publications; each title is listed.

First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Charlesworth (2012) <sup>25</sup>	Developing an environmentally sustainable NHS: outcomes of implementing an educational intervention on sustainable health care with UK public health registrars.				
Chenven (2013) <sup>26</sup>	Front-line worker engagement: greening health care, improving worker and patient health, and building better jobs.				
Cooper (2022) <sup>27</sup>	Preclinical curricular changes to address sustainable healthcare education in psychiatry.				
Das (2020) <sup>28</sup>	The need for fully bio-based facemasks to counter coronavirus outbreaks: a perspective.				
Davies (2023) <sup>29</sup>	Consensus on prioritisation of actions for reducing the environmental impact of a large tertiary hospital: application of the nominal group technique.				
Dunne (2022) <sup>30</sup>	Effectiveness of an online module: climate-change and sustainability in clinical practice.				
Francis (2019) <sup>31</sup>	How healthcare can help to heal communities...and the planet				














First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Grose (2013) <sup>32</sup>	Managing a sustainable, low carbon supply chain in the English National Health Service: the views of senior managers				
Husain (2021) <sup>33</sup>	Realist evaluation of the implementation and impact of the NHS carbon reduction strategy in the UK.				
Kalogirou (2021) <sup>34</sup>	How the hospital context influences nurses' environmentally responsible practice: a focused ethnography.				
Kalogirou (2021) <sup>35</sup>	Integrating planetary health into healthcare: a document analysis.				
Keil (2022) <sup>36</sup>	Greenhouse gas emissions of an outpatient care service: a cost-based approach.				
Kwong (2020) <sup>37</sup>	"For a greener NHS" campaign: response to the NHS Net Zero Call for evidence				
Langstaff (2017) <sup>38</sup>	Managing environmental sustainability in a healthcare setting.				
Lee (2022) <sup>39</sup>	Developing green healthcare activities in the Total Quality Management Framework.				

First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Luo (2023) <sup>40</sup>	A qualitative study of what motivates and enables climate-engaged physicians in Canada to engage in health-care sustainability, advocacy, and action.				
Maughan (2016) <sup>41</sup>	Evaluating sustainability: a retrospective cohort analysis of the Oxfordshire therapeutic community.				
Maughan (2016) <sup>42</sup>	Primary-care-based social prescribing for mental health: an analysis of financial and environmental sustainability.				
Moore (2010) <sup>43</sup>	A resourceful step: NHS organisations are attempting to cut their carbon emissions by 10 per cent during 2010 as part a green campaign, says Alison Moore				
Moore (2009) <sup>44</sup>	Action on emissions.				
Nichols (2011) <sup>45</sup>	Climate change, health and sustainability: a brief survey of primary care trusts in the south west of England.				
Ordway (2020) <sup>46</sup>	Durable medical equipment reuse and recycling: uncovering hidden opportunities for reducing medical waste.				
Pencheon (2009) <sup>47</sup>	Health sector leadership in mitigating climate change: experience from the UK and NSW.				









First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Pollard (2013) <sup>48</sup>	Mainstreaming carbon management in healthcare systems: a bottom-up modeling approach.				
Reynolds <sup>i</sup> (2022) <sup>49-51</sup>	Driving markets toward a greener future: Kaiser Permanente.; Ambitious climate goals by the numbers: Providence Health and Services.; A move toward sustainability in health care.				
Richardson (2017) <sup>52</sup>	Developing awareness of sustainability in nursing and midwifery using a scenario-based approach: evidence from a pre and post educational intervention study.				
Schenk (2019) <sup>53</sup>	Environmental Stewardship in Nursing: introducing the "WE ACT-PLEASE" Framework.				
Spooner (2022) <sup>54</sup>	"Concrete ways we can make a difference": a multi-centre, multi-professional evaluation of sustainability in quality improvement education.				
Teherani (2017) <sup>55</sup>	Identification of core objectives for teaching sustainable healthcare education.				
Tennison (2021) <sup>56</sup>	Health care's response to climate change: a carbon footprint assessment of the NHS in England.				

<sup>i</sup> Study comprised three publications; each title is listed.




First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Trueland (2013) <sup>57</sup>	Green pioneers.				
Tun (2019) <sup>58</sup>	Fulfilling a new obligation: teaching and learning of sustainable healthcare in the medical education curriculum.				
Tun (2020) <sup>59</sup>	Faculty development and partnership with students to integrate sustainable healthcare into health professions education.				
University of Cambridge. (2015) <sup>60</sup>	NHS Energy Efficiency Fund: final report: summary				
Walpole (2017) <sup>61</sup>	Evaluation of a collaborative project to develop sustainable healthcare education in eight UK medical schools.				
Weimann (2022) <sup>62</sup>	On the road to net zero health care systems: governance for sustainable health care in the United Kingdom and Germany				
Wild (2023) <sup>63</sup>	End-user acceptability of personal protective equipment disinfection for potential reuse: a survey of health-care workers in Aotearoa New Zealand.				
Yellowlees (2010) <sup>64</sup>	Telemedicine can make healthcare greener				

First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Zils (2022) <sup>65</sup>	Accelerating the transition towards a net zero NHS: delivering a sustainable and resilient UK healthcare sector				

**Table 4: Non-systematic reviews (n=2) included in the literature review; principles of low carbon care addressed in each study**

First author (year)	Systematic review title	Principles of low carbon care			
		Low carbon treatment and care settings	Clinical leadership, systems and workforce	Right care, right place, right time	Keeping people healthy
Monsell (2021) <sup>66</sup>	What mental health professionals and organisations should do to address climate change				
Stancliffe (2020) <sup>67</sup>	Sustainable initiatives across non-surgical specialties A net zero NHS: how can health systems contribute to cutting carbon emissions				




**Table 5: Literature review study characteristics and the relevant principles of low carbon care**




Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Andrews et al. (2013)<sup>15</sup> Carbon footprint of patient journeys through primary care: a mixed methods approach.</b>				
Mixed methods	UK	General health	The aim if this study was to investigate the carbon footprint of patients travelling to and from a GP surgery in Yorkshire and possible ways of cutting down patient travel. The study found that having systems to prevent unnecessary travel to a surgery, such as email requests for prescriptions or electronic appointment systems, nominated chemists and messaging on screens in waiting rooms asking patients to consider their travel choices could help to reduce carbon.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul> 
<b>Aronsson et al. (2022, 2020)<sup>16,17</sup> Sustainability in clinical practice: a cross-national comparative study of nursing students in England and Sweden.; Student nurses exposed to sustainability education can challenge practice: a cohort study.</b>				
Qualitative	UK and Sweden	General health	This study of nursing students in England and Sweden showed that factors such as lack of confidence, feeling resistant to change and practical constraints impeded the students' abilities to make sustainable changes. A more supportive work culture is needed to be able to make changes.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Bajgoric et al. (2014)<sup>18</sup> Sustainability in clinical skills teaching.</b>				
Service evaluation	UK	General health	A project called 'Can we introduce sustainability to clinical skills teaching?', led by two third-year medical students, was carried out. New ways to make existing skills more sustainable were explored. Educational resources were also created by the students. The authors concluded that education is an achievable and inexpensive solution to help improve sustainability in the NHS.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 




Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Bozoudis et al. (2022)<sup>19</sup> Action plan for the mitigation of greenhouse gas emissions in the hospital-based health care of the Hellenic Army.</b>				
Case studies	Greece	General health	<p>This study carried out estimations of the carbon footprint using modelling.</p> <p>They recommended various solutions, including reducing energy consumption, digital solutions, reducing waste, transportation and supply chains. Key performance metrics should be used to monitor change.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings;</li> <li>● Right care, right place, right time</li> </ul>
<b>Brand et al. (2021)<sup>20</sup> “I teach it because it is the biggest threat to health”: integrating sustainable healthcare into health professions education.</b>				
Mixed methods	Australia	General health	<p>This study first assessed the knowledge of people who teach. Almost all respondents could report factual knowledge about the environment, but less than half reported knowing how to explain, inspire or teach students about sustainable health, and 81% had not taught it. Confidence to teach was also low.</p> <p>A number of measures, including inspired leadership, a sustainable health education curriculum and providing resources, are needed to teach and inspire the next generation.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>
<b>Brown et al. (2012)<sup>1</sup> The energy burden and environmental impact of health services.</b>				
Systematic review (n=38)	Multiple	General health	<p>The authors reviewed literature on the energy burden and environmental impact of health services, finding that carbon emissions associated with health services account for 3% of total emissions in England and 8% in the US. They also found that reducing health-related energy consumption and emissions can make a meaningful contribution to tackling climate change.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>











Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care	
<b>Buffoli et al. (2013)<sup>21</sup> Sustainable healthcare: how to assess and improve healthcare structures' sustainability.</b>					
Other: description of a sustainability evaluation tool	Italy	General health	This study outlined an evaluation method that can suggest effective strategic solutions for existing problems. The tool considers sustainability in a multidisciplinary way, and could be used to define a database of the current situation in terms of adopted technologies, management, resource consumption and user satisfaction.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>	
<b>Burch and McGain (2021)<sup>22</sup> two open-ended questions Victorian public healthcare Chief Executive Officers' views on renewable energy supply.</b>					
Mixed methods survey	Australia	General healthcare	<p>This study explored the results of self-administered questionnaire delivered to CEOs in Victoria about their views on climate change and barriers about switching to renewable energy.</p> <p>CEOs reported that climate change causing harm to health and the environment and that leaders in the sector had a responsibility to make change. However, CEOs described measures to counter the effects climate change, such as renewable energy, being aspirational or not a current priority, and cost being a barrier to implementation.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	
<b>Charlesworth and Jamieson (2019)<sup>23</sup> Healthcare in a carbon-constrained world.</b>					
Qualitative study	Australia (leaders from multiple countries)	General healthcare	A qualitative study with healthcare leaders' views on how to make future healthcare environmentally sustainable. Suggested measures included moving care outside of hospital, including telephone consultations, and keeping people healthy by maximising the physical, mental and social wellbeing of the community.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
Charlesworth et al. (2013) <sup>24</sup> Environmentally sustainable health care: using an educational intervention to engage the public health medical workforce in Australia.				
Intervention evaluation	UK and Australia	General healthcare	<p>A feasibility study of a modified 1-day workshop for healthcare professionals covering climate change, sustainability and health.</p> <p>After the workshop, participants awareness and advocacy scores improved. People found the session useful, and rated sustainability as important.</p> <p>The study shows that this intervention is workable, and can be delivered both face-to-face and online.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Charlesworth et al. (2012)<sup>25</sup> Developing an environmentally sustainable NHS: outcomes of implementing an educational intervention on sustainable health care with UK public health registrars.</b>				
Intervention evaluation	UK	General healthcare	<p>This study looked at an educational workshop with public health registrars. Self-rated knowledge and attitudes increased after the intervention. The study found that tailoring the messaging to the workshop attendees was important, as well as focusing on practical actions that can be implemented. Engagement of this group in sustainability activities in the workplace was found to be low, so interventions like this could encourage them to take action.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> <li>● Keeping people healthy</li> </ul>  

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Chenven and Copeland (2013)<sup>26</sup> Front-line worker engagement: greening health care, improving worker and patient health, and building better jobs.</b>				
Mixed methods	US	General healthcare	Healthcare career advancement programme that included training on why environmental sustainability is important to healthcare and community, reducing water use/energy/waste (and methods to do this), and communication skills. The intervention was recognised as a significant contributing factor to CO <sub>2</sub> reduction at one site. Recycling doubled at another site. Staff felt empowered to discuss environmental issues with other staff, including supervisors. Developing and implementing a training/ education programme could therefore empower staff to make changes.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Cooper and Li (2022)<sup>27</sup> Preclinical curricular changes to address sustainable healthcare education in psychiatry.</b>				
Letter to the editor (pilot intervention results)	US	Mental health	This study looked at integrating education content on the impact of climate change on mental health into the core psychiatry curriculum. Faculty staff were able to integrate the education content into the curriculum and reported it to as positive. In future, sustainable healthcare education could be integrated into more formal assessments, expanding learning objectives (e.g., to management of climate anxiety) or develop new learning activities such as creating educational videos.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Das et al. (2020)<sup>28</sup> The need for fully bio-based facemasks to counter coronavirus outbreaks: a perspective.</b>				
Case studies	Not reported	General healthcare	This study looked at a more sustainable way to make facemasks. Use of sustainable materials, such as wheat gluten biopolymer, as opposed to petroleum-based plastics can save carbon. It is therefore an option to manufacture healthcare products using sustainable materials.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul> 

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Davies et al. (2023)<sup>29</sup> Consensus on prioritisation of actions for reducing the environmental impact of a large tertiary hospital: application of the nominal group technique.</b>				
Qualitative study	Australia	General healthcare	<p>The study looked at an online activity to seek consensus on actions to prioritise. Nominal group technique was used to vote on actions to prioritise. Discussions were held about facilitators for the implementations of actions. The most commonly agreed action was related to hospital-wide education on environmental sustainability.</p> <p>The study showed that such activities are workable, and can help leadership to focus on priority actions to reduce carbon.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Drew et al. (2022)<sup>2</sup> HealthcareLCA: an open-access living database of health-care environmental impact assessments.</b>				
Systematic review (n=152)	Multiple	General health	<p>The review identified mixed findings. Most studies found a link between reusable products and a lower carbon footprint, while some showed that reusable equipment contributed either an equal or higher carbon footprint than single-use equipment.</p> <p>The authors highlighted the need to consider the carbon emissions associated with the whole life cycle of equipment, including production of single-use products and reprocessing of reusable equipment.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>  

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care	
<b>Dunne et al. (2022)<sup>30</sup> Effectiveness of an online module: climate-change and sustainability in clinical practice.</b>					
Intervention evaluation	UK	General healthcare	<p>Looked at an e-learning module that taught students to be able to describe the interactions of the environment and human health at different levels and develop knowledge in how to improve the environmental impact and sustainability of clinical pathways.</p> <p>Feedback from students was good, and results suggest that completing the module was associated with significant improvements in self-assessed knowledge of key concepts of climate health and sustainability.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>	
<b>Dupraz and Burnand (2021)<sup>3</sup> Role of health professionals regarding the impact of climate change on health – an exploratory review.</b>					
Systematic review (n=137)	Multiple	General health	<p>Overall, the studies included in the review highlighted the shortfalls of implementation of actions to address the impacts of climate change.</p> <p>The authors suggest that while healthcare professionals are aware that climate change is an issue, knowledge beyond this is relatively lacking. They suggest that more needs to be added to the educational curricula for trainee healthcare professionals.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>	
<b>Francis et al. (2019)<sup>31</sup> How healthcare can help to heal communities...and the planet.</b>					
Case studies	UK	General healthcare	<p>This study looked at examples of how healthcare organisations are working to becoming more sustainable. Included organisations were Gundersen Health System (working on clean energy products) and Region Stockholm (working to reduce emissions of active substances from the production of pharmaceuticals).</p> <p>They found that there are many actions healthcare organisations can take to reduce greenhouse gas emissions.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	












Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Grose and Richardson(2013)<sup>32</sup> Managing a sustainable, low carbon supply chain in the English National Health Service: the views of senior managers.</b>				
Qualitative study	UK	General healthcare	Qualitative study exploring senior managers' views on factors affecting supply chains, including barriers and facilitators. The study found that there was a great deal of confusion, that processes were unclear and evidence was patchy. A more co-ordinated approach is needed that recognises that a one size fits all approach does not work for everyone on the ground level. Tools need to be developed to measure environmental outcomes better.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>
<b>Husain and Sidhu (2021)<sup>33</sup> Realist evaluation of the implementation and impact of the NHS carbon reduction strategy in the UK.</b>				
Realist evaluation	UK	General healthcare	Interviews with stakeholders from an NHS trust to evaluate how organisational factors contribute to the NHS's carbon reduction strategy. Carbon reduction measures implementation was limited – implementing measures took time, financial resource and liaison with a large number of stakeholders.  Factors such as reputational fears or pressure, or where using such measures aligned with wider aims of the trust or staff being more carbon conscious and engaged made implementing measures more likely.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>



Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Kalogirou et al. (2021)<sup>34</sup> How the hospital context influences nurses' environmentally responsible practice: a focused ethnography.</b>				
Qualitative study	Canada	General healthcare	<p>A qualitative study about nurses' engagement with environmental practice or intention to practice. Several barriers to engaging in environmentally responsible practices were raised. These included patient care being prioritised over environmental care, with nurses being too busy to think about the environmental effects of their actions. Budgets set by those in decision-making positions at the top of the organisation's structure was also cited as a barrier. Participants reported challenges with voicing concerns or making changes to practices themselves given that decisions usually came from the top. Additionally, cost was often prioritised over environmental effects. Operational efficiency, including standardisation of resources such as single-use plastic items across all departments was discussed alongside centralisation (i.e., decisions being made by people in certain roles and departments).</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>
<b>Kalogirou (2021)<sup>35</sup> Integrating planetary health into healthcare: a document analysis.</b>				
Other: document analysis	Canada	General healthcare	<p>A document analysis of workplace policies of a healthcare organisation in Canada was carried out. Climate or environmental impact were rarely considered in the policies on procurement, resource use/conservation and waste management.</p> <p>Climate considerations should be integrated into policy.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>





Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Keil and Grün (2022)<sup>36</sup> Greenhouse gas emissions of an outpatient care service: a cost-based approach.</b>				
Quantitative cost analysis	Germany	General healthcare	The study calculated carbon emissions and finances across a private outpatient service in Germany, and showed the largest contributors to these emissions. The study explored methods to reduce these emissions, including switching to electric vehicles. The study shows that measures can be taken in healthcare organisations to reduce carbon emissions.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul> 
<b>Kwong et al. (2020)<sup>37</sup> “For a greener NHS” campaign: response to the NHS Net Zero Call for evidence.</b>				
Case studies	UK	General healthcare	Case studies of projects that saved carbon. These included North Bristol NHS Trust sourcing more locally produced food; University Hospitals of North Midlands NHS Trust crowdfunding for solar panels (and investing the financial savings into a local charity); and Epsom and St Helier University Hospitals NHS Trust’s work with local councils to improve public transport links to the hospital for staff and local community. Trusts can take a range of actions that protect the environment.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> <li>● Right care, right place, right time</li> </ul>  
<b>Lange et al. (2022)<sup>4</sup> to compare results, and to assess the transparency (reporting quality A transparency checklist for carbon footprint calculations applied within a systematic review of virtual care interventions.</b>				
Systematic review (n=23)	Germany	General health	Studies showed that the carbon footprint of digital healthcare needs to be better assessed. The authors suggested using a ‘transparency catalogue’ for reporting carbon footprint calculations. The study showed that telemedicine may be associated with carbon savings; however, there was a lack of consistent reporting of information about carbon emissions across studies. For example, studies did not always report factors such as carbon emissions associated with telemedicine devices and technical infrastructure required to use them.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Right care right place right time</li> </ul>  

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Langstaff and Brzozowski (2017)<sup>38</sup> Managing environmental sustainability in a healthcare setting.</b>				
Case studies	Canada	General healthcare	Case study about the work being done in St Joseph's Healthcare, Hamilton. This included building redevelopment such planting trees, installing solar panels, optimised energy efficiency, reduced water consumption, bike parking and showers to reduce active transportation and limiting waste. It also spoke of having a full-time sustainability and waste management programme co-ordinator. They used a triple bottom line approach (social, environmental and economic effects) to measure the impact of their measures.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Lattanzio et al. (2022)<sup>5</sup> Waste management and the perspective of a green hospital – a systematic narrative review.</b>				
Systematic review (n=19)	Multiple	General health	<p>This study reviewed literature on the management of healthcare waste. Common strategies to reduce waste production included the '5 Rs rule' (reduce, reuse, recycle, rethink, research) and education of healthcare professionals to raise awareness and knowledge.</p> <p>Increasing awareness, including with policymakers and stakeholders, was considered of vital importance given how much of healthcare delivery is associated with the production of waste.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>  
<b>Lee and Lee (2022)<sup>39</sup> Developing green healthcare activities in the Total Quality Management Framework.</b>				
Service evaluation	South Korea	General healthcare	Explored the effectiveness of green healthcare activities in hospitals based on the total quality management framework. Top-down leadership was found to have positive effects on participation of employees in green healthcare activities. The authors found that education and training for employees had a significant impact on continuous improvement activities. They also found that while employees are willing to engage in green healthcare activities, they remain sceptical about the impact of their individual efforts on the environment.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 






Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Lokmic-Tomkins et al. (2022)<sup>6</sup> Assessing the carbon footprint of digital health interventions: a scoping review.</b>				
Systematic review (n=13)	Multiple	General health	<p>A review of the literature showed that carbon-related travel emissions were saved when telehealth was used.</p> <p>The authors noted that more complex digital or electronic health interventions were more environmentally damaging, and thus associated carbon emissions may need to be mitigated.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Right care right place right time</li> </ul>
<b>Lopez-Medina et al. (2019)<sup>7</sup> Competencies on environmental health and pedagogical approaches in the nursing curriculum: a systematic review of the literature.</b>				
Systematic review (n=32)	Multiple	General health	<p>A review of the literature about the areas of environmental health that are important to teach in nursing education, and the methods to support this teaching. The review identified the following areas to include in the curricula: use of resources, food, health promotion, globalism, disease management and the environmental impact of delivering healthcare. The review also identified a cross-disciplinary approach to teaching, using cases studies or scenarios.</p> <p>The authors concluded that educational institutions need to commit to teaching environmental health, upskill tutors to deliver learning, and evaluate the programmes that they are delivering.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>










Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Luo et al. (2023)<sup>40</sup> A qualitative study of what motivates and enables climate-engaged physicians in Canada to engage in health-care sustainability, advocacy, and action.</b>				
Qualitative study	Canada	General healthcare	<p>An exploration of motivators and enablers behind healthcare professionals taking climate actions. Motivations included being concerned about the implications of climate change, frustration with health care waste, and recognition of the influence that they can have in their role.</p> <p>The study found that to take action, healthcare professionals need supportive top-down leadership, specific leadership roles focused on sustainability, diverse expertise and provision of education.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Maughan et al. (2016)<sup>41</sup> Evaluating sustainability: a retrospective cohort analysis of the Oxfordshire therapeutic community.</b>				
Retrospective service evaluation	UK	Mental health	<p>The study evaluated how the use of therapeutic communities<sup>j</sup> contributes to reductions in A&amp;E attendance and crisis appointments for people with a diagnosis of personality disorder compared with a control group. The study found carbon savings associated with use of therapeutic communities due to a reduction in the use of other services. However, it took 3 years for the carbon and financial costs to be offset.</p> <p>Therefore, therapeutic communities can be beneficial and reduce carbon; however, as there is carbon associated with the therapeutic communities themselves, evaluations need to be carried out over a longer time period to see these effects.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul> 





<sup>j</sup> A form of psychosocial treatment, based on empowerment, responsibility, shared decision-making and communal activities.

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care	
<b>Maughan et al. (2016)<sup>42</sup> Primary-care-based social prescribing for mental health: an analysis of financial and environmental sustainability.</b>					
Observational service evaluation	UK	Mental health	<p>The study looked at whether social prescribing leads to differences in financial and environmental savings. The authors found a small, non-significant reduction in healthcare use in the social prescribing group.</p> <p>Although social prescribing is a low carbon approach compared with traditional therapy or antidepressants, more research is needed to show the carbon and financial effects of this intervention in larger groups of patients.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	
<b>McGain and Naylor (2014)<sup>8</sup> Environmental sustainability in hospitals – a systematic review and research agenda.</b>					
Systematic review (n=76)	Multiple	General health	<p>This study reviewed multiple areas of high carbon activity, including using reusable as opposed to single-use products, reducing waste, providing heating, ventilation and air conditioning, transport and digital health interventions. The authors concluded that there are still a lot of evidence gaps and that more research, especially of an interdisciplinary nature, is needed to guide decision-making.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>	 
<b>Monzell et al. (2021)<sup>66</sup> What mental health professionals and organisations should do to address climate change.</b>					
Non-systematic review	Does not specify	Mental health	<p>This review highlighted a range of measures towards integrating sustainable practice into mental health care. Measures include taking a preventive approach to mental illness, providing low carbon care, controlling waste and empowering patients to manage their mental health. The authors also highlighted the importance of measuring, and improving the measurement of, low carbon care.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>	 

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Moore (2010)<sup>43</sup> A resourceful step: NHS organisations are attempting to cut their carbon emissions by 10 per cent during 2010 as part a green campaign, says Alison Moore.</b>				
Case studies	UK	General healthcare	<p>This study looked at ways that NHS organisations could reduce their carbon emissions by 10% during the 2010 green campaign. Suggestions were focused on energy use, travel, procurement and IT systems.</p> <p>The study assessed steps taken by trusts towards the 10% reduction target. See <i>also Moore (2009) below</i>.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings </li> <li>● Clinical leadership, systems and workforce </li> </ul>
<b>Moore (2009)<sup>44</sup> Action on emissions.</b>				
Case studies	UK	General healthcare	<p>This study introduces the 10:10 campaign, which encouraged NHS organisations to cut their carbon emissions by 10% in 2010.</p> <p>The author focused on key areas including staff travel, waste, energy and procurement, and suggested practical steps that can be taken to meet the 10% carbon reduction target such as Cycle to Work schemes.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings </li> <li>● Clinical leadership, systems and workforce </li> <li>● Right care, right place, right time </li> </ul>






Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Naylor and Appleby (2012, 2013)<sup>8,9</sup> Sustainable health and social care: connecting environmental and financial performance; Environmentally sustainable health and social care: scoping review.</b>				
Systematic review (n=78)	UK	General health	<p>This report, based on a systematic review of the literature, looks at alternative lower energy measures that can be implemented in health and social care settings, such as natural heating, ventilation and installing combined heat and power systems. The authors note, however, that these require significant investment.</p> <p>Other interventions include more effective segregation of waste streams and the use of telemedicine. The authors discuss the benefits of keeping care outside of hospital, but recognise the carbon associated with doing that such as use of carbon-intensive equipment and staff travel.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Keeping people healthy</li> </ul>
<b>Nichols and Richardson (2011)<sup>45</sup> Climate change, health and sustainability: a brief survey of primary care trusts in the south west of England.</b>				
Quantitative survey	UK	General healthcare	<p>This study presents a survey of primary care trusts to understand their current knowledge of action on climate change and to ask them to provide examples of work being carried out.</p> <p>Examples of action being taken included sourcing local food produce and renewable energy, implementation of a Cycle to Work scheme, and plans for waste reduction. Some respondents spoke about a need for commitment at senior level, to help with adapting and implementing policies and carbon reduction strategies.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>






Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care	
<b>Ordway et al. (2020)<sup>46</sup> Durable medical equipment reuse and recycling: uncovering hidden opportunities for reducing medical waste.</b>					
Qualitative study	US	General healthcare (durable medical equipment)	<p>This study looked at hospitals' practices for managing durable medical waste (DME). The authors found that some hospitals had policies and were taking some action towards reducing DME waste, for example recycling some components. The authors found that there was a lack of information for patients about their options to reduce DME waste.</p> <p>The study showed that there are options to reduce DME waste, and that these need to be rolled out more widely, coupled with appropriate education for patients.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	
<b>Pencheon et al. (2009)<sup>47</sup> Health sector leadership in mitigating climate change: experience from the UK and NSW.</b>					
Case studies	UK and Australia	General healthcare	<p>This study explored changes that NHS systems had made in line with a carbon reduction strategy. The authors explored changes made around energy transport and the role of staff, suggesting that such changes could be implemented in Australian healthcare systems.</p> <p>The authors concluded that more could be done in Australia to mitigate climate change, such as working in a whole healthcare system approach.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>	 
<b>Pollard et al. (2013)<sup>48</sup> Mainstreaming carbon management in healthcare systems: a bottom-up modelling approach.</b>					
Other: scenario outcome modelling study	UK	General healthcare	<p>This study used modelling to calculate the carbon emissions generated by a healthcare provider through patient pathways.</p> <p>The study showed that it is possible to simulate the carbon footprint of secondary healthcare, and include a large number of carbon-emitting activities in the model.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>	



Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Purohit et al. (2021)<sup>11</sup> Does telemedicine reduce the carbon footprint of healthcare?: a systematic review.</b>				
Systematic review (n=14)	Multiple	General health	This systematic review of the literature showed that carbon savings associated with telehealth are usually indirect (due to reduced travel) and are context-dependent (carbon savings are higher in larger areas where driving long distances to appointments is more common). Video conferencing was found to be more carbon intensive than telephone calls.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Right care, right place, right time</li> </ul>
<b>Reynolds (2022)<sup>49-51</sup> Driving markets toward a greener future: Kaiser Permanente.; Ambitious climate goals by the numbers: Providence Health and Services.; A move toward sustainability in health care.</b>				
Case studies	US	General healthcare	<p>This study explored a series of case studies looking at what healthcare organisations are doing to reduce their carbon footprint.</p> <p>Measures include purchasing sustainably, energy consumption, for example buying and creating their own renewable energy/installing light-emitting diode (LED) lights, cutting back on business travel flights and, in the longer term, focusing on educational strategies.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>
<b>Richardson et al. (2017)<sup>52</sup> Developing awareness of sustainability in nursing and midwifery using a scenario-based approach: evidence from a pre and post educational intervention study.</b>				
Observational study: pre-post intervention evaluation	UK	General healthcare	<p>This observational study looked at a sustainability focused, scenario-based educational intervention for undergraduate nursing and midwifery students. Students found that the scenarios were realistic and that the sessions were delivered well in a group format.</p> <p>Overall, the study showed that teaching about sustainability can change attitudes and improve knowledge, as well as how students engage with sustainability principles at home.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>



Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Schenk (2019)<sup>53</sup> Environmental stewardship in nursing: introducing the “WE-ACT-PLEASE” framework.</b>				
Other: framework for action	US	General healthcare	<p>This paper outlines the ‘WE-ACT-PLEASE’<sup>k</sup> framework, showing how it can be applied to a range of roles in different settings, and used to evaluate environmental strategies.</p> <p>The author stated that such a framework can help to provide structure and guidance, and thus improve the sustainability of healthcare organisations.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Schmidt and Bohnet-Joschko (2022)<sup>12</sup> Planetary health and hospitals’ contribution: a scoping review.</b>				
Systematic scoping review (n=21)	Multiple	General health	<p>This scoping review found that collecting data is essential to evaluate and reduce the carbon footprint of activities. Standardising measures and performance indicators are important in this endeavour.</p> <p>The authors highlighted a range of low carbon approaches, such as telemedicine to reduce travel, reusables, and waste management systems</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>  
<b>Sergeant et al. (2022)<sup>13</sup> Identifying opportunities for greenhouse gas reductions and cost savings in hospitals: a knowledge translation tree.</b>				
Systematic review (n=not reported [NR])	US	General health	<p>This review found that sustainability should be a factor when considering procurement contracts.</p> <p>The authors highlighted several evidence-based carbon reduction approaches, including providing a plant rich diet for patients, upgrading to energy-efficient boilers, fitting LED lights, switching from single-use to reusable products, investing in bike stations and electric vehicle chargers to reduce gas car mileage.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>  

<sup>k</sup> ‘Waste, Energy/water – Agriculture/food, Chemicals, Transportation – Professional Obligation, Leadership, Education, Accountability, Science, and Engagement’.

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Spooner et al. (2022)<sup>54</sup> “Concrete ways we can make a difference”: a multi-centre, multi-professional evaluation of sustainability in quality improvement education.</b>				
Mixed methods intervention evaluation	UK	General healthcare	<p>This study evaluated an educational toolkit that looked at how elements of sustainable healthcare can be linked to quality improvement methodologies. Survey data showed that the educational toolkit supported learners to understand sustainable healthcare, and increased their motivation to make positive changes.</p> <p>To build on this, the authors concluded that workplaces need to build in adequate opportunities to work on sustainability projects.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Stancliffe (2020)<sup>67</sup> Sustainable initiatives across non-surgical specialties A net zero NHS: how can health systems contribute to cutting carbon emissions.</b>				
Non-systematic review	UK	Mental health and general health	<p>This report focused on sustainable initiatives within a range of specialties including psychiatry.</p> <p>Initiatives included having specific staff roles related to sustainability (e.g. having a research fellow in sustainability, sustainability focused online networks, and sustainability scholarships), providing low carbon care (e.g. green walking) and using quality improvement methodologies when integrating sustainability frameworks and education.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>  

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Teherani (2017)<sup>55</sup> Identification of core objectives for teaching sustainable healthcare education.</b>				
Mixed methods intervention evaluation	UK	General healthcare	<p>This evaluation looked at which sustainable healthcare education objectives should be implemented into healthcare education, and when they should be taught. Sustainable healthcare education experts rated objectives found some that should be prioritised, and advised which should be taught in preclinical versus clinical years of education.</p> <p>The author concluded that teaching sustainable health objectives will ensure that students have an awareness of the impact of climate change on health, and can treat patients who have ill health due to environmental effects accordingly.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>
<b>Tennison et al. (2021)<sup>56</sup> Health care's response to climate change: a carbon footprint assessment of the NHS in England.</b>				
Mixed methods	England	General healthcare (including mental health use of carbon breakdown)	<p>This study used top-down modelling, supported by bottom-up data, to break down the NHS's carbon emissions. Of the carbon footprint, most carbon came from supply chains (62%), with almost a quarter (24%) coming from direct delivery of care. Staff commuting, patient/visitor travel and private health services also contributed to the carbon footprint. Measures such as decarbonising the energy system have helped.</p> <p>This study showed that modelling is a viable way to represent the NHS's carbon emissions.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>







Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Trueland (2013)<sup>57</sup> Green pioneers.</b>				
Case study	England	General healthcare	<p>This case study looked at the green initiatives that Nottinghamshire Healthcare NHS Trust was undertaking to reduce its carbon footprint. This included making changes to energy consumption and travel, planting trees, looking at enhancing green spaces for patients, and encouraging staff to get involved in sustainable development activities and consultations.</p> <p>The study shows that it is possible to take a range of actions to reduce carbon emissions.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Tun et al. (2019)<sup>58</sup> Fulfilling a new obligation: teaching and learning of sustainable healthcare in the medical education curriculum.</b>				
Mixed methods	UK	General healthcare	<p>In this study looking at implementing sustainable healthcare into the medical curriculum, medical educators who teach sustainable healthcare were interviewed, meetings with stakeholders were held and documents were reviewed. The authors found that although students want sustainability to be taught, there were multiple barriers to implementation including poor staff knowledge, lack of space in the curriculum, not knowing where it fits and the need for more resources.</p> <p>The authors concluded that more should be done to ensure that sustainable health education is implemented into the curriculum in an appropriate manner.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 



Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Tun (2020)<sup>59</sup> Faculty development and partnership with students to integrate sustainable healthcare into health professions education.</b>				
Other: review and case studies	US and UK	General healthcare	<p>This study looked at actions that can be taken to contribute to sustainable health education in faculties. Actions included those that students could co-create with faculty staff. The case studies indicated significant untapped interest among educators in learning about sustainable healthcare then teaching it, although some suggested that recruiting and engaging clinicians to be educators can be challenging.</p> <p>The authors found that training can help other institutions to progress with educational interventions through networks and sharing. They also found that educational interventions can help healthcare professionals become more sustainable in their practice, which demonstrates the importance of integrating them into health education.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul>
<b>University of Cambridge (2015)<sup>60</sup> NHS Energy Efficiency Fund: final report: summary.</b>				
Case studies	UK	General healthcare	<p>This report presented a series of funded energy efficiency projects, and their preliminary outcomes. On saving energy, for example, it described Southend University Hospital's projects aiming to reduce water consumption, and Cornwall Partnership's installation of solar panels. The report noted that having buy-in from staff, as well as staff using the interventions appropriately, was important.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Right care, right place, right time</li> </ul>



Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Walpole and Mortimer (2017)<sup>61</sup> Evaluation of a collaborative project to develop sustainable healthcare education in eight UK medical schools.</b>				
Qualitative participatory action research	UK	General healthcare	This study looked at strategies, facilitators and barriers to implementing sustainable healthcare education. Medical school teams participated in a collaborative project over 9 months with the aim of delivering new teaching at their medical schools. Seven introduced new teaching, using a variety of methods, which was rated highly by students. The authors concluded that collaborative working can support educators to develop and deliver teaching on sustainability. It can also help them build their confidence in the area of sustainability.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 
<b>Weimann and Weimann (2022)<sup>62</sup> On the Road to Net Zero Health Care Systems: governance for Sustainable Health Care in the United Kingdom and Germany.</b>				
Mixed methods	UK and Germany	General healthcare	Qualitative interviews with 11 experts from the UK and Germany were carried out in this study. Secondary data were also analysed, and an online survey was administered. The importance of sustainability in the UK compared with Germany was explored. Regional differences in sustainability in healthcare were found. For example, experts expressed that the UK was further ahead than Germany in terms of sustainability, despite it being rated as equally important in both countries. In Germany, sustainable healthcare is led through a bottom-up governance approach; however the study acknowledges that top-down input is also needed and suggests that laws need to be passed to include sustainability in the key principles of healthcare.	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> </ul> 

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care	
<b>Wild et al. (2023)<sup>63</sup> End-user acceptability of personal protective equipment disinfection for potential reuse: a survey of health-care workers in Aotearoa New Zealand.</b>					
Survey	New Zealand	General healthcare	<p>This survey of the reuse of personal protective equipment (PPE) during the first wave of the COVID-19 pandemic was carried out with 1,411 health care workers in New Zealand. Reuse of PPE was common and overall found to be acceptable; however, this depended on the type of PPE and context (e.g. if there were supply shortages). Respondents recognised that reuse was important, e.g. for reducing waste, but this had to be balanced against risk and infection control.</p> <p>This suggests that reuse of some PPE is acceptable, however more research is needed to understand the associated risks.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	
<b>Wyns (2022)<sup>14</sup> A review of sustainable healthcare.</b>					
Systematic review (n=37)	Australia	General health	<p>This systematic review of sustainable healthcare found that multiple strategies can be used to reduce carbon. Strategies included: purchasing more sustainable products and materials, switching to renewable energy, using zero emission vehicles and active modes of transport, reducing waste, considering sustainability when making financial decisions and using telehealth.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>	

Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Yellowlees et al. (2010)<sup>64</sup> Telemedicine can make healthcare greener.</b>				
Service description	US	General healthcare	This paper described how telemedicine and health information technology can contribute to reduction of the carbon footprint. The authors highlighted carbon exchange systems (selling 'carbon credits' to organisations with higher carbon emissions). The authors also explored the US health industry's progress in reducing carbon footprint, while acknowledging that more needs to be made, including sustainable design, energy conservation, and management, recycling and electronic health practices.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Right care, right place, right time</li> </ul>
<b>Zils et al. (2022)<sup>65</sup> Accelerating the transition towards a net zero NHS: delivering a sustainable and resilient UK healthcare sector.</b>				
Case studies	UK	General healthcare	This report presented a series of case studies, including on lighting, zero waste PPE and telehealth. It also outlined carbon associated with different aspects of healthcare and barriers to implementing sustainable healthcare. The report described a range of actions that can be taken to work towards net zero and provided guidance on how to implement different green interventions.	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Clinical leadership, systems and workforce</li> </ul>



## Recommended publications and reports

Members of the Expert Reference Group (ERG, comprising professional and lived experience advisers) were encouraged to recommend resources and literature to be considered in the development of this report and recommendations.

Recommended reports were cross-checked with those identified in the database searches. Records that were not identified by the database searches but met inclusion criteria were reviewed and used in development of the report and recommendations.

[Table 6](#) summarises the study characteristics of these records.





**Table 6: ERG-recommended literature (n=4) study characteristics and relevant principles of low carbon care**




Study design	Country	General health/ mental health	Summary	Relevant principles of low carbon care
<b>Maughan et al. (2016)<sup>68</sup> Cost and carbon burden of long-acting injections: a sustainable evaluation.</b>				
Quantitative data analysis and prescription data analysis  Participants: n=28	UK	Mental health	<p>Authors explored the economic and carbon cost projections of flupentixol decanoate (antipsychotic medication) injections. They reported that there are considerable savings to be made by improvements to psychiatrists' prescribing practices.</p> <p>Optimising medication doses and adapting the time between doses in line with recommended evidence for effectiveness, has the potential to result in a reduction in spending up to £300,000. Optimisation could also save 170,000 kg CO<sub>2</sub>e.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> </ul>
<b>Vergunst et al. (2020)<sup>69</sup> Applying the triple bottom line of sustainability to healthcare research – a feasibility study.</b>				
Secondary analysis of randomised controlled trial  Participants: n=333	UK	Mental health	<p>A triple bottom line approach (exploring environmental, social and economic impacts of interventions) was applied to evaluate a randomised controlled trial looking at community treatment orders (CTOs).</p> <p>Authors estimated that one bed-day in a psychiatric hospital costs about £373 and results in 97 kg CO<sub>2</sub>e emissions. In contrast, one community appointment as estimated to cost £121 and result in 59 kg CO<sub>2</sub>e emissions. Researchers found no difference in financial, environmental or social costs of care between the trial group (people with severe mental illness receiving community treatment orders) and the control group (people with serious mental illness [SMI] not receiving a CTO).</p> <p>They concluded that the triple bottom line framework can be applied retrospectively when evaluating health interventions, and that estimates of CO<sub>2</sub> for healthcare activities can be calculated from publicly available data.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Keeping people healthy</li> </ul>



### Maughan and Pearce (2015)<sup>70</sup> Reducing non-attendance rates in community psychiatry: a case for sustainable development?

Survey (including care modelling analysis)	UK	Mental health	<p>The study discusses the environmental cost and burden of DNAs ('did not attend' appointment). The environmental costs associated with healthcare use following a DNA was reported to be 534 kg CO<sub>2</sub>e per patient. The total environmental cost per NHS Trust for DNAs for initial appointments was reported as 293 tonnes CO<sub>2</sub>e per year.</p> <p>Authors concluded that using multiple different communication methods (which do not necessarily need to be associated with large amounts of carbon) can lead to lower DNA rates in community psychiatric teams.</p>	<ul style="list-style-type: none"> <li>● Low carbon treatment and care settings</li> <li>● Keeping people healthy</li> </ul>	 
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### Hunt et al. (2022)<sup>71</sup> Bringing nature into CAMHS inpatient services: reflections for the implementation and integration of training into practice.

Qualitative study	UK	Mental health	<p>Authors describe the implementation of the NatureWell training programme for healthcare staff working in children and young people's mental health services. They found that the training gave staff the confidence to be able to integrate nature-based solutions into practice. Doing so had many benefits for patients and staff, including enhanced therapeutic and peer-to-peer relationships, better emotional regulation, distress management and also helped patients to take an active role in their recovery.</p>	<ul style="list-style-type: none"> <li>● Clinical leadership, systems and workforce</li> <li>● Right care right place right time</li> <li>● Low carbon treatment and care settings</li> </ul>	  
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## 2.4 Limitations

The rapid literature review was subject to several important limitations.

First, the review criteria were particularly broad. While this was intended to provide as thorough a review of the literature that rapid measures can deliver, the breadth of inclusion criteria meant that only two bibliographic databases could be searched. A limited search of Google was included to supplement the database searches.

While search terms were intended to be broad it is likely that some were too specific, leading to some relevant papers not being identified. For this reason, recommended papers were sought from the ERG and cross-checked with publications identified by the database searches. This led to the inclusion of several relevant publications, but there is a risk that other publications were not included.

Terms for prevention were not included in the scope of the review, to ensure that the review was manageable.

However, given the importance of prevention in the net zero agenda, this is a significant limitation of the review. 'Keeping people healthy' is one of the four principles of low carbon care, so the decision to exclude prevention terms from the searches meant that studies on the carbon impact of preventive healthcare were not able to be explored adequately in this work. Future research dedicated to exploring the potential for preventive care to reduce the carbon impact of NHS services is highly recommended. This work should focus

on identifying the potential carbon savings of preventive care and should be accompanied by an economic evaluation.

Searches were limited to include publications from OECD countries. While this approach intends to ensure that research findings can be more easily generalised to health care settings and services in the UK, it limits findings to those from a handful of countries, potentially missing important interventions and approaches utilised by other non-OECD countries.

There was a lack of identified literature on mental health (versus physical health) care. There was also a lack of evidence from children and young people's services, which are particularly important to the prevention agenda and healthcare provision across the lifespan. Studies on patient empowerment, work with communities and workforce and resource issues were also limited. This may be due to a paucity in the evidence base or due to limitations of the database searches.

Finally, several studies lacked evaluation or measurement of intervention or approach outcomes. In the studies that reported outcomes, measures of carbon data were inconsistently reported, which made it challenging to draw comparisons between papers. Few studies included measurement of the impact of net zero and sustainability interventions or approaches on patients receiving care.

# 3. Call for evidence



## 3.1 Overview

A call for evidence was placed to gather evidence from NHS Trusts. The call asked for examples of interventions or approaches initiated with the aim of delivering greener, more sustainable and net zero mental health care.

Evidence was requested (including case studies, quality improvement projects or findings from academic research) from services to explore measures in place across the mental health care pathway. Examples of measures requested included:

- Opportunities for public and preventive mental health care
- Decarbonising high carbon and resource-intensive mental health care pathways
- Efforts to reduce the carbon footprint of mental health services and care pathways
- Alternative approaches to traditional mental health care provision (for example, use of technology, digital and telehealth)
- Methods to improve efficiency between and across health care services and staff involved in them (such as adaptations to pathways and routes into care, joined-up working, and so on)
- Training and education for the staff around sustainable practices

- Patient engagement activities on the topic of mental health care provision and sustainability, or any patient-led initiatives aimed at making mental health care provision more environmentally sustainable.

Evaluation of interventions or approaches was not essential, but services were encouraged to provide evidence of outcomes if available. A copy of the call for evidence is provided below.

### Assessing and synthesising submissions to the call for evidence

Submissions were made using Microsoft Forms (see [Copy of the call for evidence submission form](#)) and assessed for relevance according to the criteria above.

Following assessment, data from included submissions (and supporting documentation, if provided) was extracted and organised into a matrix for summary and synthesis.

The following information was extracted from included evidence submissions:

- Whether the submission included a sustainability intervention or a net zero effort
- Whether there was a focus on public and preventive health care

- The area of focus of the intervention or approach
- Details of the intervention or approach and how they map onto the four principles of low carbon care, developed by Greener NHS
- Outcome measures collected (if available)
- Information on carbon footprinting (if available)
- Challenges and facilitators that were identified.

A summary of the inclusion criteria for the call for evidence and literature review is provided in [Table 7](#).

**Table 7: Summary of inclusion criteria for the call for evidence and literature review**

Issue	Call for evidence	Literature review
<b>Resource/doc type</b>	Case studies from Trusts	Published articles and grey lit
<b>Country</b>	UK only	OECD
<b>Healthcare setting/service</b>	Mental health care only	Any health care (but must be generalisable)
<b>Private/public service or setting</b>	NHS only	Any private or public
<b>Sustainability interventions versus net zero efforts</b>	Both sustainability and net zero	Both sustainability and net zero
<b>Prevention interventions</b>	Included	Not included
<b>Measured or evaluated outcomes of intervention</b>	Not required but encouraged	Not required



## 3.2 Method

Submissions to the call for evidence were collected via Microsoft Forms. The submission form included information on the aims of the call for evidence exercise, followed by a series of questions and free text response boxes where NHS Trust representatives could input information. Responders were asked to provide information about:

- The service setting
- The intervention or approach
- Measurement of the intervention (if available)
- Findings and outcomes (if available)
- Challenges and facilitators associated with implementation of the approach or intervention
- The carbon footprint of the service and intervention or approach (if available).

See sections below for a [copy of information shared in the call for evidence](#), and a [copy of the call for evidence submission form](#).

## Copy of information shared in the call for evidence

We would really like to hear from you if you have evidence (including case studies, quality improvement projects or findings from academic research) from your service, trust or board that demonstrates the implementation of measures to deliver greener, more sustainable or net zero mental health care. We are looking for evidence of measures **across the mental health care pathway**, including primary, secondary and community care.

Examples of such measures include:

- Opportunities for public and preventative mental health care (this can include prevention, early diagnosis, early detection and interventions to prevent deterioration or progression and use of acute services)
- Decarbonising high carbon and resource-intensive mental health care pathways (e.g., psychiatric intensive care units and chronic-term mental health care)
- Efforts to reduce the carbon footprint of mental health services and care pathways, such as:
  - Low carbon care, treatments and settings (e.g., green social prescribing, low carbon community care models)
  - Changes to medication and prescription practices
  - Reducing ward energy consumption (e.g., electricity efficiency efforts, improving insulation, solar panelling)
- De-carbonising supply chains (e.g., locally sourcing food to reduce shipping and air miles, reducing the use of single-use products,)
- Transport initiatives (e.g., staff car-pool initiatives, electric mental health response vehicles)
- Recycling and waste management (including reducing food waste on wards)
- Alternative approaches to traditional mental health care provision (e.g., use of technology, digital and telehealth)
- Methods to improve efficiency between and across health care services and staff involved in them (such as adaptations to pathways and routes into care, joined-up working, etc.)
- Training and education for the staff around sustainable practices
- Patient engagement activities on the topic of mental health care provision and sustainability, or any patient-led initiatives aimed at making mental health care provision more environmentally sustainable

We are interested in examples of interventions or approaches that your service has **initiated with the aim of delivering greener, more sustainable or net zero mental health care.**

We are interested in receiving examples of what has worked, as well as what has not worked. The intervention or approach **need not have been measured or evaluated but where available, we would like to receive detail of findings/outcomes.**

All of the evidence received will be reviewed, and some examples of successful initiatives will be chosen to feature within the report resulting from this work. You may also have the opportunity to showcase your initiatives at events to publicise this work.

Please click [here](#) to submit your evidence. The deadline for submissions is 12 noon on 11 April 2023.

Please provide your name and email in the form where indicated if you are happy for us to contact you with any queries. Please be careful not to disclose any identifying information about colleagues or patients in your submission.

If you would like further information or have any queries regarding submission please contact: [netzeroMHC@rcpsych.ac.uk](mailto:netzeroMHC@rcpsych.ac.uk)

We look forward to receiving your submission.

## Copy of the call for evidence submission form

### Contact details

#### Service/Trust/Board name and address:

Please provide your contact details so that we can contact you with any queries related to your case study.

#### Name:

#### Email address:

Please indicate whether you are happy for your Service/Trust/Board service to be identified in any reports resulting from this work [tick box]

- Yes
- No
- Happy to explore this with my service and confirm at a later date

### Evidence of work to deliver greener, more sustainable or net zero mental health care

This can include any intervention or approach that your service has **initiated with the aim of delivering greener, more sustainable or net zero mental health care**, including but not limited to:

- Opportunities for public and preventative mental health care
- Decarbonising high carbon and resource-intensive mental health care pathways
- Efforts to reduce the carbon footprint of mental health services and care pathways

- Alternative approaches to traditional mental health care provision
- Methods to improve efficiency between and across health care services and staff involved in them
- Training and education for the staff around sustainable practices
- Green social prescribing practices
- Patient engagement activities on the topic of mental health care provision and sustainability, or any patient-led initiatives aimed at making mental health care provision more environmentally sustainable

We are looking for interventions and approaches that have been implemented with the **aim of achieving a greener, more sustainable or net zero service**. If your intervention or approach has been evaluated and/or the impact has been measured, we would ask you to share this information regardless of whether it was successful or unsuccessful.

### The setting

Please provide an outline of the mental health service or pathway including the type of service, affected patient group, typical volumes of patients who use the service per year (if known) and other relevant information about the service:

### The intervention or approach

Please outline the intervention(s) or approach(es) introduced to work towards achieving greener, more sustainable or net zero mental health care:

### Measurement

Has the intervention or approach been measured or evaluated to determine its impact? [tick box]

- Yes [move to next question on challenges/barriers]
- No [move to elaborate on measure]
- There is a goal to measure or evaluate impact but this has not happened yet [move to elaborate on measures]

Your responses have indicated that the intervention or approach has been or will be evaluated or measured. Please outline what data you have used or intend to use to evaluate or measure the impact of your intervention or approach:

### Findings/outcomes

If applicable, please outline any findings or outcomes of your intervention or approach as measured using your measurement approach above (e.g. financial impact of the intervention, environmental/carbon impact, survey data findings, impact on patient(s) and staff (including equality impact).

### Challenges/barriers

Please let us know the challenges or barriers you faced and how these were overcome. What would you suggest to others trying to replicate what you did?

### Facilitators

Please let us know what facilitators you identified and how these helped the intervention or approach. What would you suggest to others trying to replicate what you did?

Any other comments:

### Carbon footprint

If you have any information or data on the carbon footprint of your service or pathway, please share this information below or attach any supporting documentation.

### Green Plans

If your service has a Green Plan, please upload it [here]

### Supporting evidence

Please attach any supporting documents to support your submission.

Note, any attachments are not a substitute for completing the proforma form. If you encounter any issues, please email supporting documents to:

[netzeroMHC@rcpsych.ac.uk](mailto:netzeroMHC@rcpsych.ac.uk)



## 3.3 Findings

Of the submissions we received in the call for evidence, 16 met the inclusion criteria. The range of interventions and approaches was vast, with services adopting a range of strategies in attempts to reduce their carbon footprint, work towards environmental sustainability and provide greener interventions for patients.

A summary of the included submissions is in [Table 8](#), containing links to the detailed summary tables in [Table 9](#) through [Table 24](#).

**Table 8: Included submissions to the call for evidence from NHS services**

Provider (and link to detailed summary table)	Service setting	Service type	Intervention/ approach name/ type	Outcomes
<b>Bradford District Care NHS Foundation Trust (a)</b> ( <a href="#">Table 9</a> )	Early Intervention (psychosis) service	Inpatient	Allotment provision	None reported at the time of submission
<b>Bradford District Care NHS Foundation Trust (b)</b> ( <a href="#">Table 10</a> )	Trust HQ building	Trust-level initiative <sup>1</sup>	Decarbonisation of HQ building	Energy consumption: 9% reduction in electricity consumption was reported by the Trust
<b>Dorset Healthcare University NHS Foundation Trust</b> ( <a href="#">Table 11</a> )	Multiple Trust-wide projects across services	Trust-level initiative	Multiple strategies including: <ul style="list-style-type: none"> <li>● Energy</li> <li>● Reuse and recycling</li> <li>● Waste</li> <li>● Travel</li> <li>● Biodiversity</li> <li>● Green Space</li> <li>● Procurement</li> </ul>	None reported at the time of submission
<b>East London NHS Foundation Trust</b> ( <a href="#">Table 12</a> )	Long COVID Mental Health Service (work-based project)	Community mental health care	Remote patient consultations to reduce travel	None reported at the time of submission
<b>Hertfordshire Partnership NHS Foundation Trust</b> ( <a href="#">Table 13</a> )	Dementia inpatient care service	Inpatient	Medication rationalisation and de-prescribing (reduction of unnecessary medication use)	Reduction of unnecessary medication for 30% of patients on the ward

<sup>1</sup> 'Trust-level initiatives' are implemented at the wider trust level rather than by the mental health service only, e.g., approaches focused on buildings or facilities, board-level training or trust-wide net zero interventions.

Provider (and link to detailed summary table)	Service setting	Service type	Intervention/ approach name/ type	Outcomes
<b>Midlands Partnership University NHS Foundation Trust (Table 14)</b>	Psychosis pathway	Community mental health care	Green psychosis pathway clinic (measures to improve prescribing and medication collection practices)	Carbon footprint impact: reduction of 40.6 Kg CO <sub>2</sub> e/month from reduced miles driven Other outcomes: reduction in staff time spent on ordering, prescribing and collecting prescriptions
<b>Nottinghamshire Healthcare NHS Foundation Trust (a) (Table 15)</b>	N/A (Training programme for Board of Directors, Trust Management and Net Zero Leads)	Trust-level initiative	Staff training programme	None reported at the time of submission
<b>Nottinghamshire Healthcare NHS Foundation Trust (b) (Table 16)</b>	Mental Health Clinical Care pathways particularly in SMI and Transformation of Mental Health Services	Community mental health care Inpatient	Green social prescribing (GSP) (to embed GSP in Mental Health Clinical Care pathways, particularly in SMI and Transformation of Mental Health Services)	None reported at the time of submission
<b>Oxford Health NHS Foundation Trust (Table 17)</b>	NatureWell in children and young people settings (inpatient and community services)	Inpatient (children and young people) Community mental health care (children and young people)	Staff training programme on integrating nature-based approaches to care	Qualitative evaluation of phase one found staff reported benefits to patients and themselves
<b>Pennine Care NHS Foundation Trust (Table 18)</b>	N/A (Trust-wide mental health, learning disability and autism services)	Trust-level initiative	Single-use plastic pledge	None reported at the time of submission

Provider (and link to detailed summary table)	Service setting	Service type	Intervention/ approach name/ type	Outcomes type
<b>South Central Ambulance Service (Table 19)</b>	Ambulance service-led mobile Mental Health Rapid Response Service	Community mental health care Emergency care	Transport adjustments	None reported at the time of submission
<b>South London and Maudsley NHS Foundation Trust (a) (Table 20)</b>	Anxiety Disorder Residential Unit at the Bethlem Royal Hospital	Inpatient	<ul style="list-style-type: none"> <li>● Access to green space</li> <li>● change in culture (e.g., cooking, using the green space)</li> <li>● development of skills</li> </ul>	None reported at the time of submission
<b>South London and Maudsley NHS Foundation Trust (b) (Table 21)</b>	Bethlem Royal, The Orchards	Inpatient	Nature-based intervention: The Orchards, used by services across various pathways	None reported at the time of submission; Estimated CO <sub>2</sub> extracted from the air: about 30 tonnes per year
<b>South London and Maudsley NHS Foundation Trust (c) (Table 22)</b>	Bethlem Royal, the Walled Garden	Inpatient	Nature-based intervention: The Walled Garden, used to run therapeutic groups and conduct research	None measured at the time of submission
<b>South London and Maudsley NHS Foundation Trust (d) (Table 23)</b>	Bethlem Royal, Green Walking	Inpatient	Nature-based intervention: Green Walking, with a mindfulness component and integrated forest therapy	Patient outcomes: before-and-after questionnaires using Likert scales which show positive feedback from patients
<b>Summerhill Services Ltd (on behalf of Birmingham and Solihull Mental Health Foundation Trust) (Table 24)</b>	Acute Mental Health Hospital sites (×3) and Medium Secure Hospitals (×3)	Inpatient	Food waste reduction initiative	Food waste: over 24 tonnes of food waste has been diverted from the black bag waste route (estimated 14 tonnes of carbon saved)

## Details of included submissions

Table 9: Bradford District Care NHS Trust (a)



Early Intervention (psychosis) service: Allotment provision			
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i> 	<i>Right care, right place, right time</i> 	Outcomes measured
<b>Sustainability intervention</b>	The provision of an allotment offers a low carbon or green socially prescribed treatment for patients.	The allotment provides an alternative therapeutic activity for patients enabling them to engage in green treatment outdoors.	None measured. However, the service has plans to measure outcomes for patients using questionnaires. The service also plans to measure the environmental impact of the allotment and will complete a biodiversity assessment in due course.

Table 10: Bradford District Care NHS Trust (b)


Decarbonisation of Trust headquarters (HQ) building		
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i> 	Outcomes measured
<b>Net zero effort</b>	Energy efficiency measure aimed to reduce energy use at Trust HQ buildings. All lights were switched to LED. Also, staff were enabled to switch from working in the office building to working remotely or from home where possible. This was intended to reduce the need for commuting/staff travel.	At the time the submission was received from the service, a 9% reduction in electricity consumption was reported by the Trust. There is a future plan to measure mileage and carbon impact but at the time of the submission this was not completed. The Trust also reported plans to review bill data to measure reductions and the financial impact of the approaches.



Table 11: Dorset Healthcare University NHS Foundation Trust



Sustainability and net zero strategies (multiple): Energy, reuse and recycling, waste, travel, biodiversity and green space, procurement			
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i> 	<i>Right care, right place, right time</i> 	Outcomes measured
<b>Net zero effort Sustainability intervention</b>	<p>To improve energy efficiency, LED light fittings were installed on buildings across the Trust. The Trust has also undertaken measures to ensure clean renewable energy sourced from UK wind and solar sources, including the installation of solar panelling.</p> <p>A Cycle to Work scheme was put in place with incentives to encourage staff to use this method of transport where possible. The Trust also reported car-sharing opportunities for staff and has invested in equipment to enable staff to work remotely, reducing unnecessary travel. A <a href="#">Warp It</a> reuse and recycle portal where surplus equipment can be listed on the staff intranet and items can be claimed (avoiding the cost of buying new items).</p> <p>Food waste is sent for processing at local anaerobic digestion facility.</p>	<p>The Trust reported future plans in place to provide more Green and outdoor space for patients and for staff, offering alternative therapeutic activities.</p>	<p>For the Warp It reuse and recycle portal, the service records the percentage of products that are recycled or reused. At the time of submission, over £178,500 had been saved in the purchase costs of new items, and over 79,500 kg of CO<sub>2</sub> emissions were saved on the manufacture and distribution of new items. The service also reported that 33,980 kg of assets were reused.</p>

Table 12: East London NHS Foundation Trust



Long COVID Mental Health Service work-based project: Remote patient consultations			
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i> 	<i>Right care, right time, right place</i> 	Outcomes measured
<b>Net zero effort</b>	The Trust has been shifting towards performing patient consultations remotely. Telephone and video consultations are now used, in conjunction with more traditional, face-to-face consultation methods. The Long COVID service provides remote patient consultations, reducing the need for patient travel to inpatient services.	Some patients prefer to be seen remotely, so offering this option can benefit some patients and provides a degree of choice over how they engage with the service.	No outcomes were measured at the time of submission. The main outcomes that the service plans to measure in future involve measuring the impact of remote consultations on patient care and whether the provision of remote sessions enhances the patient experience. Measures of the carbon impact were not available at the time of submission.

Table 13: Hertfordshire Partnership NHS Foundation Trust


Dementia inpatient care service: Medication rationalisation and de-prescribing		
Net zero, sustainability or public and preventive healthcare	Low carbon treatment and care settings	Outcomes measured
		
<b>Net zero effort</b>	De-prescription of unnecessary medication initiative. The service performed a review of medications using STOPPFrail guidelines. The aim was to create a formalised process to enable safe medication rationalisation and de-prescribing appropriate to the population of patients with dementia across several inpatient wards.	The service achieved safe and appropriate medication rationalisation and de-prescribing across several dementia wards. This initiative reduced the use of unnecessary medication, contributing to waste reduction and cost savings. On one ward used as an example, the service was able to stop or reduce medications for 30% of patients on the ward. The most common medications stopped were statins, proton pump inhibitors, Adcal-D3 and antihypertensives. The most common reasons for stopping were 'symptoms resolved' and meeting the specific criteria set out for stopping medications affecting the cardiovascular system. The service reported that the success contributes to the This will contribute to achieving the Royal College of Psychiatrists' sustainability initiatives. The service has started collecting data and implementing the process in other dementia wards across the trust. Carbon reduction and sustainability outcomes were not measured. The impact on carbon output is implied only.

Table 14: Midlands Partnership University NHS Foundation Trust



Psychosis Pathway: Green Psychosis Pathway Clinic			
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i> 	<i>Right care, right place, right time</i> 	Outcomes measured
<b>Net zero effort</b>	The service put in place measures to ensure that medication is readily available when patients come to collect it, to reduce unnecessary travel. Measures were also put in place to reduce the number of trips that staff would need to take to pharmacies when collecting prescriptions for patients by allowing them to collect prescriptions in one go.	Electronic prescriptions were rolled out to replace handwritten ones, allowing patients to collect medication from pharmacies close to them.	The service measured the impact of the initiative on its carbon footprint and found that it resulted in a reduction of 40.6 Kg CO <sub>2</sub> e/month. This was concluded to be from reduced miles driven, from 28 to just 4 miles per month. Other outcomes reported by the service included a reduction in staff time spent on ordering, prescribing and collecting prescriptions and thus increasing their capacity to focus on other areas of patient care. The service also reported favourable outcomes in terms of reduced postage costs, costs of storage of paper prescriptions and travel costs for patients.

Table 15: Nottinghamshire Healthcare NHS Foundation Trust (a)



Training Programme for Board of Directors, Trust Managers and Net Zero Leads			
Net zero, sustainability or public and preventive healthcare	<i>Clinical leadership, systems and workforce</i> 	<i>Low carbon treatment and care settings</i> 	Outcomes measured
<b>Net zero effort Sustainability intervention</b>	The Trust commenced a programme to train its Board of Directors, Net Zero Group leads and the Trust Management Group in an Institute of Environmental Management and Assessment-approved, 2-day training course in sustainability. The purpose of the training is to ensure that Trust decision-makers are aware of the impacts of climate change on services, how the organisation is contributing to the problem and what action is necessary to minimise our impact and deliver net zero.	The course has a number of intended outcomes including a commitment to embed sustainability in daily practice, a focus on reducing emissions from gas and action to reduce emissions from the Trust’s supply chain. Funding was also allocated for improved monitoring.	None measured at the time of submission. There are future plans to collate suggestions put forward during the training and to record changes made as a result of the training.



Table 16: Nottinghamshire Healthcare NHS Foundation Trust (b)



Mental Health Clinical Care Pathways (SMI and transformation): Green Social Prescribing (GSP)		
Net zero, sustainability or public and preventive healthcare	Low carbon treatment and care settings	Outcomes measured
		
Net zero effort	<p>The service put in place an intervention to embed GSP and make it easier for clinicians to make referrals, especially in SMI and Transformation of Mental Health Services. The aim was to promote GSP internally, increase referrals from mental health services to GSP providers and support these providers to engage more with patients with complex needs.</p> <p>The service developed resources including the Trust’s Green Hub page, which was made available as a digital prescription. Staff were given access to the ‘Big Green Book’ – a map containing details of Green Provision by area, accessibility, and level of mental health need (developed as part of Greenspace GSP pilot in Nottinghamshire).</p> <p>In terms of inpatient care, the service also put in a place a hospital-based community garden for patients.</p>	<p>None measured at the time of submission.</p> <p>Future plans to evaluate the GSP impact are in place. The service collects data and is performing an evaluation of two internal GSP hubs being run by the service, including number of attendees, onward referrals to community providers and use of outcome measure with service users focused on levels of engagement and wellbeing pre- and post-attendance.</p> <p>The service also tracks referrals received from mental health services to key Green providers.</p>


Table 17: Oxford Health NHS Foundation Trust

NatureWell in children and young people’s mental health services: Staff training			
Net zero, sustainability or public and preventive healthcare	<i>Clinical leadership, systems and workforce</i> 	<i>Low carbon treatment and care settings</i> 	Outcomes measured
<b>Sustainability intervention</b>	A training programme for staff focused on Nature Connectedness, training staff to integrate and embed nature-based approaches to patient care in their practice.	The focus of NatureWell is to establish a framework for weaving nature into the provision of care, offering lower carbon and novel nature-based interventions in children and young people’s settings.	The service reported collecting staff satisfaction and experience measures at the time of submission. There are future plans to collect measures of patient experience of nature-based interventions. In a qualitative evaluation from the first phase of the work, staff reported benefits: Patient benefits – emotional regulation, relational security, increased engagement. Staff benefits – feeling relaxed and refreshed, helped with burnout, improved peer relationships The second phase of this work is to pilot and evaluate interventions designed and delivered by staff who have had the training, looking at patient experience outcomes. No measures of the carbon impact were provided.

Table 18: Pennine Care NHS Foundation Trust

Trust-wide mental health, learning disability and autism services: Single-use plastic pledge		
Net zero, sustainability or public and preventive healthcare	Low carbon treatment and care settings	Outcomes measured
		
<b>Sustainability intervention</b> <b>Net zero effort</b>	<p>A single-use plastic pledge was made across the trust, restricting the procurement of single-use products unless there is a justifiable medical need or no available alternative. The Trust implemented mandated restrictions on orders, to reduce the use of single-use plastics. Staff are also encouraged to make personal changes, e.g. by bringing reusable coffee cups.</p>	<p>None measured at the time of submission. However, the Trust plans to evaluate the impact of the pledge by comparing pre- and post-pledge single-use plastic ordering data from the procurement system. From this, the Trust will be able to measure the reduction in single-use plastic items by way of the number of items ordered.</p>

**Table 19: South Central Ambulance Service NHS Foundation Trust**

Ambulance service-led mobile Mental Health Rapid Response Service: Transport and pathway initiative			
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i>	<i>Right care, right place, right time</i>	Outcomes measured
			
<b>Net zero effort</b>	The ambulance service uses an electric mental health vehicle to respond to mental health crises. This reduces the use of ambulance and other non-electric vehicles being used for patient assessment or transfer. The electric vehicle presents a lower carbon alternative to traditional mental health patient transportation.	The mental health response vehicle can be deployed to support other services when there is a crisis. For example, it has been deployed to the railway to support British Transport Police. In the event of a crisis, the vehicle crew can assess the patient and if appropriate, return them safely home avoiding unnecessary conveyance to a Place of Safety under Section 136 using a standard combustion vehicle.	None measured at the time of submission. However, there is a future plan to measure the carbon impact of the electric vehicle by monitoring mileage, vehicle battery efficiency and compare results at the end of the project trial with existing traditional ambulance fleet data.

**Table 20: South London and Maudsley NHS Foundation Trust (a)**


Anxiety Disorder Residential Unit at the Royal Bethlam Hospital: access to green space and skills-development programme		
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i>	Outcomes measured
		
<b>Sustainability intervention</b>	The unit provides access to Green Space which is used for exercise and therapy groups held outside. There are also allotments that residents can use to practice horticultural skills.	None measured at the time of submission

Table 21: South London and Maudsley NHS Foundation Trust (b)



Bethlam Royal:The Orchards			
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatment and care settings</i>	<i>Right care, right place, right time</i>	Outcomes measured
			
<b>Net zero effort Sustainability intervention</b>	<p>This intervention was not aimed at one particular pathway. The Orchards is located on a large hospital site and is used by services across various pathways. This includes acute psychiatric wards, forensic services, specialist and national services (i.e. national units for mother and baby, autism, psychosis, and anxiety disorder [residential]), and inpatient services for children and young people, older adults, and eating disorders. The Orchards is also used by staff and patients who are outpatients in occupational therapy groups. Produce from The Orchards is used in the service, with apples stored and used throughout the winter months. Dried produce from The Orchards can also be purchased in the community centre shop.</p>	<p>The Orchards provide opportunities for alternative methods of relaxation for patients. There are also practical classes that focus on supporting the rehabilitation of patients and on improving self-worth. Classes include cooking, pressing and pruning. The intervention has financial benefits, as produce from The Orchards brings in a small annual income for the service.</p>	<p>The service estimated the amount of CO<sub>2</sub> extracted from the air each year by The Orchards: 1 acre (0.4 Ha) of apple orchards will extract about 15 tonnes of CO<sub>2</sub> from the air each year, so the large orchard at the Bethlem Hospital is sequestering about 30 tonnes of CO<sub>2</sub> per year.</p>



Table 22: South London and Maudsley NHS Foundation Trust (c)



Bethlam Royal: The Walled Garden			
Net zero, sustainability or public and preventive healthcare	<i>Lower carbon treatment and care settings</i>	<i>Right care, right place, right time</i>	Outcomes measured
			
<b>Sustainability intervention</b>	<p>As with The Orchards, the Walled Garden intervention was not aimed at one particular pathway but across services at the Bethlem Hospital, The garden is used to grow produce, reducing the need for as much food to be procured elsewhere.</p>	<p>A number of therapeutic groups are run using the garden. These groups are seasonably themed and include sensory groups, horticulture, processing and packaging food to sell in the shop. The garden has also been used as a research facility by the charity, Thrive. Thrive has developed the Thrive Insight Measure and the staff are using this tool to monitor the direct and indirect benefits of the garden for patients.</p> <p>As with The Orchards, the Garden has financial benefits in that produce sold brings in a small annual income for the service.</p>	<p>None were provided with the submission. However the service reported that Thrive measure patient outcomes such as social interaction, engagement with tasks and motivation as well as clinical outcomes such as anxiety levels, memory and cognitive ability. No measures of the carbon impact were provided.</p>

Table 23: South London and Maudsley NHS Foundation Trust (d)





Bethlam Royal: Green Walking Intervention				
Net zero, sustainability or public and preventive healthcare	<i>Low carbon treatments and care settings</i>	<i>Keeping people healthy</i>	<i>Right care, right place, right time</i>	Outcomes measured
				
<b>Net zero effort Sustainability intervention</b>	As with The Orchards, and the Walled Garden, the Green Walking intervention was not aimed at one particular pathway but across services at the Bethlem Hospital. It involves a walking group for patients across services intended to provide a low carbon therapeutic activity for patients.	Walking is a form of physical exercise that is beneficial to overall health and wellbeing.	The walking group offered patients a therapeutic activity with a mindfulness component, in addition to integrated forest therapy.	Details of the outcome measures were not provided with the submission. However, the service reports that the walking group has been evaluated with before-and-after questionnaires using Likert scales which show positive feedback from patients. No measures of the carbon impact were provided.

Table 24: Summerhill Services Ltd

On behalf of Birmingham & Solihull Mental Health Foundation Trust, Acute/Speciality Mental Health Hospital sites and Medium Secure Hospitals: Greener Food Waste Provision		
Net zero, sustainability or public and preventive healthcare	Low carbon treatment and care settings	Outcomes measured
		
<b>Net zero effort</b>	Waste management – removing macerators which chop food for release into sewage system; reducing black bag waste; waste caddie and clear bag food waste disposal system with scales – to separate waste out for compost or anaerobic digestion. Enables better understanding of waste type and volume.	A full evaluation is yet to be completed. However, to date, over 24 tonnes of food waste has been recorded as diverted from either the black bag waste route or disposed of through food macerators into the sewerage system. The service suggests this accounts for an estimate of the diversion of 14 tonnes of carbon. There is a future plan to do a full evaluation using hard data, i.e., tonnage of waste from each site, in addition to collecting local data that will help catering teams understand what works and what does not in terms of menus and choices.

### 3.4 Limitations

While several good examples of interventions and approaches to achieve greener, more sustainable and net zero mental healthcare were submitted to the call for evidence, there were some limitations associated with this approach.

First, few submissions were received. This may be due to limitations in outreach and communication attempts, or the method by which services were asked to submit their evidence.

For example, the form used to collect information could have been seen as too long or complex for service providers to complete.

There was also a significant lack of evidence submissions that were accompanied by evaluations or concrete measures of impact. Many of the interventions and approaches were in their infancy, meaning that outcome measures had not been collected at the time of submission. This meant that there was a limited evidence base for the effectiveness of interventions and approaches provided.

## 4. Review of NHS Green Plans



### 4.1 Overview

As part of the effort to move towards net zero health care, Green Plans have been mandated across NHS England for all mental health care trusts. Plans tend to fall into the following categories:

- Workforce and system leadership
- Sustainable models of care
- Digital transformation
- Travel and transport
- Estates and facilities
- Medicines
- Supply chain and procurement
- Food and nutrition
- Adaptation
- Green space and biodiversity.

### 4.2 Method

As part of this report, all available Green Plans from NHS mental health trusts in England were reviewed. The aim of this review was to use the Green Plans to identify novel and interesting initiatives that have been established and undertaken by trusts.

Each plan was reviewed by a member of the research team with support from the project's appointed Green Scholar. Relevant information was extracted according to the four principles of low carbon care as well as the categories


listed above. Initiatives were placed under the category of 'best fit' given that examples were likely to cut across principles.

### 4.3 Findings: examples from Green Plans

In the tables below, we present examples from trusts' Green Plans of approaches or interventions that were considered to be novel or interesting initiatives. The examples are grouped according to the Greener NHS sustainability principles.

- Keeping people healthy ([Table 25](#))
- Right care, right place, right time ([Table 26](#))
- Low carbon treatment and care settings ([Table 27](#))
- Clinical leadership, systems and workforce ([Table 28](#)).

Table 25: 'Keeping people healthy' principle: examples of net zero actions from selected NHS Green Plans

Keeping people healthy 			
Green Plan heading	Trust	Description of approach or intervention	Type of approach
Adaptation	Sheffield Health and Social Care NHS foundation trust	As part of their heatwave planning the Trust have identified cool rooms/ areas maintaining a temperature of 26°C or below, with prioritised use for people from high-risk groups. Mobile air-conditioning units are also available for dispatch.	<ul style="list-style-type: none"> <li>● Identifying vulnerable service users</li> <li>● Cool rooms.</li> </ul>
	NAVIGO	Navigo have a predefined list of vulnerable service users which is used in adverse conditions to make sure people are safe. During COVID, a vulnerable service user service was run, calling daily and delivering medication and food parcels.	<ul style="list-style-type: none"> <li>● Identifying vulnerable service users.</li> </ul>
	Devon Partnership NHS Trust	<p>At Langdon Hospital during the construction of the new forensic unit, a hydro-brake was installed to mitigate against further flooding to Dawlish Warren.</p> <p>In 2000, Dawlish Warren was battered by storms. Flood defence work was completed by the Environment Agency.</p> <p>In 2014, the Network Rail line at Dawlish was severely damaged affecting transportation in the South West. Sea defences are being completed to sustain future adverse weather.</p>	<ul style="list-style-type: none"> <li>● Flooding mitigation.</li> </ul>
	South London and Maudsley NHS Foundation Trust	<p>An Emergency and Preparedness Manager is responsible for the coordination of resilience and emergency preparedness in the Trust. In accordance with the Civil Contingency Act (2004), the Trust produced business plans to ensure they respond to adverse events and incidents and have contingencies for water/power shortages and supply chain failures.</p> <p>During a recent local authority exercise with other stakeholders, such as mental health and acute trusts, facilities organisations and emergency services, their response was rated 'satisfactory', and learning points were then embedded into processes/plans.</p>	<ul style="list-style-type: none"> <li>● New and dedicated role roles</li> <li>● Adaptation and Contingency planning</li> <li>● Participation in emergency response planning/exercise.</li> </ul>





## Keeping people healthy

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Adaption</b>	<b>Mersey Care NHS Foundation Trust</b>	The Trust attended the Merseyside Local Health Resilience Partnership Forum, where new policy/legislation was discussed and action plans formulated.	<ul style="list-style-type: none"> <li>● Participation in emergency response planning/ exercise.</li> </ul>
<b>Green spaces and biodiversity</b>	<b>Gloucestershire Health and Care NHS Foundation Trust</b>	<p>At North Cotswold Hospital the grounds have extensive ornamental gardens with some semi-naturalised copses. The site is drained with a system of swales with a variety of bog plants.</p> <p>The grounds are designed with rehabilitation in mind for example with use of raised benches and hand rails.</p> <p>The grounds are maintained by a dedicated team of experienced volunteers with assistance from a wildlife volunteer project.</p> <p>246 NHS Forest trees have been planted since 2012 and the site was highly commended at the NHS Forest Conference Awards in 2014.</p>	<ul style="list-style-type: none"> <li>● Increasing/ improving green space</li> <li>● Using green spaces: working with community/ voluntary, community and social enterprise (VCSE).</li> </ul>
	<b>Cumbria, Northumberland, Tyne and Wear</b>	<p>Examples of using the outdoors and green space effectively across the organisation, include:</p> <ul style="list-style-type: none"> <li>● The horticulture projects at Hopewood Park, Carleton Clinic and Northgate</li> <li>● Gardening activities on various inpatient wards</li> <li>● The Mother and Baby walking groups</li> <li>● Adapted cycling at Walkergate Park</li> <li>● Bike4Health initiative at St George's Park</li> <li>● The 'A Weight Off Your Mind' walking routes on all main Trust sites</li> <li>● Tree planting at Ferndene</li> <li>● The allotment scheme in Fenham supporting service users who misuse substances.</li> </ul>	<ul style="list-style-type: none"> <li>● Increasing/ improving green space</li> <li>● Using green spaces: working with community/ VCSE</li> <li>● Using green spaces as part of care</li> <li>● Using green spaces for physical activity.</li> </ul>



## Keeping people healthy

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Green spaces and biodiversity</b>	<b>Greater Manchester Mental Health NHS Foundation Trust</b>	<p>The trust has worked with Sow the City to develop a Green Health Walk at Prestwich Hospital incorporating orchard and wildflower areas and planters for food growing, allowing staff, patients, carers and visitors to enjoy the hospital grounds, promoting physical and mental wellbeing. Petrus, who provide nature-based programmes for people experiencing mental health issues, have a permanent presence in a local GP practice and a Social Prescribing Link Worker engages directly with patients to provide nature-based programmes to suit their needs and interests.</p> <p>Lancashire Wildlife Trust's MyPlace programme is a green wellbeing service which supports people to connect with nature through nature-based interventions as a way of managing their wellbeing. They provide different seasonal activities such as bushcraft, practical conservation, carpentry, mindfulness, survey skills and nature walks.</p>	<ul style="list-style-type: none"><li>● Increasing/improving green space</li><li>● Using green spaces: working with community/ VCSE</li><li>● Using green spaces as part of care</li><li>● Using green spaces to grow food.</li></ul>



## Keeping people healthy

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Green spaces and biodiversity</b>	<b>Sheffield Health and Social Care (SHSC) NHS Foundation Trust</b>	<p>During SHSC Sustainability week, June 2021 at Woodland view the Trust planted 15 native trees including crab apple, rowan, and cherry as part of the NHS Forest project to help improve the health and wellbeing of service users, staff, and the wider community. The tree species were selected for their benefit to the environment, for example the Rowan Trees will provide a perfect habitat for waxwings when they visit the UK in Winter.</p> <p>Working in partnership with the Sheffield Wildlife Trust, staff and service users from the South Recovery Team, based at East Glade have planted a wildflower meadow and orchard, and built homes for swifts, hedgehogs, and toads. Their work aims to enhance staff and service user wellbeing while also increasing local biodiversity and greenspace for the benefit of the community. It is a positive example of how internal collaborations between estates, clinical teams, volunteers and service users can have big impacts on the local environment and wellbeing.</p> <p>The Trust partnered with local horticulture project Oasis who work with service users in the communities on their allotments and inpatients service users to grow food and herbs in ward gardens. Service users are able to interact with therapeutic greenspace, increase physical activity and learn about healthy diets.</p>	<ul style="list-style-type: none"><li>● Increasing/improving green space</li><li>● Using green spaces: working with community/ VCSE</li><li>● Using green spaces as part of care</li><li>● Using green spaces to grow food.</li></ul>



## Keeping people healthy

Green Plan heading	Trust	Description of approach or intervention	Type of approach
Green spaces and biodiversity	<b>South London and Maudsley NHS Foundation Trust</b>	<p>Open access to good quality and well-maintained green spaces is provided on the Bethlem site for the use of patients, staff and the wider community.</p> <p>A space has been provided for the growth and cultivation of food on the Bethlem site and patients are engaged in local sustainable food sourcing.</p> <p>The creation of woodland paths have improved access to the Bethlem woods for staff, patients and the wider community.</p> <p>Biodiversity and habitat protection is considered during construction projects.</p> <p>Pests and invasive species (e.g. oak processionary moth) are controlled, to ensure the quality of our green spaces is maintained.</p> <p>To encourage pollination we worked with a local beekeeper to install five beehives on the Bethlem site</p>	<ul style="list-style-type: none"> <li>● Increasing/improving green space</li> <li>● Using green spaces: working with community/ VCSE</li> <li>● Using green spaces as part of care</li> <li>● Using green spaces to grow food</li> </ul>
	<b>Sussex Partnership NHS Foundation Trust</b>	<p>With over 80 trees planted up at Swandean and a lavender hedge outside a bedded unit, and the creation of the Wander Loop at Langley Green, the Trust is investing in developing green spaces on its sites.</p> <p>The Trust has also done a lot with developing green spaces at Mill View for wards, recently developing a beautiful therapeutic garden space with plans to roll out similar on other wards.</p> <p>Thanks to funding from Friends of Brighton &amp; Hove Hospitals teams at Mill View were also able to install outdoor gyms on two wards to give patients access to an environment that is beneficial to their health and recovery.</p> <p>Also, teams at Mill View and at Swandean are looking into developing an onsite allotment area that staff, patients and their carers can all get involved with, creating a space to connect with nature and promote wellbeing.</p>	<ul style="list-style-type: none"> <li>● Increasing/improving green space</li> <li>● Using green spaces: working with community/ VCSE</li> <li>● Using green spaces as part of care</li> <li>● Using green spaces to grow food</li> <li>● Using green spaces for physical activity.</li> </ul>



## Keeping people healthy

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Food and nutrition</b>	<b>Lincolnshire partnership NHS Foundation Trust</b>	Work is being carried out by the Trust's dietitian to produce menus which will promote and support healthier eating in units, that provide self-cooking with patients, using locally procured ingredients. The Trust has increased menu choice to include more vegetarian options.	<ul style="list-style-type: none"> <li>● Healthier eating</li> <li>● Locally produced food</li> <li>● Vegetarian and vegan option.</li> </ul>
	See also examples of using green spaces to grow food under Green spaces and biodiversity (table rows above) and in Table 27 (on 'Low carbon treatment and care settings' principle)		
<b>Sustainable care models</b>	<b>Greater Manchester Mental Health NHS Foundation Trust</b>	The Community Assets Navigators programme in Bolton is working in partnership with Bolton Community and Voluntary Services, Bolton Wanderers Community Trust, The Octagon Theatre, Age UK Bolton, BAND (community mental health services) and Bolton Lads and Girls Club to support people to connect with their local communities and participate in activities that make them feel good.	<ul style="list-style-type: none"> <li>● Working with local community groups.</li> </ul>
	<b>Sheffield Health and Social Care NHS Foundation Trust</b>	As an influential anchor organisation in Sheffield, the Trust aspires to empower their communities. They have successfully invested in local VCSE to support wider social needs and low carbon social and green prescribing interventions. This includes close links to Sheffield Flourish, use of Individual Placement Support to support meaningful employment and our focus on social integration through the Connecting People project. They are working with local partners and the South Yorkshire and Bassetlaw Integrated Care System to explore means of ensuring access to warmer homes for service users	<ul style="list-style-type: none"> <li>● Working with local community groups.</li> </ul>
	<b>NAViGO</b>	NAViGO work closely with their partners to offer preventive interventions – for example, Mind runs a Safe Space crisis café.	<ul style="list-style-type: none"> <li>● Working with local community groups</li> <li>● Preventive interventions.</li> </ul>





## Keeping people healthy

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Sustainable care models</b>	NAVIGO	Sustainability is considered a dimension of health care provision; for example, WHISe (Wellbeing Health Improvement Service) offers preventive health checks to those with SMI. NAVIGO have also embedded MECC (Making Every Contact Count) into their practice and, if applicable, work with service users on weight management, smoking prevention, etc., as part of a holistic package.	Preventive interventions.

Table 26: 'Right care, right place, right time' principle: examples of net zero actions from selected NHS Green Plans



## Right care, right place, right time

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Sustainable care models</b>	<b>Hertfordshire Partnership University NHS Foundation Trust</b>	Host Families Scheme, which aims to prevent admission and support service users to return home as soon as possible enabling more efficient use of resources.	<ul style="list-style-type: none"> <li>● Sustainable models of care (initiative to improve access to care and prevent admission)</li> </ul>
	<b>Lincolnshire Partnership NHS Foundation</b>	Mental health crisis cafés and other community-based support services, to help provide local support and reduce travel for patients and staff including patient transport journeys carried out by the police, ambulance service and mental health transport.	<ul style="list-style-type: none"> <li>● Prevent unnecessary use of the mental health care pathway</li> <li>●</li> <li>● Approach to reduce patient transport and transfer services</li> </ul>



Right care, right place, right time

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Sustainable care models</b>	<b>Sheffield Health and Social Care NHS Foundation Trust</b>	<p>The Community Enhancing Recovery Team, which aims to bring patients back home from out of area placements. The team focuses on preventing a deterioration in mental health, empowering patients to achieve their recovery goals and providing a range of low carbon interventions including nature-based therapies and building community connections</p>	<ul style="list-style-type: none"> <li>● Sustainable models of care (in local area, rather than out of area)</li> </ul>
		<p>Expanding the Primary Care Mental Health Framework across Sheffield, thereby supporting 600 people who otherwise would not have accessed mental health services (nearly 40% of whom were from minoritised ethnic backgrounds)</p>	<ul style="list-style-type: none"> <li>● Improve access to primary mental health care</li> </ul>
<b>Digital transformation</b>	<b>Oxleas NHS Foundation Trust</b>	<p>A survey of over 5,000 patients explored what did and did not work for patients receiving remote video appointments providing valuable learning on when video appointments work and when face-to-face care is needed instead.</p>	<ul style="list-style-type: none"> <li>● Alternative treatment delivery formats (use of digital technology to provide care, i.e., remote treatment)</li> </ul>
	<b>Coventry and Warwickshire Partnership NHS Trust</b>	<p>Introduced non-contact technology for night-time observation of patients in dementia and mental health wards. The system provides staff with activity reports and vital sign measurements, as well as real-time alerts to clinical staff.</p>	<ul style="list-style-type: none"> <li>● Alternative care delivery formats (use of digital technology to provide care, i.e., remote treatment)</li> </ul>
<b>Using green spaces</b>	<b>Avon and Wiltshire Mental Health Partnership</b>	<p>Use of a therapeutic garden to run sessions which range from basic stimulation to deliberate fitness and strength. Some teams also run walking groups and help service users connect with nature and horticulture activities as part of their recovery plans across the Avon and Wiltshire Mental Health Partnership map including Green Gym, volunteering with wildlife trusts, attending walking groups, etc.</p>	<ul style="list-style-type: none"> <li>● Lower carbon interventions/ alternative treatments (using green spaces as part of care provision)</li> </ul>

Table 27: 'Low carbon treatment and care settings' principle: examples of net zero actions from selected NHS Green Plans

Low carbon treatment and care settings			
Green Plan heading	Trust	Description of approach or intervention	Type of approach
Estates and facilities	Gloucestershire Health Care	Lighting was upgraded to low energy LED and buildings have been installed with roof-mounted solar panels to create on-site renewable energy. This generates over 21% of renewable electricity and has achieved carbon savings of 2,324 tonnes CO <sub>2</sub> e.	<ul style="list-style-type: none"> <li>● Intervention to reduce energy consumption</li> </ul>
	Sussex Partnership NHS Foundation Trust	Installation of a solar panel system at Langley Green Hospital (providing acute mental health care); the panels have a total installed capacity of 97kWp which will produce enough energy to meet up to 15% of the site's annual electricity demand and should provide 30–40 years of renewable power generation with very little maintenance required.	<ul style="list-style-type: none"> <li>● Renewable energy; solar panels</li> </ul>
		Installation of automated meter reading technology, enabling energy consumption to be monitored and managed; high frequency resolution data can alert the trust to leaks or power left on unnecessarily, which can be used to develop behaviour change campaigns. Expansion of the Building Management System so that heating and ventilation controls of 19 buildings can now be monitored and adjusted remotely. Move to 100% renewably backed electricity from April 2021.	<ul style="list-style-type: none"> <li>● Efficient buildings: management system</li> <li>● Renewable energy; renewable energy provider</li> </ul>
Rotherham, Doncaster and South Humber NHS Foundation Trust	Installation of energy-efficient equipment such as LED lights; occupancy sensors in many office spaces; solar panels across multiple sites.	<ul style="list-style-type: none"> <li>● Efficient buildings: LED light; occupancy sensors;</li> <li>● Renewable energy; solar panels</li> </ul>	



## Low carbon treatment and care settings

Green Plan heading	Trust	Description of approach or intervention	Type of approach
Estates and facilities	<b>Tees Esk and Wear Valleys NHS Foundation Trust</b>	Harvesting rainwater to irrigate landscaped gardens and for use in flushing toilets, thereby reducing water stress and potentially alleviating flooding by attenuating surface water run-off during storms	<ul style="list-style-type: none"> <li>● Saving water</li> <li>● Adverse weather adaptation</li> </ul>
		Auctioning obsolete working medical equipment, where it is sold on, often abroad, for continued use. Disposing of equipment that is beyond repair through the appropriate waste channels, and recycling components.	<ul style="list-style-type: none"> <li>● Refurbishment, recycling, reuse</li> </ul>
	<b>Sheffield Health and Social Care NHS Foundation Trust</b>	Subscription to the online platform Warp It to redistribute and reuse surplus items across the organisation and with partners and charities, saving more than 50,000 kg of CO <sub>2</sub> .	<ul style="list-style-type: none"> <li>● Refurbishment, recycling, reuse</li> </ul>
	<b>South West Yorkshire Partnership</b>	Management of obsolete electrical items using ReTech to ensure that components of IT products, including precious metals, are salvaged.	<ul style="list-style-type: none"> <li>● Waste reduction</li> </ul>
Food and nutrition	<b>Central and North West London</b>	Signing up to the NHS Plastics Pledge and the UK Plastics Pact to eliminate unnecessary use of single-use plastics in food provision and improve plastic recycling. All food plastic packaging is made from 100% green energy and is widely recycled. All aluminium packaging is made from 40%–100% recycled materials and is 100% recyclable.	<ul style="list-style-type: none"> <li>● Reducing single-use plastics: catering</li> </ul>
	<b>Midlands Partnership University NHS Foundation Trust</b>	As part of the Catering Sustainability Plan, encouraging staff, patients and visitors to bring in their own food containers when purchasing food, and issuing staff and patients with cutlery for personal use.	<ul style="list-style-type: none"> <li>● Reducing single-use plastics: catering</li> </ul>



## Low carbon treatment and care settings

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Food and nutrition</b>	<b>Hertfordshire Partnership University NHS Foundation Trust</b>	Implementing digital meal ordering and offering a seasonal menu, which has significantly reduced food waste and minimised the carbon emissions associated with food delivery.	● Reducing food waste: digital meal planning
	<b>Oxleas NHS Foundation Trust</b>	Sending all food waste from Queen Mary's Hospital to Biogen, which is then used to produce biogas and biofertiliser	● Reducing food waste: fertilisers
	<b>South London and Maudsley NHS Foundation Trust</b>	Recycling 271 tonnes of food waste recycled the by-product of which is used as fertiliser	● Reducing food waste: fertilisers
	<b>NaViGO</b>	Selling surplus food from our cafés in 'magic bags' (with the contents unknown to buyers at the point of purchase, for a heavily discounted price) using the Too Good to Go app	● Reducing food waste: Use of surplus food
<b>Digital transformation</b>	<b>Midlands Partnership University NHS Foundation Trust</b>	Introducing OneConsultation remote patient face-to-face technology, reducing paper, travel and energy use of clinics; 35% of outpatient appointments were virtual at the Haywood Hospital in 2020–21	● Using technology: remote appointments
		Introducing the digital Electronic Prescribing and Medicines Administration system, eliminating the need for paper drug charts and for staff to travel to the pharmacy dispensary multiple times a day to order medication, and reducing incidents such as loss or damage to paper drug charts that delay treatment	● Using technology: electronic records and communication systems/ reduced printing
	<b>Oxleas NHS Foundation Trust</b>	Digitising discharge summaries, estimated to save 20–30 minutes per discharge	● Using technology: electronic records and communication systems/ reduced printing





## Low carbon treatment and care settings

Green Plan heading	Trust	Description of approach or intervention	Type of approach
<b>Digital</b>	<b>Tees, Esk and Wear Valleys NHS Foundation Trust</b>	Using digital applications, including: <ul style="list-style-type: none"> <li>● Calm Harm, which helps patients to manage self-harm</li> <li>● Dementia Stages Ability Model, which promotes understanding of the progression of dementia</li> <li>● Fear Tools, which is an anxiety aid</li> <li>● Baby Buddy for pregnancy, birth and baby support.</li> </ul>	<ul style="list-style-type: none"> <li>● Using technology: digital interventions</li> </ul>
<b>Travel and transport</b>	<b>Birmingham and Solihull Mental Health NHS Foundation Trust</b>	Developing local partnerships to deliver 1-week bus passes for all new staff, with a plan to expand these partnerships for further discounts for regular passengers	<ul style="list-style-type: none"> <li>● Approaches to reduce staff travel or make patient transport less carbon intensive</li> </ul>
	<b>Sheffield Health and Social Care NHS Foundation Trust</b>	Collaborating with Love To Ride South Yorkshire, an online platform to encourage more people to cycle. Hosting Introduction to Urban Cycling Webinars and providing basic cycle maintenance workshops for staff.	<ul style="list-style-type: none"> <li>● Reducing carbon from travel: cycling – training and workshops</li> </ul>
		Staff in the Community Enhancing Recovery Team swapping their cars for e-bikes when visiting patients at home in a Green Wheels pilot scheme. They were supported by Pedal Ready, a Sheffield Enterprise that offers free cycle training and cycle route advice to residents. During a 4-week pilot Community Enhancing Recovery Team staff cycled over 720 miles, improving staff wellbeing and reducing the trust's carbon emissions of 209 kg CO <sub>2</sub> e – saving the equivalent of over 120 trees per year.	<ul style="list-style-type: none"> <li>● Reducing carbon from travel: cycling – e-bikes</li> </ul>



## Low carbon treatment and care settings

Green Plan heading	Trust	Description of approach or intervention	Type of approach
Travel and transport	<b>Sussex Partnership NHS Foundation Trust</b>	Electrifying its fleet, replacing vehicles in tandem with investing in vehicle charging infrastructure. The trust uses the Vauxhall Vivaro E-Life, which can carry up to 8 patients and covers average journeys of around 30 miles (although it can cover a range over 100 miles if needed). It takes between 4 and 8 hours to charge and be easily charged overnight for use each day. Using the Vivaro saves around 1 tonne of CO <sub>2</sub> per year based on a saving of around 4 kg CO <sub>2</sub> per average journey of 30 miles.	<ul style="list-style-type: none"> <li>● Reducing carbon from travel: electric vehicles/ green fleet</li> </ul>
	<b>Isle of Wight NHS Trust</b>	Working with the Isle of Wight Council to undertake a fully funded 'Cycle Friendly Employer' accreditation delivered by Cycling UK. The award assesses how well equipped organisations are to encourage and facilitate active and sustainable modes of transport and travel, and the trust plans to address their recommendations, such as offering bike maintenance to staff, installing a dry room for staff use, and increasing the number of cycling facilities.	<ul style="list-style-type: none"> <li>● Reducing carbon from travel: cycling – better cycling facilities</li> </ul>
Medicines	<b>Humber Teaching NHS Foundation Trust</b>	Reduced medicines waste through the implementation of ward-based technicians and ward-based dispensing	<ul style="list-style-type: none"> <li>● Waste reduction</li> <li>● Improved medication or prescribing practices</li> </ul>
	<b>Pennine Care NHS Foundation Trust</b>	Invested in reusable beakers for patient medication reducing the need for plastic cups	<ul style="list-style-type: none"> <li>● Waste reduction</li> <li>● Improved medication or prescribing practices</li> </ul>
	<b>Sheffield Health and Social Care NHS Foundation Trust</b>	When administering medications, switching from plastic cups to a reusable option saves 18,000 cups per year for one rehabilitation unit in Sheffield. This has the potential to save 1,490 kg CO <sub>2</sub> e, equivalent to more than 40 car journeys from Sheffield to London.	<ul style="list-style-type: none"> <li>● Reducing single-use plastics: medication</li> </ul>



### Low carbon treatment and care settings

Green Plan heading	Trust	Description of approach or intervention	Type of approach
Supply chain and procurement	Hertfordshire Partnership University NHS Foundation Trust	Creating a procurement role supporting the department, who will be tasked with investigating ways that waste in the supply chain can be reduced.	<ul style="list-style-type: none"> <li>New and dedicated staff roles</li> </ul>
	Humber Teaching NHS Foundation Trust	Consolidating the supply route for most consumable products with NHS Supply Chain, which enables the management, monitoring and assessment of carbon reporting, supply chain mapping and labour standards to take place at a strategic level and the appropriate resource and leverage to be applied	<ul style="list-style-type: none"> <li>Supply chain management</li> </ul>

Table 28: 'Clinical leadership, systems and workforce' principle: examples of net zero actions from selected NHS Green Plans



### Clinical leadership, systems and workforce

Green Plan heading	Trust	Description	List of subtypes
Workforce and system leadership	Hertfordshire Partnership University NHS Foundation Trust	Creating a procurement role supporting the department, to investigate ways that waste in the supply chain can be reduced.	<ul style="list-style-type: none"> <li>New and dedicated roles</li> <li>Supply chain management</li> </ul>
	Humber Teaching NHS Foundation Trust	Establishing an Adaptation Lead, to develop the trust's adaptation plan	<ul style="list-style-type: none"> <li>New and dedicated roles</li> <li>Adaptation and contingency planning</li> </ul>



## Clinical leadership, systems and workforce

Green Plan heading	Trust	Description	List of subtypes
<b>Workforce and system leadership</b>	<b>Leeds and York Partnership NHS Foundation Trust</b>	Funding a Head of Sustainability role as well as project support to develop the trust's sustainability work over the period of the Green Plan. An agreed governance route was also put in place to ensure the Trust Board and other stakeholders would receive assurance that targets are met and that service delivery is ethical.	<ul style="list-style-type: none"> <li>● New and dedicated roles</li> <li>● Oversight and governance</li> </ul>
	<b>Sussex Partnership NHS Foundation Trust</b>	Establishing a Sustainable Programme Board, with sessions facilitated by the Care Without Carbon (CWC) team every quarter. While the team lead on delivery of the CWC programme, senior leaders across the trust own each work stream, aligned with the CWC elements. Work stream delivery plans are renewed every 12 months, developed by operational leads and with specialist input from the CWC team who feed into working groups taking these actions forward. Quarterly KPI (key performance indicator) reports measure progress against both delivery plans and key environmental targets, focusing on energy, waste and travel.	<ul style="list-style-type: none"> <li>● Oversight and governance</li> </ul>
	<b>Tees, Esk and Wear Valleys NHS Foundation Trust</b>	Establishing a Sustainable Development Management Plan Steering Group, which promotes sustainability across the trust and influences how sustainable actions are implemented. Staff engagement relating to sustainability is also overseen by the group, in addition to promoting the reduction of the trust's carbon footprint and recruiting and coordinating the activities of Sustainability Champions. A newsletter has been circulated and a Climate Change Adaptation plan produced.	<ul style="list-style-type: none"> <li>● Oversight and governance</li> <li>● Promotion and engagement</li> <li>● Sustainability groups and staff champions</li> </ul>



## Clinical leadership, systems and workforce

Green Plan heading	Trust	Description	List of subtypes
<b>Workforce and system leadership</b>	<b>Sussex Partnership NHS Foundation Trust</b>	<p>Launching a Dare to Care engagement programme designed to create a culture that celebrates, empowers and supports staff to make more sustainable choices at work. A key aspect of the programme is to link health with sustainable behaviours. A dare is a small pledge to do something differently, focused on reducing the impact on the environment and improving wellbeing, such as 'Take a walk', 'Switch it off' and 'Check it before you bin it'. To date, 2,234 dares have been taken by 822 staff.</p> <p>Appointing CWC Envoys who represent sustainable healthcare in their teams and lead on it as agenda item each month at team meetings. A CWC team support the envoys with a themed toolkit to ensure the sustainability narrative aligns with the trust's Green Plan.</p> <p>Embedding sustainability into the trust's induction programme so all new starters understand that CWC is their approach to delivering sustainable healthcare.</p>	<ul style="list-style-type: none"> <li>● Staff engagement and induction</li> </ul>
	<b>Midlands Partnership University NHS Foundation Trust</b>	<p>Adapting Quality Improvement (QI) training and QI project methodology following the Centre for Sustainable Healthcare's Sustainability in QI (SusQI) training to become an Aspiring Beacon Site for Sustainability in QI, empowering staff and students to design and implement sustainable QI programmes.</p> <p>Outcomes from the SusQI projects will be reported to the Directors Forum, Quality Governance Committee and Trust Board, and highlighted on the Trust website. The QI Team will also report quarterly to each Care Group and share regular updates at the Sustainability Champions Group forum and the QI Café.</p>	<ul style="list-style-type: none"> <li>● QI</li> </ul>





## Clinical leadership, systems and workforce

Green Plan heading	Trust	Description	List of subtypes
<b>Workforce and system leadership</b>	<b>Midlands Partnership University NHS Foundation Trust</b>	<p>Forming a Sustainability Champions Group, which is part of the Clinical and Practice Network. As such, it is part of an integrated, organisation-wide framework to support improvement, through which local activities are supported, aligned, coordinated and appropriately resourced. The group provides opportunities to improve, standardise, and share learning. It provides staff with a practical, cohesive social network, connecting and coordinating organisation-wide change. The group shared the sunflower seeds donated by Central Co-op England, donated plants, seedlings, and shared the homegrown harvest with patients, carers, staff and visitors. The Sustainability Champions also created a Sustainable Guide at Work and Home.</p>	<ul style="list-style-type: none"> <li>● Sustainability groups and staff champions</li> <li>● Promotion and engagement</li> </ul>
		<p>Establishing a GSP (Green Social Prescribing) group for clinicians to share ideas and pool resources. People can get support for accessing funds, applying for grants, and also measuring clinical outcomes and green metrics. The group is supported to publicise success stories, as well as gathering ideas from other sectors on the topic of green social prescribing. The projects in this group will be clinician-led, with input and potential for co-production from patients and carers.</p>	<ul style="list-style-type: none"> <li>● Sustainability groups and staff champions</li> </ul>
		<p>Forming a Greener Clinical Practice Group, a network group for service leads, team managers and clinicians with an interest in changing clinical practice to reduce the trust's carbon footprint. The group will share ideas and good practice, and take part in measurable change projects, supported by Continuous Improvement, SusQI, Libraries and Research, and Business Support. Projects will report outcomes to the Strategic Sustainability Group and Trust Board.</p>	<ul style="list-style-type: none"> <li>● Sustainability groups and staff champions</li> </ul>



## Clinical leadership, systems and workforce

Green Plan heading	Trust	Description	List of subtypes
Workforce and system leadership	Sheffield Health and Social Care NHS Foundation Trust	In the Therapeutic Environments Steering group and Therapeutic and Great Places to Work group, reviewing the trust's building stock and redevelopment of the estate and green spaces to provide sufficient high-quality healing environments and external green spaces in support of 24/7 facilities. Offering the opportunity to empower and enable staff to make nature-based improvements to the workplace by funding improvements such as creating wildflower beds, planting trees, creating outdoor seating areas and installing bird houses and bee hives.	● Sustainability groups and staff champions
		Successfully delivering an International Health Partnership scheme with Uganda remotely.	● Remote international health partnerships
	South London and Maudsley NHS Foundation Trust	Undertaking a Green Champions engagement workshop for Junior Doctors and other individuals to share their priorities and ideas for developing the Green Plan. Key themes drawn from this session included resource use, communication and leadership, sustainable healthcare, transport, capital developments and estate, greenspace and wellbeing.	● Sustainability groups and staff champions

## 4.4 Limitations

The review of Green Plans does not provide a comprehensive review of all actions planned by Trusts and only considers actions that were described as underway or completed. Evaluation and outcome data were not available for most examples, and so the review does not provide any evaluation of how successful actions taken have been. Differences in how Green Plans are structured in addition to variations in their content and detail meant that comparisons between Green Plans was not appropriate. It should also be noted that this review is not an evaluation of the quality or success of individual Green Plans. A full audit of Green Plans in the future might help to address these limitations.

# 5. The carbon impact of the mental health care pathway: carbon mapping workshop

## 5.1 Overview

A workshop was held with members of the ERG to map the areas of mental health care considered to be carbon intensive. The outputs from the workshop were synthesised and used to create a visual representation of high carbon impact areas across the mental health care pathway (shown in [Guidance and Recommendations: Figure 3](#)).

## 5.2 Method

Members of the ERG were split into three groups to discuss the carbon impact of mental health care services and activities spanning:

1. Primary care
2. Secondary care
3. Tertiary care.



















Members were asked to provide their views on areas of mental healthcare considered to have a high carbon impact, that is the settings, services and activities that contribute relatively high levels of carbon emissions.

Workshop group discussions were recorded by members of the research team, who used the synthesis of discussions to develop a visual representation of examples of high carbon activities across the mental healthcare pathway.

## 5.3 Outputs

[Table 29](#) contains the outputs from the carbon mapping workshop, presented under primary, secondary and tertiary care and indicating the principles that each output aligns with.

Table 29: Outputs from the carbon mapping workshop



















Primary care					
High carbon impact activity	Factors effecting carbon impact	Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems
	<b>Patient, carer and staff travel</b>	Repeated journeys for multiple appointments at same location or with different professionals			
		Difficulties getting diagnosis and care right the first time.			
	<b>Referral and diagnosis</b>	Poor communication between different services			
		Wait times for secondary services increasing demand on GPs and A&E			
		Patients falling between services e.g. not meeting criteria for access due to comorbidities or level of severity			
		Patients being referred to inappropriate services that do not meet their needs			
	<b>Medication</b>	Poor communication between GPs and pharmacies			
		Medication continuing for longer than needed			
		Overprescribing			
	<b>Physical health</b>	Managing co-occurring physical health problems			
		Managing physical health side effects of medication			























**Secondary care**

High carbon impact activity	Factors effecting carbon impact	Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems
	<p><b>Patient travel, commuting and business travel</b></p> <p>Location and public transport options. More challenging in rural areas and for trusts covering large areas</p>				
	<p><b>Investigations</b></p> <p>Unnecessary investigations such as blood tests and scans. More guidance/policy needed</p>				
	<p><b>Interventions</b></p> <p>Some interventions such as electroconvulsive therapy and depot injections may be more carbon intensive</p> <hr/> <p>Uncertainty about the carbon footprint of interventions</p> <hr/> <p>Need for Interventions that include advice and support for service users on carbon and sustainability</p>				
	<p><b>Digital intervention and use of technology</b></p> <p>Need for more digital interventions to help reduce travel emissions</p> <hr/> <p>Carbon costs associated with digital equipment, e.g. lack of recycling and refurbishment options, computers left running when not in use, etc.</p> <hr/> <p>Carbon costs of storing information on servers and in cloud storage</p>				
					
					












## Secondary care

High carbon impact activity	Factors effecting carbon impact	Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems	
 <b>Medications</b>	Medications prescribed in secondary care often impact carbon footprint of primary care instead					
	Medication being stockpiled and poor compliance					
	Medication discarded when more is supplied than needed or medication is stopped/changed.					
	Lack of advice from specialist services about how and when to stop medication					
	Medication care plans not planned collaboratively with patients					
	Trade-off in benefits of depot injection versus oral medication can be complicated. Some patients may benefit from more contact with health provider					
	Lack of clarity around the carbon cost of different medication and delivery methods					
	Issues with stock control and storage, e.g., supply levels and temperature control. Central clinics may help with this					
 <b>Crisis care</b>	Need for more local crisis cafés, community crisis services and dedicated phone lines for admissions to help avoid the need for blue-light responses, A&E and acute admissions					
	Disjointed services					
	Intensive resource needed for Mental Health Act assessments and response					
	Limited follow-up care and support options					

**Secondary care**

High carbon impact activity	Factors effecting carbon impact	Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems
	<b>Acute and inpatient care</b>	Lengthy stays, delayed discharge and readmissions			
	High staff-to-patient ratio interventions, e.g., 2:1 nursing				
	Restrictive practices affecting therapeutic relationships and increasing length of stay				
	<b>Food and nutrition</b>	Carbon-intensive diets, e.g., meat-based and not locally sourced			
	<b>Supply chain and procurement</b>	Carbon-intensive production and supply chains need to be considered			
	<b>Energy use</b>	Inefficient systems resulting in higher energy bills, e.g., needing to open windows when the heating cannot be turned down  Old equipment/lack of energy-saving solutions/technology, e.g., lack of motion-sensored lights			

## Tertiary care

High carbon impact activity	Factors effecting carbon impact	Keeping people healthy	Right care, right place, right time	Low carbon treatment and care settings	Clinical leadership, systems
 <b>Staff travel</b>	Staff travel for assessments and follow-ups, etc.				
 <b>Inpatient care</b>	Long admissions associated with high energy consumption				
	Bottleneck at discharge –delayed discharge due to lack of community and social care provision				
 <b>Specialist services (e.g., specialist psychotherapy services)</b>	Location of specialist services, which are often provided at national rather than local level				
 <b>Out of area placement</b>	Tertiary services are often less local to patients				
 <b>Forensic services</b>	MDT follow-up assessments with multiple professionals				

## 6. Full narrative summary of research findings

### 6.1 Keeping people healthy



Sustainability and net zero interventions and approaches included under this heading included:

- **Access to green spaces for outside activities** that promote mental and physical wellbeing
- **Implementing sustainable models of care**, such as those that improve access to services and that reduce preventable hospital admissions
- **Keeping people healthy** by responding to health needs that occur as a result of climate change<sup>m</sup>
- **Food and nutrition**, such as strategies to include more sustainable food that supports healthier eating.

#### Call for evidence



The only submission to the call for evidence categorised under 'Keeping people healthy' was the green walking group intervention, submitted by South London and Maudsley NHS Foundation Trust. This is because the service reported on the benefits of exercise on overall health in addition to positive patient feedback from questionnaires.

<sup>m</sup> The health impacts of climate change and responses to these issues were not in the core scope of this work and as such, recommendations on this issue have not been derived. However, findings are reported here given that several of the Green Plans discussed plans to protect vulnerable groups and respond to climate-related health issues.

The walking group provides a no-carbon outdoor activity for patients that incorporates mindfulness and integrated forest therapy. Although patient outcomes were collected in before-and-after questionnaires, carbon impact had not been measured at the time of submission.

#### Review of Green Plans



Across Green Plans, the role of **access to green spaces** for outside activities that promote mental and physical wellbeing was often highlighted. Many mentioned increasing the amount of green space in hospitals and local communities. Actions included establishing hospital gardens and allotments, planting trees and protecting green spaces. Several of the Green Plans focused on using green spaces for activities to promote physical and mental wellbeing, including gardening and horticulture groups, growing food for use by patients in cooking sessions, nature walks and outside gyms. Biodiversity initiatives, such as establishing wildflower meadows, installing habitat boxes and tackling pests were also proposed. Many examples provided in the Green Plans involved collaborative working with local voluntary and community services. Initiatives were most often aimed at



patients in mental health hospital and community settings but a few included those aimed at staff and the wider community.

Some Trusts reported efforts to keep people healthy through **sustainable models of care**, incorporating preventive and early intervention efforts (see also [6.2. Right care, right place, right time](#)). Actions taken by Trusts included initiatives to help prevent admissions and support discharge, provide crisis support and community recovery teams in local areas and initiatives to improve access to primary mental health care. Examples included expanding primary care frameworks and working with community partners to offer preventive interventions. Other Green Plans highlighted actions to improve the physical health of people with SMI through health checks and preventive interventions. Green Plans typically stressed the importance of tackling health inequalities as key to keeping people healthy.

Green Plans also noted that **keeping people healthy** by responding to health needs resulting from climate change will require Trusts to plan for and adapt to an increasing frequency of extreme weather events. Changing climate will also increase risk of diseases spread by vectors such as ticks and mosquitos. Other impacts on health and wellbeing and increased demand on health services may include increased displacement of people, lack of resources and climate change perpetuating health inequalities. Actions taken by trusts as reported

in Green Plans included creating lists of vulnerable people, establishing mechanisms to provide food parcels and check on patients as needed. Dedicated staff roles such as Emergency Preparedness Manager, contingency plans for water and power shortages, assessing and mitigating flood risk, building cool rooms for heat waves and participating in local response planning exercises, were also included.

**Food and nutrition** was a topic often included in Green Plans. As well as strategies to increase the sustainability of food and reduce carbon footprints by increasing vegetarian and vegan offers and locally sourcing food, many Trusts highlighted the importance of offering menus that promote and support healthier eating. Some of these were informed by work with dietitians. Examples of actions taken contained in Green Plans also included Trusts using green spaces to grow food.

## Literature review



Preventive care was out of the scope of the database search. However, strategies relevant to the principle of 'Keeping people healthy' and achieving a sustainable healthcare system were referenced in several studies. Studies discussed the value of early intervention in reducing the need for further treatment, by redesigning care services to prevent worsening health and delivering care in the most effective way using evidence-based methods to ensure optimal outcomes.<sup>9,10</sup> Priority areas for services to meet sustainability goals often

focused on prevention and keeping people well, especially the benefits of early rather than late intervention on not only the environment but on the healthcare systems themselves and by extension, the people who use them.<sup>58</sup> The necessity of preventive methods such as addressing social influencers of health (for example, housing, employment and isolation), and strategies to empower patients to manage their own mental health and be more in control of their care and treatment was also discussed.<sup>66</sup>

Several of the studies described in [Lower carbon interventions](#) included approaches that are relevant to the principle 'Keeping people healthy' in terms of secondary prevention or maintaining wellbeing, including:

- Social prescribing (that is., when patients are referred to services, activities and groups in their community to improve their health and wellbeing)<sup>41</sup>
- Using peer support workers to facilitate activities (such as gardening groups) that can help empower patients to manage their mental health<sup>66</sup>
- Green walking initiatives and advancing access to green spaces.<sup>67</sup>

In addition to studies identified from the database search, two studies recommended by the ERG were relevant to the principle of 'Keeping people healthy'. The first, a survey and care modelling analysis, showed that reducing DNAs ('did not attend' appointment) could be associated with reductions in carbon. Also, applying methods to reduce clinical

non-attendance may have indirect health benefits by contributing to appointment attendance and the receipt of prescribed care, preventing the need for further treatment.<sup>70</sup>

The other recommended study reported on the use of the triple bottom line (social, environmental and economic effects) framework to evaluate a CTOs intervention based on those combined impacts. The study demonstrated the feasibility of using the triple bottom line approach to determine intervention cost, and environmental and social impacts. Patients on CTOs did not differ significantly from the control group (patients given voluntary status via a brief absence of leave from inpatient care) in terms of financial and environmental costs of care, meaning CTOs could offer a sustainable method of providing meaningful care in the community.<sup>69</sup>

Studies exploring lower carbon methods of care (such as reducing car travel, or nature-based interventions like walking groups) also have relevance to the principle of 'Keeping people healthy'. This is due to the health benefits known to be associated with these measures. Though not explored in detail for this review, the impact of such lower carbon approaches on keeping people active or reducing pollution associated with health risks is important to mention here.

## 6.2 Right care, right place, right time



Different types of interventions were included under this heading:

- **Delivering treatment in alternative formats, including the use of digital technologies** (remote care, video and telehealth)
- **Green treatment alternatives**, including nature-based interventions
- **Alternative patient transport and transfer services**
- **Preventing unnecessary use of the care pathway**

Several of these interventions or approaches could also be considered under [6.3. Low carbon treatment and care settings](#), as they focus on ensuring that the right care is available while providing a lower carbon alternative. There is also crossover with some of the approaches under [6.1. Keeping people healthy](#), in the context of nature-based or green interventions often having health and wellbeing benefits.

### Literature review



The database search found several of these studies focused on **alternative mental health treatment delivery formats** (systematic reviews, n=6 (7\_publications); primary studies, n=7; mental health-focused non-systematic reviews, n=1). Alternative treatment approaches included:

- Using telemedicine and videoconferencing for outpatient appointments or virtual clinics,<sup>4,6,11,37</sup> or replacing staff meetings with online ones<sup>44</sup>
- Internet-based self-care approaches, including programmes such as online cognitive behavioural therapy<sup>66</sup>
- Making use of technology, e.g., uptake of electronic prescriptions and electronic medical records.<sup>6</sup>

These methods were reported to be associated with carbon reductions largely because of reductions in patient and staff travel. Included studies often reported that telemedicine, for example, is associated with carbon savings. One review reported that telemedicine can save 148 kg CO<sub>2</sub> emissions per patient<sup>n</sup> on average, or 128 kg CO<sub>2</sub> emissions per consultation held.<sup>4</sup> One study that looked at outpatient appointments across 30 different medical specialities across Northern California estimated that about 200 miles of travel per patient, each way, can be saved using telemedicine as an alternative to face-to-face care for outpatient appointments, equal to 1,700 metric tonnes of reduced carbon.<sup>64</sup> However, patients need to be supported and empowered to engage with digital technologies if they are to be routinely used.<sup>66</sup>

<sup>n</sup> Lange (2022) acknowledged that it was not always clear if 'per patient' corresponded to one consultation, and so a time frame was not always available.

It should be noted that studies did not consistently report on carbon emissions associated with use of electronic devices and infrastructure required to provide tele-healthcare. Where studies did report this, some found that electronic health interventions that use more complex interfaces and technologies could be more environmentally damaging and that carbon emissions associated with such interventions would require mitigation.<sup>6</sup> Another issue across studies was that carbon emissions were reported using different metrics and across various timescales, making it challenging to derive estimates in some cases.

### Call for evidence



Three submissions to the call for evidence focused on **delivering treatment in alternative formats**.

Dorset University Healthcare NHS Foundation Trust reported an investment equipment and technology to enable video and audio conferencing, where appropriate, to reduce unnecessary travel for patients receiving care (and for staff).

East London NHS Foundation Trust provided the example of their Long COVID Mental Health Service as an alternative approach to delivery, offering remote consultations to patients. However, the Trust acknowledged that while secondary research supports remote consultations in enhancing patient care in some cases, how often remote consultations are offered is unclear. They acknowledge that

research is also inconclusive in providing clinicians a clear strategy for when to use remote consultations rather than face-to-face interventions.

Midlands Partnership University NHS Foundation Trust described the rollout of electronic prescriptions for patients. As well as reducing travel (see [Improved medication and prescribing practices](#)), the programme aimed to ensure that medication is available when patients come to collect it.

Sustainable or **green treatment alternatives** may also provide the benefit of allowing patients to access the right care at the right time, while also reducing the carbon impact by providing sustainable interventions based in nature. Three submissions to the call for evidence focused on these types of interventions.

Bradford District Care NHS Foundation Trust described a social prescribing activity employed by their Early Intervention Psychosis service whereby patients were provided with an allotment to use as a low carbon or green socially prescribed treatment. However, the impact of the intervention had not been measured at the time of submission.

Oxford Health NHS Foundation Trust described a training programme for staff focused on Nature Connectedness, which trained staff to integrate and embed nature-based approaches to mental health care in their practice. The focus of the programme, NatureWell, was to establish lower carbon and novel



nature-based interventions in children and young people's mental health settings. The service reported collecting staff satisfaction and experience measures at the time of submission. In a qualitative evaluation from the first phase of the work, staff reported patient benefits such as improved emotional regulation, relational security and increased engagement, and staff benefits included feeling relaxed and refreshed, and improved peer relationships. There are future plans to collect measures of patient experience of nature-based interventions. No measures of the carbon impact were provided with the submission.

South London and Maudsley NHS Foundation Trust also provided evidence of an allotment as a method of green care. The allotment at the Anxiety Disorder Residential Unit at the Bethlem Royal Hospital provides patients with access to horticultural skills development and an outdoor therapeutic activity. Outcome measures were not available at the time of submission.

The Trust provided two further examples of green interventions, in the form of a green walking group and The Orchards project, both at the Bethlem Royal Hospital. The walking group is a no-carbon outdoor activity for patients, while The Orchards also provides patients with green spaces for therapeutic activities, such as those led by occupational therapy teams.

Another submission relevant to the 'Right, care, right place, right time' principle came from the South Central Ambulance Service and the use of **alternative patient transport and transport services**. An electric mental health response vehicle was commissioned by the service to support people in crisis. The vehicle, as well as being electric, is suitable for performing assessments with patients and provides a safe method of transportation to a person's home, where conveyance to a place of safety under section 136 of the Mental Health Act is not required thus **preventing unnecessary pathway use**. The vehicle can be deployed to local railways so that mental health professionals can provide support to patients and work together with the British Transport Police to ensure the person in crisis receives the appropriate assessment and support.

## Review of Green Plans



The review of Green Plans resulted in the identification of actions taken by trusts focused on sustainable models of care that ensure people had access to care when it was needed. These included initiatives to improve access to primary mental health care, crisis services and to prevent admissions (see also [6.1. Keeping people healthy](#)). A number of trusts also mentioned adhering to the Getting it Right First Time programme.



Digital transformation was also a common feature across Green Plans. The use of digital technology in providing lower carbon and more sustainable approaches to care (such as remote treatment delivered by telehealth or video conferencing) is also discussed in other parts of this report (see [6.3. Low carbon treatment and care settings](#)). In addition to reducing emissions associated with patient and staff transport, the use of digital technology in treatment can allow clinicians to be more flexible with how treatments are offered to patients to meet their individual needs. Some trust's reported using non-contact technology for nighttime observation on inpatient mental health and dementia wards. Such methods allow for remote observation, activity reports and real-time alerts to clinical staff, ensuring patient safety remotely.

Green Plans also included actions taken to adapt to climate change. Responding to the health impacts of climate change was not in the scope of this work, but was considered important to mention here in the context of ensuring the right care is available for patients. For example, some Trusts outlined actions taken to ensure continued care for patients during adverse weather events. This included actions such as identifying vulnerable patients and providing 'cool rooms' (see also [6.1. Keeping people healthy](#)).

There were a number of examples of Trusts integrating nature-based interventions and using green spaces in patient care and recovery planning. Nature-based therapies such as gardening, nature walks and outside fitness activities were included in plans as ways of mitigating the effects of medication-related weight gain and improving or maintaining fitness as well as providing opportunities for mindfulness and anxiety management.

### 6.3 Low carbon treatment and care settings



Interventions and approaches under this heading included:

- **Sustainable procurement practices and supply chains**
- **Interventions to reduce energy consumption** (such as electricity or gas consumption)
- **Approaches to promoting sustainable staff and patient travel** (such as promoting walking or cycling to work, using public transport and remote working)
- **Waste reduction** (including food waste and single-use product reduction)
- **Lower carbon interventions** (including nature-based green interventions, as above)
- **Improved medication or prescription practices** (such as de-prescribing)

## Sustainable procurement practices and supply chains

### Literature review



The database search identified studies focused on interventions reducing healthcare services' carbon footprint through sustainable procurement practices and supply chains (systematic reviews, n=5 [6 publications]; primary studies, n=11; mental health-focused non-systematic reviews n=1). These studies found that health care service supply chains were associated with a large proportion of generated carbon emissions. Suggested techniques for reducing services' carbon footprint included:

- Sourcing products sustainably, e.g., establishing a 'green procurement scheme' by adding sustainability as a factor on the scoring system when choosing which supply companies to use<sup>9,10,13,14,19</sup>
- Purchasing reusable instead of single-use products; this is based on the finding that higher carbon emissions are associated with single-use items (0.0018–18 kg CO<sub>2</sub>e), compared with mixed items (reusable, with single-use components) (0.38–0.93 kg CO<sub>2</sub>e) and reusable items (0.0028–4.5 kg CO<sub>2</sub>e)<sup>2</sup>
- Using local providers to source food and produce<sup>45,49–51</sup>
- Using more plant-based items.<sup>37,49–51</sup>

## Call for evidence



The call for evidence returned three service examples that included approaches to **addressing carbon emissions in supply chains**.

Nottinghamshire NHS Foundation Trust initiated a sustainability training programme for its Board of Directors, Net Zero Group Leads and the Trust Management Group. The purpose of this programme was to ensure that Trust decision-makers are aware of the impacts of climate change on services, how the organisation is contributing to the problem and what action is necessary to minimise the Trust's impact and deliver net zero services. One of the outcomes from the training was a commitment to embed sustainability as business as usual, with a focus on reducing emissions from the Trust's supply chain. This submission demonstrates the vitality of training for those in senior leadership positions to prioritise the provision of lower carbon services; however, no further outcome measures were provided at the time of submission.

The South London and Maudsley NHS Foundation Trust provided two examples of work to reduce carbon emissions linked to supply chains. Both the Walled Garden and the Orchards projects provide options for locally sourced produce for use at the Bethlam Hospital and other Trust services. In addition to providing green spaces for therapeutic activities and supporting patients with occupational therapy, cooking and horticultural groups, these

projects provide access to homegrown produce which is used by patients and is also sold in the community centre shop. Locally grown produce avoids the Trust having to source this elsewhere, limiting the carbon associated with procurement, however no specific outcome measures were provided with this submission.

## Review of Green Plans



Some trusts considered increasing sustainability through efforts to **reduce, reuse and recycle** a range of items. Strategies included reducing single-use plastic, switching to recyclable or reusable alternatives, and reusing and refurbishing furniture and technology. Increasingly, services reported plans to avoid using landfills and to recapture energy from items being disposed of. Several trusts also considered supply chain mapping as a future goal. Green Plans tended to include a focus on food and nutrition, particularly in changes to staff and patient menus, and providing more locally sourced food and seasonal options.

## Interventions to reduce energy consumption

### Literature review



Studies also explored the impact of energy consumption as part of carbon footprint reduction (systematic reviews n=5 [6 publications]; primary studies n=14; mental health-focused non-systematic reviews n=1). Approaches to reduce or better manage energy consumption tended to focus on the infrastructure of healthcare buildings and the use of more energy-efficient appliances within them. These included:

- Switching to more energy-efficient appliances, for example:
  - Installing combined heat and power systems or optimising thermostats
  - Installing LED lights
  - Reducing water consumption by using water-saving taps or low-water use showers<sup>1,38,60</sup>
  - Using greener IT systems such as monitors which automatically switch off after a period of not being used, or replacing systems less energy intensive equipment<sup>19,26,43</sup>
- Changes to buildings to allow for more natural ventilation<sup>8,9,10,43,44,49-51,60</sup>
- Installing solar panels on healthcare service buildings to generate natural energy.<sup>37,44,49-51,60,65</sup>

Some studies also discussed moving care away from energy intensive environments (such as care away from hospitals or providing digital forms of treatment) where possible, to reduce the carbon footprint of services.<sup>9,10,37</sup> These methods rely on the sufficient availability of preventive healthcare in addition to provision of suitable treatment alternatives available in the community. One of the fundamental challenges associated with many of the approaches above is that they tend to involve large, lengthy, and expensive investments which take a long time to implement even though they are likely to be financially as well as energy-efficient in the long-term.

## Call for evidence



Three of the submissions to the call for evidence included interventions or approaches aimed at **reducing energy consumption**.

Bradford District Care NHS Foundation Trust submitted evidence of work undertaken at the Buildings/Estates level to de-carbonise the Trust's HQ building. This involved switching all lights to LED, which led to a reduction in electricity consumption of 9%.

Dorset Healthcare University NHS Foundation Trust undertook similar energy-saving projects, incorporating multiple strategies including using LED lights, sourcing energy from UK wind and solar sources, and changing the staff uniform scheme to avoid excessive laundering in Trust facilities. The Trust estimated the impact of installing solar panels to be an annual carbon saving of 120 tonnes. The initiative is predicted to reduce the Trust's grid energy use and costs. Two hospital sites fitted with solar photovoltaic arrays as part of refurbishment are expected to generate a combined 48,000 kWh of electricity per annum, avoiding electricity purchase from grid while also saving 14 tonnes of carbon per annum.

Nottinghamshire Healthcare NHS Foundation Trust provided evidence of the value of sustainability training for those in leadership positions to enable decisions on reducing energy consumption. Following training for the Trust board of directors, funding was allocated to improved monitoring of efforts to reduce gas electricity use across the Trust.

## Review of Green Plans



In Green Plans, many trusts reported **upgrading buildings to make them more carbon friendly**, for example installing LED lighting, heat pumps and solar panels. Consideration was also given to the design of new energy-efficient builds. Trusts also reported plans to switch to renewable energy suppliers, to reduce their carbon footprint. Water conservation, such as roof rainwater harvesting, was also referenced some Green Plans.

## Approaches to reduce staff travel or make patient transport less carbon intensive

### Literature review



The database search identified several studies focused on **sustainable transport or travel interventions** to reduce carbon emissions (systematic reviews n=4; primary studies n=13; mental health-focused non-systematic reviews n=1). Strategies included:

- Promoting cycling to work instead of driving by installing more bike parking spaces (and showers to facilitate this)<sup>38</sup> or implementing Cycle to Work initiatives, making cycling lessons available and implementing bike purchasing schemes<sup>44,45</sup>
- Reorganising staff working structures to minimise time spent travelling for work. Examples include arranging district nurses' work by catchment area rather than by GP practices (which may overlap), or encouraging staff to car share where possible<sup>44,43</sup>



- Providing shuttle buses for staff and patients between hospital sites<sup>43</sup>
- Encouraging the use of public transport by healthcare staff travelling to places of work and working with local councils to improve public transport links<sup>37</sup>
- Providing care using remote or digital formats that reduce the need for patient and/or staff travel to healthcare sites<sup>4,11,12,19,37,44,60,64,66</sup>
- Switching service vehicles (such as ambulances) from petrol to electric vehicles and providing sufficient charging points.<sup>9,10,13,14,19,36,60,66</sup>

## Call for evidence



The call for evidence resulted in four submissions from services that focused on **transport and/or travel interventions**.

Bradford District Care NHS Foundation Trust, in its approach to de-carbonise the HQ building, enabled remote working for staff members. Staff based at the building were supported to work from home, to reduce staff travel and long-distance commuting. At the time of submission, the effects of the intervention had not been measured but the Trust reported plans to use mileage to calculate its carbon impact.

Dorset University Healthcare NHS Foundation Trust's Cycle to Work scheme, provision of staff bike shelters and investment in staff remote working opportunities are other examples of staff transport interventions.

The South Central Ambulance service provided evidence of the use of an electric mental health vehicle, aimed to prevent a traditional ambulance or other non-electric vehicle being used to assess or transfer a person in mental health crisis. Electric vehicles provide a lower carbon alternative to traditional mental health service transportation. While there was no measurement provided at the time of submission the service reported a plan to measure the impact of the electric vehicle in future using mileage and battery efficiency data.

East London NHS Foundation Trust submitted evidence from their Long COVID Mental Health Service, which provides remote consultations to patients. Consultations over video call or telephone instead of face-to-face appointments reduce patient travel and, the service argues, can enhance patient care. Although remote care reduced carbon emissions from travel, the service emphasised that how much patients benefit from remote consultations depends, for example, on the person's presentation, their home environment, their access to technology (so they can meaningfully engage), their age and their level of social anxiety. At the time of submission, the carbon impact of remote consultations was not available.



## Review of Green Plans



The review of Green Plans found that trusts are switching their fleets to **low emission vehicles and electric vehicles** with appropriate infrastructure (such as charging points) being utilised. Active travel for staff was also a key feature across plans, including the need for appropriate infrastructure to encourage this (such as bike-storage areas and staff shower and changing facilities). Encouraging and incentivising staff to use public transport also often featured in Green Plans. Several plans make the argument that active travel has the benefit of keeping people healthy – a key principle of sustainable healthcare.

Digital transformation was also a key focus across Green Plans, with many including a strong focus on appropriate use of remote consultations in place of face-to-face care. Remote care reduces need for travel but services and patients need to be appropriately supported to engage in this way. Processes that traditionally use paper are being digitised (such as discharge summaries and e-prescribing), which can also save on travel. Several plans also mentioned the use of digital Apps to support patients.

## Waste reduction

### Literature review



**Waste reduction or improvements to waste management** were discussed as ways to reduce carbon emissions by healthcare services in several studies (systematic reviews n=6; primary studies n=13; mental health-focused non-systematic reviews n=1). Strategies employed included:

- Improved recycling measures<sup>8,19,26,38,44,46,66</sup> and redistribution of unused items, such as unused food<sup>14</sup> or medication<sup>8</sup>
- Reusable medical and healthcare products in hospital settings, such as reusable sharps containers,<sup>14</sup> which can reduce up to 127 metric tonnes of CO<sub>2</sub>e units in one year.<sup>13</sup> Studies also referenced reusable hospital gowns to reduce CO<sub>2</sub> emissions.<sup>12,13</sup> While the use of hospital gowns is less common in mental health hospital settings compared with general hospital settings, these findings are useful in the broader context of carbon savings that can be made possible by changing to reusable medical equipment
- Reducing waste created by healthcare services. An example given was the reduction of single-use plastic water bottles by providing water stations in hospitals, which was estimated to reduce greenhouse gases by 16 kg per 100 L<sup>13</sup>
- Improved waste management systems, such as using integrated waste management systems, segregating waste, composting and incineration.<sup>9,10,12,14,38,35,49–51</sup>

Studies discussed the need for clearer guidance and regulations on waste management set by the government.<sup>5</sup> Additionally, appropriate training and education for both patients and staff was considered necessary to develop and embed a culture for waste management and reduction.<sup>39,46</sup>

## Call for evidence



Three submissions to the call for evidence included **waste reduction or waste management interventions**.

In its multipronged sustainability project, Dorset Healthcare NHS Foundation Trust added the Warp It reuse and recycle portal to the staff intranet, allowing staff to list surplus equipment that can be claimed by other staff members. This was to reduce costs of buying new items and of carbon emissions associated with manufacture and distribution. Also, food waste is sent for processing at local anaerobic digestion facility. The service records the percentage of products are that recycled or reused and, at the time of submission, over £178,500 had been saved in new items purchase costs and over 79,500 kg of CO<sub>2</sub> emissions were saved from the manufacture and distribution of new items. The service also reported 33,980 kg of assets were reused.

A submission from Summerhill Services Ltd, on behalf of Birmingham and Solihull Mental Health Foundation Trust, reported a food waste reduction intervention across three hospital sites. The intervention had several components, intended to help move towards greener food waste provision, including removing macerators from use meaning that food waste can no longer be chopped and deposited into the sewage system. They also put in place caddies for food waste, which are taken to an anaerobic digestion facility or composted. The service also reported

on the importance of improving patient choice and food quality, to minimise food waste while enhancing patient care. At the time of submission, over 24 tonnes of food waste were recorded as diverted from either the black bag waste route or disposed of with food macerators into the sewage system. The service estimated this to be the equivalent of about 14 tonnes of carbon.

The single-use plastic pledge from Pennine Health Care NHS Foundation Trust was another example of an intervention to reduce waste by restricting the procurement of single-use products unless there is a justifiable medical need or no other alternative. The trust implemented mandated restrictions on orders to reduce the use of single-use plastics. No outcome measures were provided at the time of submission.

## Review of Green Plans



As described under [6.3. Low carbon treatment and care settings](#), several Green Plans included strategies to reduce, reuse and recycle items to reduce emissions. This included reducing single-use plastic and switching to recyclable or reusable alternatives. Plans reported efforts being made to reduce waste or to reuse waste as fertiliser. Efforts to reduce the use of single-use plastics in good catering were also common across plans. In some services, dieticians had been involved in the development of food and nutrition changes that can support keeping people healthy as well as providing environmental benefits.

## Lower carbon interventions

### Literature review



Delivery of **lower carbon interventions (including nature-based green interventions)** was the focus of a few studies (primary studies n=3; mental-health-focused non-systematic reviews n=2). Strategies discussed across studies included:

- Better use of social prescribing (that is, when patients are referred to services, activities and groups in their community to improve their health and wellbeing) and the incorporation of green spaces into delivery of routine care,<sup>41</sup> for example:
  - using peer support workers to facilitate community activities (such as gardening groups) that can help empower patients to manage their mental health<sup>66</sup>
- Therapeutic communities (a form of psychosocial treatment, with a focus on communal activity and increased personal responsibility), which have been shown to reduce A&E attendance, crisis appointments and their associated carbon footprint<sup>42</sup>
- Green walking initiatives and advancing access to green spaces.<sup>67</sup>

Lower carbon or green interventions aim to provide evidence-based alternatives to traditional more carbon-intensive healthcare methods. Providing green interventions can lead to reductions in health service carbon emissions both directly and indirectly

(for example, by reducing hospital re-admissions, A&E presentations and crisis appointments).<sup>41</sup> That said, the financial and environmental benefits of lower carbon interventions can take a long time to materialise and there are estimates that it can take up to 3 years for effects to become apparent.<sup>41</sup> As such, there is a need for continued demonstrative research of the beneficial effects of green interventions in order for strategies such as social prescribing to be implemented consistently and at scale.

### Call for evidence



Interestingly, six of the submissions to the call for evidence focused on **lower carbon or green treatments** (with a further one service reporting on a future plan to provide more green and outdoor spaces for use by patients and staff).

Bradford District Care NHS Foundation Trust described a social prescribing activity employed by their Early Intervention Psychosis service whereby patients were provided with an allotment to use as a low carbon or green socially prescribed treatment. However, the impact of the intervention had not been measured at the time of submission.

South London and Maudsley NHS Foundation Trust also provided evidence of an allotment and a walking group as methods of green care (see [6.2. Right care, right place, right time](#)). Unfortunately, there were no outcome measures available at the time submission was received.

The South Central Ambulance service electric mental health vehicle also provides a lower carbon treatment alternative, as it is suitable for patient assessment as well as transfer. Use of the vehicle for assessments avoids unnecessary travel to a place of safety.

The East London NHS Foundation Trust's Long COVID Mental Health Service can also be considered a lower carbon treatment, as the provision of remote consultations reduces the need for patients and staff to travel.

Nottinghamshire Healthcare NHS Foundation Trust put in place an intervention to embed green social prescribing (GSP) and make it easier for clinicians to make referrals, especially in SMI and Transformation of Mental Health Services. The aim was to promote GSP internally, increase referrals from mental health services to GSP providers and support these providers to engage more with patients with complex needs. Staff were given access to the 'Big Green Book' – a map containing details of green provision by area, accessibility, and level of mental health need (developed as part of Greenspace GSP pilot in Nottinghamshire). In terms of inpatient care, the service also put in place a hospital-based community garden for patients. There were no outcomes measured at the time of submission, but the Trust did report their plans to evaluate the GSP impact and is collecting data that they will use to evaluate the intervention. The service also tracks referrals received from mental health services to key green providers.

## Review of Green Plans



Green Plans often included **green spaces and the role of biodiversity in care**. These tended to focus on the principle of keeping people healthy, but also provide evidence of plans to develop more sustainable green interventions. Many of examples sought to increase the amount of green space in hospitals and local communities by establishing hospital gardens and allotments and planting trees. Initiatives were often aimed at service users in hospitals and community settings, but others also were also aimed at staff and the wider community

## Improved medication and prescribing practices

### Literature review



Changes to **medication and prescribing practices** were explored across studies (systematic reviews n=3; primary studies n=3; mental health-focused non-systematic reviews n=1; ERG-recommended papers, n=1). Lower carbon strategies associated with medication use and prescribing practices were wide-ranging but were closely linked to waste reduction. Approaches included:

- De-prescribing and medication optimisation practices such as reducing the number of unnecessary prescriptions<sup>13,14</sup> extending the shelf life of medications, and conscious ordering of medication by patient<sup>14</sup>



- Returning unused medication to reduce waste, prevent inappropriate disposal and allow for recycling or reuse.<sup>14</sup> Reducing medication wastage could save acute trusts millions of pounds and save 22,000 tonnes CO<sub>2</sub> per year<sup>43</sup>
- Making changes to medications packaging such as purchasing products with packaging that is free from environmentally harmful components or minimising unnecessary packaging<sup>8,14</sup>
- Making changes based on resource management, such as holding pharmacy-led medication reviews remotely using telehealth.<sup>37</sup>

One paper provided by the ERG discussed improved medication and prescribing practices, specifically looking at prescriptions of flupentixol decanoate injections. Authors found that there were both financial and environmental costs associated with these injections, including those associated with staff travel, appointment energy costs the overprescribing and the equipment required to administer injections. Authors concluded that changing prescribing behaviour could save money and carbon. For example, increasing the time between administering doses to the maximum interval required to achieve the evidence-based maximally effective dose, could save money and carbon.<sup>68</sup>

## Call for evidence



Only two evidence submissions were received that included **changes to medication or prescribing practices**.

Hertfordshire Partnership NHS Foundation Trust provided evidence of a medication rationalisation and de-prescribing programme rolled out across dementia inpatient wards. The service was able to review the medication of a sample of patients and stop or reduce unnecessary medication prescriptions by 30%.

Midlands Partnership University NHS Foundation Trust submitted evidence of the Green Psychosis Pathway Clinic – an initiative aimed to ensure that medication is available when patients come to collect it, thus reducing unnecessary or wasted travel. The intervention resulted in fewer trips to pharmacies to collect prescriptions. The service measured the impact of the initiative on its carbon footprint and found that it resulted in a reduction of 40.6 Kg CO<sub>2</sub>e/month from reduced mileage.

## Review of Green Plans



Actions pertaining to medication and prescribing in Green Plans were largely related to **reducing waste related to medications**, such as reducing single-use plastics. Electronic prescribing was also featured. Reducing medication use or using alternatives to medication did feature strongly as future ideas services could adopt.



## 6.4 Clinical leadership, systems and workforce



Interventions and approaches broadly covered the following areas:

- **Training and education** for healthcare providers and medical students
- **Visible leadership from above** ('top-down' leadership)
- **Empowering nurses and other healthcare professionals** to take on net zero leadership roles
- **Changes to governance structures, policies and standards**
- **Measuring and reporting on carbon emissions**
- **Methods to implement carbon reduction measures**

### Literature review



Several studies identified from the database search focused on professional and trainee education (systematic reviews, n=3; primary studies, n=19 [20\_publications]; mental health-focused non-systematic reviews, n=2; ERG-recommended papers, n=1) and on leaders empowering staff to take responsibility for green initiatives (systematic reviews, n=3; primary studies, n=12; mental health-focused non-systematic reviews, n=1).

Regarding **training and education**, studies identified several sustainable healthcare priority areas for system leaders, service developers, providers and those responsible for

trainee education and staff training programmes. Several studies focused on training for healthcare trainees in education settings and discussed the benefits of training that:

- includes teaching on waste management, energy use, development of renewable resources and sustainable procurement in care settings, and emphasises the role of nursing in environmental health<sup>7</sup>
- establishes competence in flexible thinking and critical reasoning<sup>7</sup>
- includes teaching on the practical applications of sustainability and net zero module content, including health promotion practices<sup>30,58</sup>
- is supported by inspired leadership, for example student and academic champions or collaborative partners with health services<sup>20</sup>
- is designed and delivered using methods to stimulate learning such as interactive groups<sup>52</sup> and using case studies<sup>7</sup>
- embeds learning into assessments<sup>58</sup>
- is developed and delivered collaboratively between educators, students and trained clinicians in the interest of shared learning<sup>61</sup>
- incorporates learning on how quality improvement strategies can be used to achieve sustainability.<sup>37</sup>

Evaluations from several studies showed that completion of a sustainability module was associated with significant improvement in trainees' self-assessed knowledge of

key concepts in climate health and sustainability<sup>25,30</sup> Studies found evidence that trainees tend to perceive training on sustainable healthcare as valuable and implementable to their practice<sup>54</sup> and personal lives.<sup>39,16</sup> Studies argued that it is relatively easy to implement sustainability modules into training programmes and it is an inexpensive and achievable approach.<sup>30,18</sup>

Studies also focused on professional development training for healthcare professionals and discussed the benefits of training that:

- Is mandatory across healthcare professions<sup>29</sup>
- Involves guest speakers and field experts.<sup>24</sup>

The associated carbon savings from sustainability and net zero training initiatives were also reported and there was evidence to suggest staff training programmes may contribute to reductions in carbon emissions as a result of increases in healthcare workers' confidence to address issues with other staff members.<sup>26</sup> While most of the identified studies on training were focused on trainees and students in education, the principles discussed are also relevant for qualified professionals. The approaches used in medical training courses could be generalised to continuing professional development and general staff training.

One study recommended by the ERG evaluated staff training in the NatureWell approach to working with people in nature<sup>71</sup> (see also [the submission to the call for evidence](#)

[from Oxford Health NHS Foundation Trust](#)).

Professionals trained to support patient engagement in activities such as walking and gardening were found to have several benefits for patients and for staff, as well as offering lower carbon methods of care. Staff noted that their training gave them the confidence and passion to be able to integrate nature-based activities into their practice, and that having a multidisciplinary team trained was helpful for integrating nature-based activities into practice.

Studies also focused on organisations **empowering nurses** to engage in sustainability and net zero initiatives by:

- Giving nurses the responsibility to lead on sustainability adaptations in their departments<sup>3</sup>
- Creating new roles for nurses such as dedicated positions focused on reducing emissions<sup>13,33</sup>
- Encouraging and supporting nurses to bring sustainability learning, knowledge and activities to the workplace<sup>66</sup>
- Incorporating techniques designed to inspire behaviour change in staff and to support them to make ethical decisions in practice<sup>8</sup>
- Using existing frameworks, such as the 'WE-ACT-PLEASE' (waste, energy/water, agriculture/food, chemicals and transportation professional obligation, leadership, education, accountability, science, and engagement) to help reframe the roles of nurses and healthcare professionals<sup>53</sup>

Reviews also explored what giving additional responsibility to nurses (and other healthcare professions) might look like (including the barriers services and staff might encounter) as well as recommendations for implementation. Nurses were often portrayed as being in a pivotal position to make changes due to being seen as societal role models and respected members of the community.<sup>43,47,62</sup> Motivations behind nurses' taking more responsibility for sustainability and net zero efforts included concern with the impact of climate change, frustration with healthcare waste and recognition of the influence that they can have within their role.<sup>40</sup> Staff having a personal interest in the environment was found to increase the likelihood of engaging in recycling.<sup>8</sup>

Linked to staff empowerment, was the importance of **top-down leadership** in encouraging and empowering staff to engage sustainability and net zero initiatives and to put training into practice. Strategies included:

- Leaders framing the issues of sustainability and net zero in healthcare positively, focusing on the co-benefits for health that people value<sup>24</sup>
- Appointment of academic 'champions' in partnership with healthcare services to inspire others to engage in sustainability and net zero action<sup>20</sup>
- Having board level and senior leadership staff in positions responsible for adapting and implementing sustainability and

net zero policies,<sup>34,33,45</sup> and for involving front-line staff<sup>38</sup>

- Encouraging healthcare professionals to get involved in net zero and sustainability action<sup>57</sup> by demonstrating how their efforts can contribute to environmental protection<sup>39</sup>
- Using incentives to encourage staff to engage in sustainability measures<sup>62</sup>
- Sharing good practice at conferences and meetings<sup>66</sup>
- Establishing top-down, interdisciplinary groups and leaders in sustainability within services, which can have positive influence employee participation in sustainability interventions<sup>40</sup> as well as encouraging engagement in education and training<sup>39</sup>
- Including the commitment to reducing carbon emissions in the Trust Board's list of responsibilities<sup>44</sup>
- Running staff communications campaigns to increase awareness and help staff to identify actions to improve environmental performance (e.g., the '365 Days of Green' campaign at St Joseph's Healthcare Hamilton in Canada, which supported staff to take part in a different sustainability or net zero activity each month)<sup>38</sup>
- Creating climate change and sustainability groups that encourage staff to champion environmental awareness and suggest changes that they can make in their own lives.<sup>44</sup>

Studies also discussed the impact of **governance structures, policies and standards** in the context of systems and workforce (systematic reviews, n=2; primary studies n=9; mental health-focused non-systematic reviews n=1). Strategies included:

- Incorporating sustainability measures into financial decisions including in decisions made about procurement<sup>9,10</sup>
- Carefully following environmental management standards and environmental regulations as well as developing clear working guidelines for monitoring 'green activities' for effectiveness, efficiency and progress,<sup>19</sup> undertaking climate risk assessments, adaptation planning and streamlining of healthcare sustainability activities across hospitals<sup>14</sup>
- Ensuring that service policies are up to date and align with broader system priorities and regulations,<sup>38</sup> and implementing contemporary standards and policies into the infrastructure.<sup>19</sup>

Fewer studies discussed **measuring and reporting** about carbon emissions (systematic reviews n=2; primary studies n=5; mental health-focused non-systematic reviewers n=2). Methods to collect, measure and report on health service emissions data included:

- Encouraging and empowering trusts to collect data, and enabling them to collect sufficiently detailed data using tools that are user-friendly and affordable<sup>60</sup>
- Using tools such as those from the Sustainable Development Unit,<sup>o</sup> evaluation tools or incorporating methods identified in Green Plans<sup>66</sup>
- Creating databases that NHS health services could use to evaluate the environmental and sustainability aspects of healthcare provision, drawing on examples such as [HealthcareLCA \(Life Cycle Assessment\)](#).<sup>2,12</sup> The databases could include information on adopted technologies, management, resource consumption and service user satisfaction, for services to evaluate how the NHS is operating against its sustainability goals<sup>21</sup>
- Using modelling techniques to estimate the carbon impact of activities (such as patient appointments, diagnostic tests and patient travel across services or hospital trusts) to aid decision-making about energy efficiency measures and future carbon footprint reduction<sup>48</sup>
- Collecting service or Trust-level primary data about waste levels (e.g., by weighing waste) and measuring patient and staff travel (e.g., using surveys)<sup>12</sup>

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<sup>o</sup> The Sustainable Development Unit was formed following the publication of the Climate Change Act to encourage sustainability in healthcare. The Unit has been archived and replaced with the net zero strategy outlined in the [Delivering a 'Net Zero' National Health Service](#) report (see also the Greener NHS Dashboard via the [FutureNHS collaborative platform](#)). Archived materials are available from the Sustainable Development Unit archive.



- Collecting secondary data (e.g., obtaining data from manufacturers of hospital products)<sup>12</sup>
- Performing life-cycle assessment of equipment used in services<sup>12</sup>
- Annual reporting of data from carbon-exchange programmes<sup>p, 64</sup>
- Integrating sustainability into quality improvement work (SusQI)<sup>q, 37,66,67</sup>
- Using a triple bottom line approach, which includes environmental, social and economic impacts when evaluating sustainability and net zero interventions.<sup>38</sup>

### Call for evidence



The call for evidence returned two service examples that included a **training and education approach**.

The Nottinghamshire NHS Foundation Trust commenced a sustainability training programme for its Board of Directors, net zero group leads and the Trust Management Group. The purpose of this programme was to ensure that Trust decision-makers were aware of the impacts of climate change on services, how the organisation is contributing to the problem and what action is necessary to minimise the carbon impact. No outcomes of the intervention had been measured at the time of submission.

Oxford Health NHS Foundation Trust's NatureWell training programme for staff aimed to support staff in the

establishment of lower carbon and novel nature-based interventions in children and young people settings. Staff satisfaction measures showed that the training was received well. No measures of the carbon impact were available, however.

### Review of Green Plans



Green Plans included **actions on workforce and system leadership**.

Many plans highlighted new and dedicated roles focused on achieving net zero and sustainability such as Head of Sustainability positions.

Others included new roles focused on supporting departments to meet Green plan actions, for example procurement roles exploring how to reduce waste in the supply chain (see [Sustainable procurement practices and supply chains](#) and supply chains) Other new roles centred on adaptation and preparation for adverse events such as adaptation lead (see [6.1. Keeping people healthy](#)).

Green Plans highlighted the importance of ensuring oversight and governance structures and processes to achieving their net zero and sustainability goals. For example, plans included establishing sustainability boards and steering groups responsible for setting and monitoring goals. Plans to report how and where progress in meeting such goals through quarterly KPI (key performance indicator) reports were also included.

<sup>p</sup> Carbon-exchange programmes provide financial or other incentives for organisations to reduce carbon emissions.

<sup>q</sup> [Sustainability in Quality Improvement \(SusQI\)](#) is an approach to improve healthcare by assessing quality and value, and measuring impact and sustainable value in terms of the environmental, social and economic costs.



Improving knowledge and engagement of the workforce was a common feature of Green Plans. This included the addition of sustainability topics to induction programmes, mandatory training and specific offers of training where needed. Many Green Plans also described communication strategies such as 'green newsletters' and emails, campaigns to promote a green agenda and holding service 'sustainability weeks'.

The role of the workforce in driving change itself was also emphasised across plans. Staff champions and sustainability groups were involved in generating ideas about initiatives (such as using green spaces) and how these could be delivered as part of Green Plans. Green Plans also described engagement in quality improvement initiatives.

Many Green Plans described the role of the Trust as an anchor organisation<sup>r</sup> in supporting the local community to improve the environment. These included examples of trusts working to increase the number of locally employed staff. There was less mention of international health partnerships, however, some Green Plans did refer to their involvement in projects beyond the UK and the importance of leadership and supporting sustainable healthcare internationally. Involvement in research and academic partnership was also included in some Green Plans.

## 6.5 Challenges and facilitators associated with implementing greener, more sustainable and net zero approaches

Challenges associated with implementing sustainability and net zero approaches were commonplace across research findings. Several sources of information also outlined how barriers may be overcome or what could be done to facilitate positive change when faced with challenges.

Challenges and facilitators associated with implementing greener, more sustainable and net zero approaches are summarised in [Table 30](#).

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<sup>r</sup> UCL partners provides [guidance on anchor organisations](#) and the role that the NHS can play in improving population and environmental health.

**Table 30: Challenges and facilitators associated with implementing greener, more sustainable and net zero approaches**

Approaches	Challenges	Facilitators
<b>Green initiatives</b>	A lack of resource, time and space in schedules for green initiatives such as walking groups (South London and Maudsley NHS Foundation Trust)	<ul style="list-style-type: none"> <li>Using green walking guides can help to facilitate green initiatives (South London and Maudsley NHS Foundation Trust)</li> </ul>
<b>Digital healthcare</b>	Remote working is not always possible or appropriate and working on-site is necessary or required in some settings (Dorset Healthcare University NHS FT). Remote consultations are not appropriate or wanted by all patients (East London NHS Foundation Trust NHS Foundation Trust)	<ul style="list-style-type: none"> <li>Ensuring that staff who are able to work safely remotely, have the opportunity and resources to do so and that patients are provided with choices about how their care is delivered</li> </ul>
<b>Medication and prescribing</b>	De-prescribing medication can be met with disagreements about decisions to stop medications (Hertfordshire Partnership NHS Foundation Trust) is not always a popular practice in mainstream psychiatry (Dorset Healthcare University NHS FT)	<ul style="list-style-type: none"> <li>Multi-disciplinary team working and shared decision-making achieved through good communication and assessment of the benefits and potential disadvantages of de-prescribing to ensure patient safety</li> </ul>
<b>Transport</b>	Conversion of ambulance vehicles from petrol to electric is a long process and there is also a lack of charging infrastructure available, although this is improving (South Central Ambulance)	<ul style="list-style-type: none"> <li>Monitor the benefits of switching to electric vehicles to make the case for change and encourage uptake more widely</li> </ul>
<b>Procurement</b>	A lack of awareness of what supply chains can offer in terms of sustainable products and materials <sup>9,10</sup>	<ul style="list-style-type: none"> <li>Trusts prioritising training and supporting staff with the time to attend (Nottinghamshire Healthcare NHS Foundation Trust)</li> </ul>
<b>Waste reduction</b>	Needing to justify the mandated restrictions on single-use products' (Pennine Care NHS Foundation Trust)	<ul style="list-style-type: none"> <li>Implementing policy development standards and governance structures to help services<sup>5,37</sup></li> </ul>

Approaches	Challenges	Facilitators
<b>Staff roles and workforce structures</b>	Diffusion of responsibility can hinder sustainable action-taking by staff members <sup>9,10</sup>	<ul style="list-style-type: none"> <li>● Top-down leadership and organisational support<sup>40</sup></li> <li>● Supporting, empowering and encouraging staff to engage in ‘green action’ and getting ‘buy-in’ from staff by providing incentives<sup>60,62</sup></li> <li>● Giving staff more responsibility and autonomy to embed sustainable practices in their</li> </ul>
	There is often a lack of a dedicated sustainability lead or team within services <sup>33,67</sup>	<ul style="list-style-type: none"> <li>● Designated staff to work on sustainability e.g.:</li> <li>● Appointing climate champions<sup>20</sup></li> <li>● Sustainability leaders within services (Bradford District Care NHS Foundation Trust)</li> <li>● An energy officer responsible for measuring energy consumption (Bradford District Care NHS Foundation Trust)</li> <li>● Good quality and experienced project managers to lead sustainability projects (Avon and Wiltshire Mental Health Partnership NHS Trust)</li> </ul>

Approaches	Challenges	Facilitators
<p><b>Communication and collaborative working between and across services</b></p>	<p>Poor communication between departments and staff (Bradford District Care NHS Foundation Trust) and community partners (Nottinghamshire Healthcare NHS Foundation Trust)</p>	<ul style="list-style-type: none"> <li>● Providing staff with opportunities to share good practice and solve problems (Oxford Health NHS Foundation Trust)</li> <li>● Providing opportunities for staff to listen to one another and learn from mistakes made (Summerhill Services Ltd on behalf of Birmingham and Solihull Mental Health Foundation Trust)</li> <li>● Taking steps to engage the whole multidisciplinary team in shared goals (Summerhill Services Ltd on behalf of Birmingham and Solihull Mental Health Foundation Trust)</li> <li>● Providing encouragement and empowerment to staff to make changes (Midlands Partnership University NHS Foundation Trust)</li> </ul>

Approaches	Challenges	Facilitators
<b>Training</b>	Front-line staff may lack the training, time and organisational support to meaningfully engage in sustainable practices <sup>5,6,34</sup>	<ul style="list-style-type: none"> <li>● Trusts prioritising training and supporting staff with the time to attend (Nottinghamshire Healthcare NHS Foundation Trust)</li> <li>● Trusts regularly monitoring and reviewing training, and making amendments as needed (Nottinghamshire Healthcare NHS Foundation Trust)</li> <li>● Scaling up training so that all staff have good knowledge of sustainability and net zero practices and can support each other (Oxford Health NHS Foundation Trust)</li> <li>● Providing ongoing support after the training (e.g., CPD days and supervision) to help integrate new approaches and sustain change (Oxford Health NHS Foundation Trust)</li> </ul>
<b>Funding</b>	Limited funding and budgets meaning that short-term projects with more immediate effects may be prioritised over long-term and larger scale projects with the potential for bigger returns over time <sup>22,40,43</sup>	<ul style="list-style-type: none"> <li>● Investing in long-term solutions as part of Green Plans, service development and budgeting<sup>40</sup></li> <li>● Obtaining financial support from charitable organisations (South London and Maudsley NHS Foundation Trust)</li> </ul>



Approaches	Challenges	Facilitators
<p><b>Project planning and maintenance</b></p>	<p>Projects may not move past the planning stages<sup>9,10,45</sup> due to:</p> <ul style="list-style-type: none"> <li>● The requirements for risk assessments and clearance, contracts (Bradford District care NHS Foundation Trust)</li> <li>● The level of robust planning being needed (Summerhill Services Ltd on behalf of Birmingham and Solihull Mental Health Foundation Trust)</li> <li>● Challenges with buy-in from the start (Summerhill Services Ltd on behalf of Birmingham and Solihull Mental Health Foundation Trust)</li> <li>● The volume of detailed reporting needed for monthly project updates (Avon and Wiltshire Mental Health Partnership NHS Trust)</li> <li>● Timescales (Avon and Wiltshire Mental Health Partnership NHS Trust, Summerhill Services Ltd on behalf of Birmingham and Solihull Mental Health Foundation Trust)</li> </ul>	<ul style="list-style-type: none"> <li>● Keeping in regular contact with stakeholders (South Central Ambulance)</li> <li>● Having a clear project plan (South Central Ambulance)</li> <li>● Making use of tools, frameworks or databases to facilitate, and enable change as well as sustain it (e.g., use of WE-ACT-PLEASE, SusQI frameworks);<sup>2,13,19,33,53</sup> (Midlands Partnership University NHS Foundation Trust)</li> </ul>

Approaches	Challenges	Facilitators
<p><b>Priority-setting and resource constraints</b></p>	<p>Competing priorities and managing good patient care with sustainability and net zero practices. This particularly challenging when workload is high and resource is low<sup>34</sup> (Pennine Care NHS Foundation Trust, Nottinghamshire Healthcare NHS Foundation Trust)</p> <p>The immediate need for patient care<sup>34</sup> and concerns about the safety of making changes to practices is challenging.<sup>34,65,46</sup> Introducing new novel approaches can be time-consuming and difficult to do in a high stress healthcare environment (Oxford Health NHS Foundation Trust)</p>	<ul style="list-style-type: none"> <li>● Taking steps to engage the whole multidisciplinary team in shared goals (Summerhill Services Ltd on behalf of Birmingham and Solihull Mental Health Foundation Trust)</li> <li>● Providing encouragement and empowerment to staff to make changes (Midlands Partnership University NHS Foundation Trust)</li> <li>● Implementing policy development standards and governance structures to help services<sup>5,37</sup></li> </ul>
<p><b>Sustaining change</b></p>	<p>Implementation of changes may be done in a tokenistic manner, and are not always continued once initiated<sup>9,10</sup></p>	<ul style="list-style-type: none"> <li>● Implementing strategies that have financial benefits as well as reducing carbon<sup>43</sup></li> </ul>

## 7. Resources and further reading

The following resources include articles, reports, toolkits and web pages supplied by members of the ERG. They include articles and reports that were not necessarily in scope of the literature review, and links to further reading on climate change, net zero health care and sustainability.

### 7.1 Published articles

[Caan W. Bold action is needed to strengthen primary prevention. The BMJ. 2023;380:595.](#)

[Cooke E, Cussans A, Clack A, Cornford C. Climate change and health scorecard: what are UK professional and regulatory health organizations doing to tackle the climate and ecological emergency? The Journal of Climate Change and Health. 2022;8:100164.](#)

[Patel V, Saxena S, Lund C, Thornicroft G, Baingana F, Bolton P, et al. The lancet commission on global mental health and sustainable development. The Lancet. 2018;392:1553–98.](#)

[Tillmann S, Tobin D, Avison W, Gilliland J. Mental health benefits of interactions with nature in children and teenagers: a systematic review. Journal of Epidemiology and Community Health. Journal of Epidemiology and Community Health. 2018;72:958–66.](#)

[Raymond CM, Frantzeskaki N, Kabisch N, Berry P, Breil M, Nita MR, et al. A framework for assessing and](#)

[implementing the co-benefits of nature-based solutions in urban areas. 2017;77:15–24.](#)

[Maughan DL. Determining an approach to estimating the carbon footprint of mental health care that is fit for purpose \[doctoral thesis\]. Warwick: University of Warwick; 2015.](#)

### 7.2 Reports, guidance and frameworks

Royal College of Emergency Medicine. [GreenED Handbook \[report\]](#). London: Royal College of Emergency Medicine; 2023.

Environment Agency. [The Social Benefits of Blue Space: A Systematic Review \[report\]](#). Bristol: Environment Agency; 2020.

Public Health England. [Improving Access to Greenspace: A New Review for 2020 \[report\]](#). GW11-58. London: Public Health England; 2020.

Office for Health Improvement and Disparities. [Public Health Outcomes Framework \[online data tool\]](#). London: Office for Health Improvement and Disparities. Published 2013, updated 2023.

Stanford V. [Climate change adaptation: A guide for health and care professionals \[blog\]](#). Oxford: Centre for Sustainable Healthcare; 7 April 2022.

UCLPartners, Allwood D (programme lead). [Anchor Institutions \[toolkit and programme information web page\]](#). London: UCLPartners. Published 2021, updated 2023.

Department for Energy Security and Net Zero, Department for Business, Energy & Industrial Strategy. [Public Sector Decarbonisation Scheme \[web page and notices\]](#). Published 2020, updated 2023.

## 7.3 Web pages

Greener Practice: the UK's primary care sustainability network. [Information and Resources – Why Environmentally Sustainable Practice?](#) Accessed: 23 October 2023.

Global Action Plan: Action for Clean Air. [Campaigns – Clean Air Day resources for healthcare professionals](#). Accessed: 23 October 2023.

SEE Sustainability. [Carbon Footprint – Non-clinical carbon calculator for general practice](#). Accessed: 23 October 2023.

Plant-based Health Professionals. [Factsheets](#). Accessed: 23 October 2023.

Dose of Nature. [Homepage](#). Accessed: 23 October 2023.

NHS Forest: Green Space for Health. [Homepage](#). Accessed: 23 October 2023.

Royal College of General Practitioners. [Learning Hubs – RCGP Net Zero](#). Accessed: 23 October 2023.

## 7.4 Resources provided by NHS trusts and healthcare services

Taylor Z, Daniel C, Whitley S. [Case for the proposed band four green therapy support worker and band seven green therapist \[Prezi presentation\]](#). Bradford: University of Bradford; Bradford Care NHS Foundation Trust. Published: 20 March 2023.

Humber and North Yorkshire Health and Care Partnership. [Green Primary Care \[web page\]](#). Willerby: Humber and North Yorkshire Health and Care Partnership.

NHS England. [Greener NHS Knowledge Hub – on the FutureNHS Collaboration Platform](#). Accessible to NHS staff with a single sign-up to access.

NHS England. [South Central Ambulance Service Electric Response Vehicle \[video on X, formerly Twitter\]](#). Posted: 16 May 2023.

Nottinghamshire Healthcare NHS Foundation Trust. [Annual Environmental Performance Report 2022/23](#). Accessed: 30 October 2023.

### Bradford District Care NHS Foundation Trust: Example Product Sustainability Form

The product sustainability form below was provided by Bradford District Care NHS Foundation Trust (adapted from Newcastle Hospitals NHS Foundation Trust).

## Sustainability of Products

Below is a decision support tool to assess the sustainability of any product used by BDCFT. Can be used to compare two or more products.

Score in the final column (Red=0, Amber=1, Green=2). Where there are two areas within the 'best' option, score both. Score N/A if sustainability criteria is not relevant.

Contact the Sustainability Team if support is needed to complete the decision support tool and contact Procurement if you require information on the current products used or the quantity of item used.

<b>Item Name</b>		
<b>Item Use</b>		
<b>Individual evaluating product</b>		
<b>Team/ ward using the product</b>		
<b>Is the item a new or replacement product?</b>	NEW <input type="checkbox"/>	REPLACEMENT <input type="checkbox"/>

Sustainability criteria	Worst option	Intermediate option	Best option	Product score
<b>Energy use</b>	Increase in mains electricity used	Similar to electricity consumption to existing item	Reduction in electricity use	/6
	Requires single use batteries	Rechargeable batteries	Requires mains power	/6
<b>Water use</b>	Increases water use	Similar water use to existing item	Reduction in water use	/6
<b>Transport emissions</b>	Item manufactured outside of Europe	Item manufactured in Europe	Item manufactured in UK	/6
	Air freighted	Shipped	Shipped using green fuel Transported in green fleet (e.g. ultra low emission vehicles)	/8



Sustainability criteria	Worst option	Intermediate option	Best option		Product score
<b>Medicines and chemicals</b>	Increase in use of toxic/ hazardous chemicals or medicines	Similar requirement for toxic/ hazardous chemicals or medicines to existing item	Reduction in the requirement for toxic/ hazardous chemicals or medicines		/6
<b>Use phase</b>	Item is single use	Product is reusable, requires NHS decontamination	Product is reusable by patient		/6
	Expected product lifecycle is less than 1 year	Expected product lifecycle is 1-3 years	Expected product lifecycle is more than 3 years		/6
<b>Sustainable procurement</b>	Supplier has no Net Zero or wider sustainability plan	Supplier has corporate environmental and social responsibility plan on website	Supplier has shared net zero plan using <a href="#">Government template</a> .	Supplier has signed up to carbon footprinting platform e.g. SmartCarbon	/8
<b>Sustainable models of care</b>	Product increases need for clinical care	No change in clinical care resource requirement to existing product	Product reduces need for clinical care e.g. fewer dressing changes	Product improves recovery time and patient outcomes	/8
<b>Waste</b>	Packaging is non-recyclable and non- reusable	Packaging is recyclable	Packaging is reusable		/6
	Product manufactured with no recycled content	1-50% recycled content in product	More than 50% recycled content in product		/6
<b>Social value</b>	No evidence of manufacturers' support for employee EDI, health and wellbeing	Some evidence of manufacturers' support for employee EDI, health and wellbeing	Evidence of manufacturers' support for employee EDI, health and wellbeing		/6
	Evidence of Modern Slavery and no or insufficient Modern Slavery policy	No evidence of Modern Slavery, but insufficient Modern Slavery policy	No evidence of Modern Slavery and good Modern Slavery policy		/6
<b>Total product score</b>					<b>/90</b>

Additional value	check those that apply
Product supports a reduction in health inequality	<input type="checkbox"/>
Item manufactured in Yorkshire	<input type="checkbox"/>
Product improves patient outcomes	<input type="checkbox"/>
Product reduces inpatient length of stay	<input type="checkbox"/>
Product is co-designed with end user	<input type="checkbox"/>

Qualitative comments

Conclusion and outcome

## 8. How the recommendations were developed

Recommendations were developed from findings across the various research methods described above. Draft recommendations were subject to consultation by the ERG, who were asked to rate them by importance and feasibility. The ERG were also consulted on the wording of draft recommendations and invited to suggest other recommendations that had not been identified by the research findings (Figure 2).

Greener NHS provided further advice on prioritisation and organisation of the draft recommendations based on Greener NHS policy areas and what is known about the relative size of the NHS carbon footprint of each area (including supply chains, medication, estates, transport, food and workforce). The process for developing the draft recommendations is in an accompanying [Supplementary Material Excel file](#).

1. Support patients to engage safely in activities outdoors as part of their care and treatment (for example, walking or gardening groups delivered as part of inpatient or community mental health treatment)\*

How **IMPORTANT** do you think it is to make this recommendation?

1	2	3	4	5
---	---	---	---	---

*I consider this recommendation to be of low importance*

*I consider this recommendation to be of high importance*

2. Support patients to engage safely in activities outdoors as part of their care and treatment (for example, walking or gardening groups delivered as part of inpatient or community mental health treatment)\*

How **FEASIBLE** do you think it is to make this recommendation?

1	2	3	4	5
---	---	---	---	---

*I consider this recommendation to be of relatively unfeasible*

*I consider this recommendation to be of relatively feasible*

3. Is there anything else you would like to add to your response?

Please provide any suggested re-wordings of the recommendations if you wish to do so?

**Enter your answer**

**Figure 2: Example of how recommendations were graded by importance and feasibility by members of the ERG during consultation**

# 9. Equality Impact Assessment

## 9.1 Overview

The NCCMH Equality Advisory Group (EAG) performed an Equality Impact Assessment (EIA) for this piece of work, carried out in stages.

First, EAG members were briefed on the scope and remit of the project. They were then invited to discuss any equality issues likely to arise during the development of guidance and recommendations. Following this, EAG members were invited to individually review the draft recommendations during consultation, and equality impact considerations were applied to each. The process for the EIA is provided below.

## 9.2 NCCMH Equality Impact Assessment

**Project name:** Net Zero Mental Health Care

### Introduction

1. Organisations have a duty to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations between people from different groups. The purpose of this form is to document the consideration of equality issues in each stage of the development process of this project, before reaching the final output that will be approved by the commissioning organisation and stakeholders. This equality analysis is designed to support compliance with obligations under the Equality Act 2010 and Human Rights Act 1998.
2. [Table 31](#) lists the equality characteristics and other equality factors that should be considered, i.e., not just population groups sharing the 'protected characteristics' defined in the Equality Act but also those affected by health inequalities associated with socioeconomic factors or other forms of disadvantage. The table does not attempt to provide further interpretation of the protected characteristics. This is because it is likely to be simpler, and more efficient, to use the evidence underpinning the project to define population groups within the broad protected characteristic categories rather than to start with possibly unsuitable checklists created for other purposes, such as social surveys or HR monitoring tools.

3. The form should be used to:

- Confirm that equality issues have been considered and identify any relevant to the topic
- Ensure that the project outputs do not discriminate against any of the equality groups
- Highlight planned action relevant to equality
- Highlight areas where projects may advance equality of opportunity.

4. This form is to be updated by the Project Manager, supported by member of the Research Team during development of the project and submitted at different stages<sup>s</sup> of the validation process:

- Scoping
- First circulation
- A subsequent circulation (i.e., at one other time point when project documents/drafts are circulated for comment)
- Final draft.

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<sup>s</sup> The frequency of updates to the EIA will depend on the needs of each project, and so may vary from project to project.



**Table 31: Protected characteristics (Equality Act 2010) and other characteristics that may put a person at risk of experiencing inequalities**

Protected characteristics
<ul style="list-style-type: none"><li>● Age</li><li>● Disability</li><li>● Gender reassignment<sup>t</sup></li><li>● Marriage and civil partnership</li><li>● Pregnancy and maternity</li><li>● Race</li><li>● Religion or belief</li><li>● Sex</li><li>● Sexual orientation</li></ul>
<p>Note:</p> <ol style="list-style-type: none"><li>1. The characteristic of marriage and civil partnership is protected only from unlawful discrimination. There is no legal requirement to consider the need to advance equality and foster good relations.</li><li>2. The definition of direct discrimination covers less favourable treatment of someone associated with a person with a protected characteristic, such as the carer of a disabled person.</li></ol>
Other characteristics
<p><b>Socioeconomic status</b></p> <p>Depending on policy or other context, this may cover factors such as social exclusion and deprivation associated with geographical areas or inequalities or variations associated with other geographical distinctions (e.g. the North/South divide, urban versus rural).</p>
<p>Other categories</p> <p>Other groups in the population experience poor health because of circumstances often affected by, but going beyond, sharing a protected characteristic or socioeconomic status. Whether such groups are identifiable depends on the guidance topic and the evidence. The following are examples of groups covered in National Institute for Health and Care Excellence guidance and other notable organisational resources:</p> <ul style="list-style-type: none"><li>● Refugees and asylum seekers</li><li>● Migrant workers</li><li>● Looked-after children</li><li>● Homeless people and people in unstable housing situations</li><li>● Prisoners and young offenders</li><li>● Gypsy, Roma and Traveller communities</li><li>● Young and unpaid carers</li></ul>

<sup>t</sup> In the Equality Act 2010, it is also stated that this term includes the protection of any person who is proposing to undergo or is undergoing a process of changing physiological attributes of biological sex.

## Early project development stage

### 1. Have any equality issues impacting upon equality groups been identified so far during the development process?

Please briefly state any relevant equality issues identified and the plans to tackle them during development.

#### Identified equality issues

- **People with physical disabilities** – e.g., need of transport/cars/travel options to access healthcare.
- **People likely to be more in need of transport support** – e.g., people in crisis or in need of financial support.
  - The potential impact of reducing provision of transport for people who may need this.
  - The impact of switching to electric vehicle use and greener transport options; need to consider impact on people with regard to adding to discomfort or lack of safety etc.
  - Parking availability at health care sites
  - The lack of available public transport in some areas
- **People in poverty or with accessibility disadvantages**
  - Online/digital mental health provision instead of in-person may have effects on people with digital poverty and accessibility needs
  - Consideration of housing disadvantages here
- **Staff employed by Trusts**
  - People living in communities outside of the Trust or service they work in
  - (Efforts to improve sustainability must also have a staff/workforce focus)
- **People with nutritional requirements and food preferences (based on culture, disability, neurological or other needs)**
  - The impact of services implementing changes to procurement and food provision on availability of a range of food types to suit individual need and preference
- **People who use regular medication**
  - Consider the impact of the promotion of medications aimed to reduce the carbon footprint (e.g., switching forms of medication available and promotion of certain brands) – choices still need to be right for patients
- **People belonging to Gypsy, Roma and Traveller communities**
  - There is already an access inequality associated with people belonging to these groups, who are often underserved. Staff may need to do outreach, which will result in transport and travel needs.

### General points:

- **Hospital/service buildings**
  - Building design considerations (e.g. solar panelling, ventilation etc.)
  - Outsourcing versus in-house services such as laundry and linen
- **Patients and public in general**
  - There is a need for improved education for people around sustainability and the need for interventions to mitigate the effects of climate change and minimise impact.

## 2. Have relevant bodies and stakeholders been consulted, including those with a specific interest in equality?

Have comments highlighting potential for discrimination or advancing equality been considered?

### Action taken so far:

- EAG in itself comprises several equality experts with lived experience
- Stakeholders and professionals from across the country form the ERG and are being consulted on this work at several stages. Members of the ERG comprise clinicians and sustainability specialists working in health services and organisations.

### Additional considerations raised by the EAG:

- The inclusion of representatives from specific groups likely to be at increased risk as a result of interventions to reach net zero health care, such as older adults, children and young people, people with serious mental illness (SMI)
- The inclusion of Black and Asian mental health organisations (such as Black Mental Health UK) and other VCSE groups who can speak to the specific inequalities of certain minoritised ethnic populations.

## 3. Have any population groups, treatments or settings been excluded from coverage in the project this stage in the process? Are these exclusions legal and justified?

**Yes**, there are some exclusions in line with the scope and remit of this work:

- Population – the intended audience for this work is service providers or decision-makers, rather than being aimed at patients and the general public
- Physical health services are not in remit which is a potential limitation given that people often use a range of services at one time, including mental health and physical health care.

### General considerations:

- Patient involvement e.g., in commissioning, design, delivery decisions is often lacking, procurement is a part of this work (people with lived experience involvement in those decisions) – this is not in scope specifically for this work.

## 4. If applicable, does the project make it impossible or unreasonably difficult in practice for a specific group to access a service or element of a service?

Not at present, but the recommendations are yet to be developed. This will be scrutinised in this regard for the subsequent EIA, once drafted. Points raised at this stage of the process include:

- Patient and carer choice (e.g., around travel and medication)
- (see other equality considerations above)

## 5. If applicable, does the project and framework aim to advance equality?

Advancing equality is not one of the key aims of the work, which is focused on net zero and sustainability. However, any discussion or recommendations made around changes to service design and delivery need to consider the impact on at-risk groups and include methods to mitigate the potential for introduction of inequalities.

**Completed by:** EAG

**Date:** 19 April 2023

## Recommendations development stage

### 1. Have the potential equality issues identified during the scoping stage been addressed by the project team, and if so, how?

The project team is in the process of developing and grading the recommendations. Part of this development and grading process includes the Equality Impact Considerations developed by the EAG. Each recommendation that is made is considered in terms of the potential impact on equality. The EAG are also asked to focus on equality issues during the consultation period (Autumn 2023) where a draft of the report and recommendations will be shared with them.

Discussion and considerations:

- **Green prescribing**
  - Physical disability and the need for interventions to be made accessible; not all green interventions are accessible
  - People with eating disorders and the tendency for green interventions to be food focused
  - Availability of equipment, clothing and materials for people to engage in things like green activities like walking (factors such as access to weather-appropriate clothing, appropriate footwear and the impact of poverty)
  - Availability of appropriate materials etc. for people with disabilities to be able to engage (e.g., footwear and sportswear that is inclusive and appropriate for people with disabilities)
- **Green Plans**
  - Accessibility of the plans (readability, etc.) for service users and carers; plans are publicly available but tend not to be easy to read or accessible – this would be necessary when meaningfully involving patients and carers in procurement and service development decisions
- **Carer involvement in patient care** (e.g., imposed limits on bringing a carer to health appointments and services)
- **Poverty is a key inequality that underlines everything in the equality impact assessments**
- **Domestic violence issues**
  - unsafe homelife situations making home treatment inappropriate and dangerous in some cases

**2. Have any other potential equality issues (in addition to those identified during the scoping process) been identified, and, if so, how has the project team addressed them?**

(See first iteration of the EIA above for the list of equality issues already raised)

Since the first phase of the EIA, the following issues have been raised:

- The scope of this work on primarily carbon emissions and reducing carbon impact over the prevention and 'keeping people well' agenda which is key in addressing inequalities.
  - Action taken: While not the key focus of this work, the team have included 'Keeping People Healthy' as part of the report and extracted research where available. However, was not in scope for literature review so is limited. Recommendations for future work will be made in this regard.

**3. Have the project's considerations of equality issues (including ways to advance equality) been described in any drafts for consultation, and, if so, where?**

The first draft for consultation is due to go out Autumn 2023. It will incorporate the EAG's discussions and the contents of the EIA by way of recommendations.

**Updated by:** EAG

**Date:** 07/09/23



## 10. Abbreviations

<b>A&amp;E</b>	accident and emergency department		equipment
<b>CTO</b>	community treatment orders	<b>QI</b>	Quality Improvement
<b>CWC</b>	Care Without Carbon	<b>SHSC</b>	Sheffield Health and Social Care
<b>DME</b>	durable medical waste	<b>SMI</b>	serious mental illness
<b>EAG</b>	Equality Advisory Group	<b>SusQI</b>	Sustainability in Quality Improvement
<b>EIA</b>	Equality Impact Assessment	<b>VCSE</b>	voluntary, community and social enterprise
<b>ERG</b>	Expert Reference Group		
<b>FT</b>	Foundation Trust		
<b>GSP</b>	green social prescribing		
<b>HMIC</b>	Healthcare Management Information Consortium		
<b>KPI</b>	key performance indicator		
<b>LED</b>	light-emitting diode		
<b>MDT</b>	multidisciplinary team		
<b>MECC</b>	Making Every Contact Count		
<b><i>n</i></b>	number of participants or studies		
<b>N/A</b>	not applicable		
<b>NR</b>	not reported		
<b>OECD</b>	Organisation for Economic Co-operation and Development		
<b>PPE</b>	personal protective		

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