

Scottish (Managed) Sustainable Health Network (SMaSH)

Report

What is the sustainability of models of care for older people?

**Jackie Hyland
Jenny Wares
Sheila Beck
Ann Conacher**

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Executive Summary

Introduction

This paper summarises the findings from a literature review commissioned by SMaSH^a (Scottish (Managed) Sustainable Health Network) to answer the question:

What is the sustainability of care services for older people?

Background

Models of health and social care for older people were selected for study because:

- Older people's care is an area where there is, and will continue to be a growing demand for health and social services due to the ageing population¹;
- Sustainable development affects services, communities and individuals both through behavior change and consequences, and models of care for older people span and link health, social and individual lifestyle issues.
- In terms of sustainable development, small changes in the large issues such as older people's services can have a greater impact than tackling large issues in specialist areas².

Conclusions

There is a considerable wealth of information and data to support sustainable development but as yet there is little evidence of sustainable models of care for older people and little incentive to deliver sustainable care on a collaborative basis. It is essential that to meet the Climate Change objectives, work in this area is accelerated through partnerships across agencies and with communities and service users. It is proposed that a sustainability aide-memoire is piloted, evaluated and further developed to support sustainability in models of care for older people.

Recommendations

- Greater emphasis at government level should be placed on requiring all services, communities and service users to contribute positively to the sustainable development agenda.
- SMASH should lead on the development and piloting of a sustainable development aide-memoire to be adapted for use to support models of care for older people.
- Service users and communities should have a central role in the assessment process to ensure that their contribution and receipt of service maximises benefits socially, environmentally and economically.
- A sustainable model that will embed approaches to sustainability across the various organisations involved in the health and social care system requires to be adopted i.e. Good Corporate Citizenship model and will include appropriate measures that include health outcomes.

^aThe remit for SMaSH is - *to identify the key tasks, resources, means and mechanisms to make health systems sustainable, ensuring the improvement of health and the reduction of health inequalities during the transition to sustainability*

- Organisations involved in health and social care system are encouraged to ensure sustainability is an integral part of the delivery of care from the beginning.
- Organisations involved in health and social care system are encouraged to take forward an innovative approach to transform the model of care rather than simply making pathways more efficient i.e. more sustainable technologies.
- Organisations involved in health and social care system are encouraged to share good practice.

Key Messages:

- **Very little is known about the environmental sustainability of services for older people and action is required to improve standards and evaluation of sustainable services.**
- **Given the ageing population there is an opportunity to make a significant contribution to sustainable development through improved engagement, joint planning and delivery of programmes of care in this sector.**
- **Progress towards multiagency sustainable services should be monitored and evaluated against a proposed aide-memoir which should be tested, amended and adopted in programmes of care, including services for older people.**

1. Introduction

This paper summarises the findings from a literature review commissioned by SMaSH^b (Scottish (Managed) Sustainable Health Network) to answer the question:

What is the sustainability of care services for older people?

- 1.1 The literature review will add the environmental sustainability element to a Scottish Public Health Network (ScotPHN) project aimed at delivering recommendations for models of care for older people.
- 1.2 The review collates research on a whole system approach to environmentally sustainable models of care for older people's health and social care. Where this was lacking, the review identified elements of sustainable development within parts of systems of care for older people.
- 1.3 Although there was little published evidence of sustainable models of care for older people, the review did identify elements which could contribute to a sustainable development assessment tool to be used in planning models of whole system health and social care for older people.
- 1.4 The findings from the literature review and the proposed aide-memoire could be adapted and applied to other models of care.

2. Background

- 2.1 Models of health and social care for older people were selected for study because:
 - Older people's care is an area where there is, and will continue to be a growing demand for health and social services due to the ageing population³;
 - Sustainable development affects services, communities and individuals both through behaviour change and consequences, and models of care for older people span and link health, social and individual lifestyle issues.
 - In terms of sustainable development, small changes in the large issues such as older people's services can have a greater impact than tackling large issues in specialist areas⁴.
- 2.2 The literature review was based on criteria relating to environmental, social and economic impacts of care services for older people. In addition to being the recipients of care, older people may themselves provide care to others
- 2.3 Taking residency the key issue, a continuum was considered which ranged as follows:

Own home (independent living) → own home with support (informal/formal) → retirement accommodation → sheltered accommodation → residential care homes → care in hospital

^bThe remit for SMaSH is - *to identify the key tasks, resources, means and mechanisms to make health systems sustainable, ensuring the improvement of health and the reduction of health inequalities during the transition to sustainability*

2.3 As people age and their need for support changes and fluctuates they move between elements within this continuum.

3. Principles

3.1 The study was based on key principles for quality of life and the literature review criteria (Section 4.7) were based on these principles. People should:

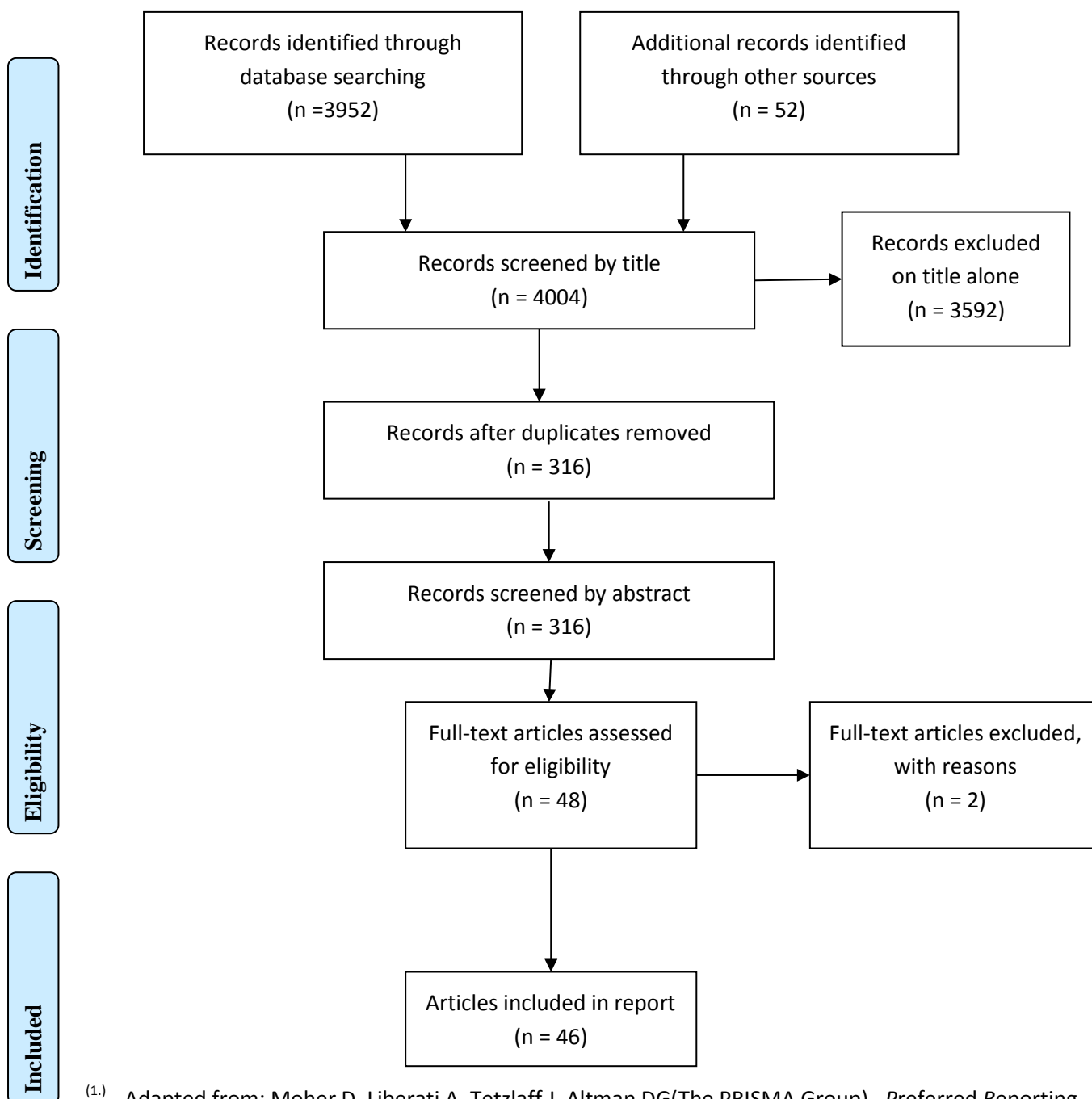
- be able to live in accommodation which can be kept sufficiently, affordably and evenly warm and dry to meet their health and wellbeing needs;
- have access to food which meets their nutritional and their wellbeing needs;
- have access to clean and safe drinking water;
- live in an environment with good air quality both inside homes and outside;
- have access to social networks and company;
- be safe and supported to a level appropriate to their needs;
- have access to outside environments in which they can walk or move, meet others and access amenities and facilities;
- have sources of support to help in times of emergency e.g. if fall or if pipe springs a leak.

4. Assessment of the literature – Method

4.1 A literature review, which used a systematic approach, was conducted to answer the research question posed. The literature review used the following search terms - sustainability, sustainable development, residential care, health services for elderly, home care, community care, personal care, social care services, community homes, independent living, long term care, hospital care, carbon footprint, greenhouse gas, environment, environmental policy, conservation of natural resources, ecosystem, food supply, water supply, transport, health resources.

4.2 The following electronic databases were searched from 2006 to 2013: Medline R/ Medline R Daily Update/ Medline R In Process; Embase; ERIC HMIC; Cochrane; ASSIA and CINAHL. The following filters were applied: 'English language', 'all aged (65 and over)' and year '2006 to current'.

Article selection flow diagram ^(1.)



^(1.) Adapted from: Moher D, Liberati A, Tetzlaff J, Altman DG (The PRISMA Group). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med.* [online] 2009;6(6). Available from: <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000097> [Accessed: 21st April 2013]

- 4.3 The following websites were also searched: The Scottish Government (www.scotland.gov.uk, 22/10/2012), Health Facilities Scotland (<http://www.hfs.scot.nhs.uk/>, 22/10/2012), Health Management Online (<http://www.healthmanagementonline.scot.nhs.uk/home.aspx>, 22/10/2012), Barbour Index (<http://www.barbour.info/webservicesv4.1/athenslogin.aspx>, 22/10/2012), Department of Health (<http://www.dh.gov.uk>, 22/10/2012), OpenGrey (<http://www.opengrey.eu/>, 22/10/2012), NHS Sustainable development Unit (<http://www.sdu.nhs.uk/publications-resources/>, 22/10/2012), NHS Sustainability Development Unit (<http://www.sdu.nhs.uk/>, 22/10/2012), The King's Fund (<http://www.kingsfund.org.uk>, 07/01/2013), The Centre for Reviews and Dissemination (<http://www.crd.york.ac.uk/CRDWeb/HomePage.asp>, 07/01/2013) and Social Care Online (<http://www.scie-socialcareonline.org.uk/>, 07/01/2013).
- 4.4 Studies and reports were included in the review if they detailed the environmental sustainability of models of care for older people. Papers were excluded if they were not available in English or did not address services for people over the age of 65 years. Bibliographies of included papers were hand-searched for further relevant studies or reports. Additional papers received through correspondence were also included if relevant.
- 4.5 The literature search identified a total of 3,984 papers. These were screened for relevance, initially by title and then by abstract. A total of 46 papers were deemed relevant for inclusion. These were largely policy and guideline documents although a small number of primary research studies were also identified.
- 4.6 Data abstraction and reporting - Papers for inclusion were reviewed in full and summarised according to a standardised template which captured the study design, objectives, description, internal validity according to study type (randomised controlled trial, cohort, case control, considered judgement, case study) overall assessment, results, and pertinent conclusions.
- 4.7 The selected papers were reviewed against sustainability criteria:

Environmental

- Transport active transport/public, person, care givers)
- Air quality (ambient and indoor, including ventilation)
- Water quality
- Waste
- Fuel (heating, lighting, cooking) per resident
- Insulation levels (fuel poverty?)
- Building quality
- Procurement

Social

- Access to social networks
- Autonomy
- Independence
- Opportunities to make contribution to society
- Opportunity to be physically active
- Opportunity to undertake activities associated with daily living
- Happiness/wellbeing outcomes
- Level of personalisation of services

- Greenspace and community links - activities

Economic

- Cost to individual (affordability) include all residence costs as well as care costs
- Cost to society

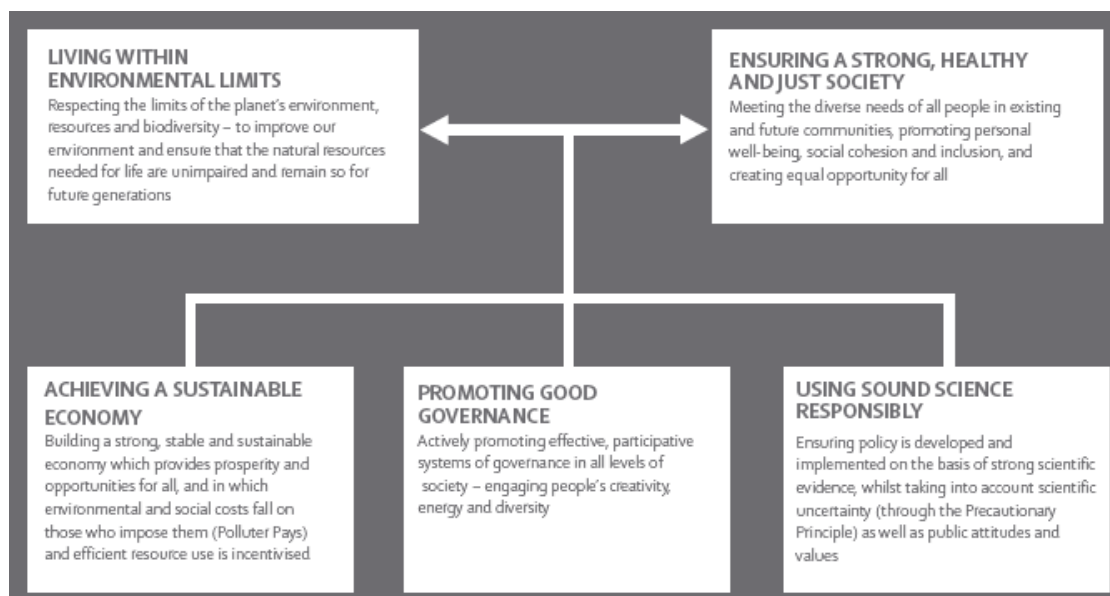
4.8 The results from the literature review, the assessment of the quality of the papers and the findings in relation to the sustainability criteria are summarised in Tables 1 and 2.

5. Results

5.1 The literature review identified no research studies which addressed all of these areas but did identify many policy and guideline documents. These focus on strategic aims, partnership working and carbon emissions from different sectors (see Table 1 – Grey Literature).

5.2 Grey Literature – Table 1

5.2.1 The Scottish Government (SG) has demonstrated a commitment at a national level to ensure sustainability by setting strategic aims for Scotland’s sustainable future⁵ aligned to the UK ambitions and based on Part 4 of the Climate Change (Scotland) Act 2009⁶ – see Figure 1:



Source: Scottish Executive. *Choosing our future: Scotland's sustainable development strategy*. Edinburgh: Scottish Executive; 2005.⁷

5.2.2 The Scottish Government (SG) has also advised of mandatory requirements for all NHS bodies to have Sustainable Development Action Plans:
‘Statement 1 – All NHS bodies must be able to demonstrate that they have assessed, considered the risks, and have a formal plan to comply with or exceed the requirements of all legislation.’⁸(p.6)
‘NHS Boards in particular are required ... to develop and implement a Sustainability Action Plan for which the Strategy provides a framework and guidance for development of Sustainability Action Plans.’⁹(p.1)

5.2.3 Social care has been addressing sustainability through the work of the Social Care Institute for Excellence (SCIE). Unlike in the NHS, social services have not had a direct steer in terms of sustainable development. In 2009 this was addressed to some extent¹⁰:

'The first explicit commitment to address sustainable development in social care was made in the Department of Health's second Sustainable Development Action Plan 2009–2011. This provided broad encouragement for local authorities, as commissioners of social care, to promote sustainable development across the sector, particularly (but not only) through reduced carbon emissions and by adapting services to the impact of climate change.'(p.4)

5.2.4 Despite the different drivers for change there is a requirement for partnership working³:

'Public bodies are encouraged to work together through existing mechanisms - for example, Community Planning Partnerships and Single Outcome Agreements - or through devising new partnerships, and to explore opportunities for building capacity and sharing best practice.' (p.13)

5.2.5 This is reinforced in the SG Best Practice Guidance¹¹ which advises that organisations must be able to demonstrate:

'An organisational culture which recognises the value of working with wider stakeholders and partners to achieve more effective and sustainable policy development, better services and customer-focused outcomes.' (p.10)

5.2.6 Yet as recently as 2012 it was reported that there was still a long way to go to achieve a collaborative approach:

*'While the facilities and settings in which care is delivered have an important influence on environmental impacts, sustainability also raises more fundamental questions about the kind of care that is provided. More evidence is needed to establish which care pathways have the greatest environmental impacts...'*¹²(p.12)

5.2.7 This was also an issue reported by Naylor and Appleby²:

'More integrated models providing better co-ordinated care could be more sustainable in environmental as well as financial terms.' (p.52)

5.2.8 Programmes of care for older people cross the health and social care sectors but there is a risk that individual agencies secure reduced carbon emissions at the expense of other partners in the system. This should be prevented by a requirement for public bodies to adhere to the Good Corporate Citizenship Model^{13,c}.

5.3 Literature Review – Studies - Table 2

5.3.1 The studies that were identified focus on specific issues such as the cost benefit analysis of telecare¹⁴ and evaluation of home energy improvements^{15,16}.

5.3.2 The studies on telecare show that there is a place for this in reducing staff and patient travel through online monitoring of vital signs¹⁴ but there is a risk that for some elderly people this might reduce social interaction and speed up the rate of

^c GCCAM was initially developed in 2006 by the Sustainable Development Commission and the Department of Health in England and later revised in 2009 in cooperation with the English NHS Sustainable Development Unit. The model has been adapted for use by NHSScotland by the Sustainable Development Commission Scotland, Health Facilities Scotland and the Scottish Government

decline into dementia¹⁰. However for others this would enable greater independence since they would not be restricted in their daily activities by having to wait for home visits for health checks. In addition it may help maintain the individual at home by reassuring family carers that the individual is not at risk.

- 5.3.3 The emphasis on maintaining home care for as long as possible might be beneficial for the individual in terms of familiarity with surroundings and proximity to social networks, and to society in terms of reduced need for expensive more intensive care. However, heating individual homes is an added cost to the individual¹⁵ and to society in terms of welfare benefits¹⁶ but can show a benefit in terms of improved health.
- 5.2.4 The only study which looked at the broader aspects of care and sustainable development was the Nottingham energy study¹⁷. This showed that it is possible to measure environmental sustainability in a residential care home and make changes to improve not only energy use but also procurement and biodiversity and thereby health and well-being.
- 5.2.5 From the Nottingham study and the policy review it was noted that there are a number of tools to support climate change initiatives¹⁸ and indicators against which to monitor progress^{15,19,20,21} (see Appendix 3). However there does not appear to be an assessment tool to support sustainability on a collaborative basis to address cross-sector programmes such as care services for older people.
- 5.3.6 The tools that were identified were collated into a simple sustainable development checklist based on single agency guidance from a number of sources, but adapted to address multiagency, community and service user input (see Table 3).

6. Discussion

- 6.1 Despite the requirement for the UK and devolved administrations to consider climate change across all sectors, action plans and monitoring systems focus on single agency objectives. There is a risk that one service will reduce their environmental footprint at the expense of others thus continuing to hinder progress towards the Climate Change targets for carbon emissions.
- 6.2 However, the delivery of services has long been recognised as a multiagency responsibility in partnership with service users. Therefore, a sustainable model of care for older people should address sustainability in terms of the contribution of each partner and the combined efforts of all and be subject to multiagency action plans and monitoring systems.
- 6.3 It is proposed that the aide-memoire for sustainable programmes of care (Table 3) which addresses single partner contribution, but is reviewed across all partners, is piloted as part of the review of models of care for older people. The findings should be used to support further collaborative work on sustainable development across sectors through joint planning, monitoring, review and development of sustainable services.

7. Conclusions

- 7.1 There is a considerable wealth of information and data to support sustainable development but as yet there is little evidence of sustainable models of care for older people and little incentive to deliver sustainable care on a collaborative basis. It is essential that to meet the Climate Change objectives, work in this area is accelerated through partnerships across agencies and with communities and service users. It is proposed that a sustainability aide-memoire is piloted, evaluated and further developed to support sustainability in models of care for older people.

8. Key Messages

- **Very little is known about the environmental sustainability of services for older people and action is required to improve standards and evaluation of sustainable services.**
- **Given the ageing population there is an opportunity to make a significant contribution to sustainable development through improved engagement, joint planning and delivery of programmes of care in this sector.**
- **Progress towards multiagency sustainable services should be monitored and evaluated against a proposed aide-memoire which should be tested, amended and adopted in programmes of care, including services for older people.**

9. Recommendations

- Greater emphasis at government level should be placed on requiring all services, communities and service users to contribute positively to the sustainable development agenda.
- SMASH should lead on the development and piloting of a sustainable development aide-memoire to adapted for use to support models of care for older people.
- Service users and communities should have a central role in the assessment process to ensure that their contribution and receipt of service maximises benefits socially, environmentally and economically.
- A sustainable model that will embed approaches to sustainability across the various organisations involved in the health and social care system requires to be adopted ie Good Corporate Citizenship model and will include appropriate measures that include health outcomes.
- Organisations involved in health and social care system are encouraged to ensure sustainability is an integral part of the delivery of care from the beginning.
- Organisations involved in health and social care system are encouraged to take forward an innovative approach to transform the model of care rather than simply making pathways more efficient ie more sustainable technologies.
- Organisations involved in health and social care system are encouraged to share good practice.

Appendix 1

Table 1: Grey literature

Article	Main objective or focus of article	Key points or messages
Department of Health. <i>Sustainable development: Environmental strategy for the National Health Service.</i> London: The Stationery office; 2005. ²²	Guidance to support sustainable development within the NHS.	The strategy summarises the key areas to be addressed when drawing up an environmental policy. Guidance is provided on the implementation of these actions in addition to describing some of their associated benefits. Strong focus on the sustainability of buildings.
Department of Health. <i>Sustainable health and social care buildings: Planning, design, construction and refurbishment- Sustainable health and social care buildings: Strategic overview.</i> Department of Health; 2011. ²³	Guidance on the actions to be taken at the different stages of building development in order to support sustainability	As public buildings become more sustainable, homes will be proportionally less.
Department of Health. <i>Environment and sustainability - Health Technical Memorandum 07-07: Sustainable health and social care buildings. Planning, design, construction and refurbishment.</i> London: Department of Health Estates and Facilities	Guidance on the actions to be taken at the different stages of building development in order to support sustainability	In order to support sustainability: consideration should be given to the adaptation of existing buildings private transport should be reduced brownfield sites are preferable to greenfield sites

Division; 2009. ²⁴		
Gassner M, Jardine R and Silsbury S (on behalf of Scottish Government Social Research Group). <i>Evaluation of Sustainability Features in New Build Social Housing in Scotland</i> . Edinburgh: Scottish Government; 2008. ²⁵	Findings can be used to inform future funding decisions made by the Scottish Government about sustainability features.	A lack of quantitative monitoring data on the sustainability features meant that it was difficult to draw accurate conclusions regarding their environmental and economic performance.
Griffiths J, Stewart L. <i>Sustaining a Healthy Future. Taking action on climate change</i> . London: The UK Faculty of Public Health; 2008. ²⁰	Provides practical information for supporting sustainability at both an individual and organisational level.	Practical steps for tackling climate change are contained within the following action checklists: Action checklist 1: individuals Action checklist 2: organisations Action checklist 3: organisational strategies Action checklist 4: the local community Action checklist 5: sustainability and health-check tool for policies and strategies
Griffiths J, Stewart L and Maryon-Davis A (on behalf of the Faculty of Public Health). <i>Sustaining a Healthy Future: Taking action on climate change. Special focus on the NHS</i> . London: The UK Faculty of Public Health; 2009. ²⁶	Provides practical information for supporting sustainability within the NHS.	Practical steps and tools for tackling climate change are contained within the following action lists: Action list 1: planning and business management Action list 2: achieving change within organisations Action list 3: the basics of a sustainable travel plan Action list 4: the local community Action list 5: individuals Action list 6: sustainability and health-check tool for policies and strategies
Health Facilities Scotland. <i>Carbon Footprint of NHSScotland (1990-2004)</i> . Health Facilities Scotland (on behalf of NHSScotland); 2009. ²⁷	Provides a detailed breakdown and understanding of the overall consumption based carbon footprint of NHSScotland.	The approximate proportions of carbon emissions for NHSScotland in 2004 were: Procurement (52%) Travel (24%) Building energy (23%) Over time there has been a reduction in carbon emissions associated with travel and building energy use but a large increase in emissions

		from procurement.
Health Facilities Scotland, a division of NHS National Services Scotland. <i>2010-2011 Annual National Environment Report</i> . Glasgow: Health Facilities Scotland; 2012. ²⁸	Provides details of NHSScotland's environmental performance.	<p>The reporting year 2010-11 saw the introduction of the Phase 2 of Health Efficiency Access Treatment (HEAT) Target E8 reporting in relation to energy consumption and CO₂ emissions. Included within the target is a 3% year-on-year reduction in CO₂ emissions and a 1% year-on-year energy efficiency target.</p> <p>With regards NHSScotland's environmental performance for 2010-11, both HEAT targets were achieved. CO₂ emissions were reduced by 4.6% relative to the 2009-10 base year and energy efficiency was improved by 3.5%</p>
Health Facilities Scotland, a Division of NHS National Services Scotland. <i>A Sustainable Development Strategy for NHSScotland</i> . Glasgow: Health Facilities Scotland; 2012. ²⁹	Provides guidance on how to meet statutory requirements in order to improve the overall sustainability of NHSScotland's activities.	<p>The carbon footprint of NHSScotland in 2004 was estimated at 2.63 million tonnes of carbon dioxide (MtCO₂). This represented 23% of Scotland's public sector emissions and 3.6% of Scotland's total carbon footprint.</p> <p>The approximate proportions of carbon emissions from each sector were comparable to the figures relating to NHS England:</p> <ul style="list-style-type: none"> Procurement of goods and services (52%, half of which were from pharmaceuticals and medical equipment) Travel (24%) Buildings (23%) <p>Each health board must have a Sustainable Development Action Plans (SDAPs) and should use the GCCAM.</p>
HM Government. <i>Securing the future, delivering UK sustainable development strategy</i> . CM6467. London: The Stationery Office; 2005. ³⁰	The framework document sets out the common challenges and goals in sustainable development for England, Scotland, Wales and Northern Ireland, and is an affirmation that, although we have devolved government, we will work to common goals without compromising the strengths which our diversity of approach offers.	The government has identified four priority areas for UK action: <ul style="list-style-type: none"> sustainable consumption and production; climate change and energy; natural resource protection and environmental enhancement; and sustainable communities.
Local Footprints. A	Provides information on the	The GCCAM is not well populated by health boards.

<p><i>Footprint Guide for Scottish Local Authorities and Community Planning Partnerships.</i> World Wildlife Fund and the Sustainable Scotland Network; 2009.³¹</p>	<p>footprint approach in addition to links to other sources of support and information.</p>	
<p>Mundon R (on behalf of the Department of Health). <i>Sustainable Development Action Plan, 2009-2011.</i> Department of Health; 2009.³²</p>	<p>Details the actions required to deliver the commitments made at a strategic level to the sustainability agenda.</p>	<p>There are a number of opportunities for driving sustainable development forward: <i>'Supporting the NHS to improve the sustainability of its operations and procurement practice, including through our support for efforts to reduce carbon emissions.</i> <i>Encouraging local authorities, as commissioners of adult social care services, to promote SD across the sector, particularly to reduce carbon emissions and adapt to climate change.</i> <i>Working effectively with our partners to promote better health and well-being for all, including our work to reduce health inequalities and to reduce the burden of lifestyle diseases.</i> (p.5) There are plans to expand the use of NHS GCCAM to social care.</p>
<p>National Audit Office. <i>Sustainable procurement in central government.</i> London: The National Audit Office; 2005.³³</p>	<p>Provides guidance to support sustainable procurement.</p>	<p>Given that approximately £15 billion each year³⁴ is spent on the procurement of services and goods by government departments and their executive agencies, there is significant potential for sustainable procurement to support the sustainability agenda.</p>
<p>NHS Sustainable Development Unit. <i>NHS England Carbon Emissions: Carbon Footprint modelling to 2020.</i> Cambridge: NHS Sustainable Development Unit; 2009.³⁵</p>	<p>The development of an analytical model for carbon footprinting.</p>	<p>The NHS carbon footprint in 2004 represented 25% of England's public sector emissions. Emissions breakdown for the three primary sectors: Procurement (60%) Building energy (22%) Travel (18%) Pharmaceuticals and medical equipment were the two largest procurement sub-sectors. Pharmaceutical emissions were equivalent in size to either building energy or travel sectors. The NHS carbon footprint is projected to rise under current trends. However, the modelling project identified significant carbon reduction</p>

		potential for the NHS in England.
NHS Sustainable Development Unit. <i>Goods and services carbon hotspots –NHS England breakdown of goods and services carbon footprint by organisation type.</i> Cambridge: NHS Sustainable Development Unit; 2012. ³⁶	Provides a breakdown of the goods and services carbon footprint in order to help prioritise action.	<ul style="list-style-type: none"> Pharmaceuticals contribute to 22% of the NHS England carbon footprint of which: <ul style="list-style-type: none"> 79% is in GP prescribing, primary care and community services 13% is in acute services and 5% is from mental health services Medical instruments contribute to 13% of the NHS England carbon footprint of which: <ul style="list-style-type: none"> 75% is in acute services 13% is in primary care and community services Building energy use, which is largely gas and electricity, is 18% of the NHS England carbon footprint of which: <ul style="list-style-type: none"> 72% is from acute services
NHS Sustainable Development Unit. <i>Saving Carbon, Improving Health – NHS Carbon Reduction Strategy for England.</i> Cambridge: NHS Sustainable Development Unit; 2009. ³⁷	Guidance to support sustainable development within NHS England in order to meet the requirements of the Climate Change Act.	<ul style="list-style-type: none"> The NHS in England had a carbon footprint of more than 18MtCO₂ in 2004, representing 25% of England’s public sector emissions: <ul style="list-style-type: none"> ‘Procurement provided 60% of NHS England emissions, comprising emissions in the manufacture and transportation of NHS purchased goods and services. Within procurement, pharmaceuticals and medical equipment made up half of the 60% procurement emissions, with pharmaceuticals comprising a fifth of the total for NHS England - comparable to emissions from either building energy use or travel sectors.’ (p.31) Building energy use (22%) Travel (18%)
NHS Sustainable Development Unit. <i>Sustainability in the NHS: Health Check 2012.</i> Cambridge: NHS Sustainable Development Unit; 2012. ³⁸	Summarises progress on sustainability within the NHS.	<ul style="list-style-type: none"> Research looking at the views of NHS leaders in relation to sustainability found that the most challenging areas included improving infrastructural changes, ensuring sustainable pathways and models of care and working with other groups and organisations to achieve more sustainable results. Sustainability needs to be integrated at all levels to ensure it becomes a core principle of the NHS.
NHS Sustainable	Describes a transformational	Collaborative working towards an integrated health system is

Development Unit. <i>Route Map for Sustainable Health</i> . Cambridge: NHS Sustainable Development Unit; 2011. ³⁹	approach to a sustainable healthcare system.	fundamental to the sustainability of models of care.
NHS Sustainable Development Unit. <i>Save Money by Saving Carbon: Decision Making in the NHS using Marginal Abatement Cost Curves</i> . Cambridge: NHS Sustainable Development unit; 2010. ⁴⁰	Provides information on MAC curves and their use.	MAC curves are a useful tool for assessing investment and returns in order to support organisational change.
NHS Sustainable Development Unit. <i>Commissioning for Sustainability - What GP Consortia need to know</i> . Cambridge: NHS Sustainable Development unit; 2010. ⁴¹	Guidance for GPs and GP Consortia on incorporating sustainability into commissioning.	Commissioning organisations have a number of responsibilities relating to sustainability: <i>'Account for outcomes – measurable improvements in health outcomes.</i> <i>Resource stewardship – balancing the use of economic resource, use of finite natural resource and use of human capital (social) resource</i> <i>Fulfilment of duties – social justice/responsibility, working with partners, responsibility to promote healthy environment, reducing inequalities, meeting environmental legislation (e.g. the Climate Change Act 2008), system resilience, managing foreseeable risks, prevention etc.'</i> (p.2)
NHS Institute for Innovation and Improvement. <i>Sustainability Guide</i> . NHS Institute for Innovation and Improvement; 2009. ⁴²	Provides advice on increasing the likelihood of sustainability of improvement initiatives.	The guide can be used as a checklist for planning improvement initiatives. It covers the subjective assessment of staff, processes and organisational issues.
Ofgem. <i>Typical domestic energy consumption figures, factsheet 96</i> . Ofgem; 2011. ⁴³	Provides information on typical domestic energy consumption.	The typical consumption figure for gas, relevant to 2011, has decreased since 2003 whereas the typical consumption figure for electricity has remained the same. The rising number of energy-dependent appliances was cited as a reason for the unaltered typical electricity consumption in the face of

		increasing energy efficiency.
Pflueger D and Kaur M (on behalf of the Foundation Trust Network). <i>Making sustainability add up. Accounting for sustainability – a strategic priority for foundation trusts</i> . London: The NHS Confederation; 2010. ⁴⁴	Describes how accounting for sustainability can be achieved within foundation trusts.	Finance is still regarded as a key driver of sustainability for healthcare organisations.
Scottish Executive. <i>Choosing our future: Scotland's sustainable development strategy</i> . Edinburgh: Scottish Executive; 2005. ⁷	Details measures Scotland will take to turn the UK framework for sustainable development, <i>One future- different paths</i> , into action.	A number of principles for sustainable development are detailed as shown in figure 1 of this report.
Scottish Executive – Central Research Unit. <i>Sustainability indicators for Waste, Energy and Travel for Scotland</i> . Edinburgh: The Stationery Office; 2001. ⁴⁵	Details the preliminary development of sustainable development indicators for Waste, Energy and Travel (W-E-T) in Scotland.	A detailed discussion on the development and use of indicators for sustainable development is provided.
Scottish Government. <i>Public bodies climate change duties: Putting them into practice – Guidance required by Part 4 of the Climate Change (Scotland) Act 2009</i> . Edinburgh: Scottish Government; 2011. ⁵	Provides guidance on meeting the requirements of the Climate Change (Scotland) Act 2009.	The Climate Change (Scotland) Act 2009 aims to reduce Scotland's greenhouse gas emissions (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur dioxide) by at least 80% by 2050. 'It is recommended that public bodies equip themselves to be able to demonstrate how sustainability has been integrated into their decision-making processes, for example by devising procedures for sustainability proofing or assessing the sustainability of policy decisions and strategies.' (p.11)
Scottish Government.	Describes a wide-ranging	Energy efficiency guidance will be provided in order to support energy

<p><i>Conserve and Save. The Energy Efficiency Action Plan for Scotland.</i> Glasgow: Scottish Government; 2010.⁴⁶</p>	<p>programme of activity on behaviour change, household, business and public sector energy efficiency infrastructure, skills and finance.</p>	<p>saving improvements and exemplary behaviour within the public sector. This will be conducted through various measures including: <i>'Action 4.1: We will use the guidance on the Public Bodies Climate Change Duties to support the delivery of improved energy efficiency across the public sector.</i> <i>Action 4.2: We will support public bodies to reduce the energy consumption of their estate and to embed good energy efficiency practice within their organisation by funding organisations such as the Carbon Trust to provide technical, behavioural and change management advice, tailored to the size of the organisation.</i> <i>Action 4.3: Working in partnership with the Carbon Trust and public sector representative bodies, we will develop a methodology for setting appropriate energy saving targets for the public sector in Scotland. We will then:</i> <i>i. set an overarching energy saving target for the sector as a whole; and</i> <i>ii. ensure, in collaboration with the sector, that all public bodies set individual annual energy efficiency targets.'</i>(p.4)</p>
<p>Scottish Government. <i>Sustainable Development: Good Corporate Citizenship Assessment Model for NHSScotland.</i> CEL (14). Edinburgh: Scottish Government; 2010.¹³</p>	<p>Provides information on the GCCAM and its role in helping to develop sustainable practice.</p>	<p>All NHS Boards are required to register with GCCAM</p>
<p>Scottish Government. <i>A policy on sustainable development for NHSScotland 2012.</i> CEL (2). Edinburgh: Scottish Government; 2012.⁸</p>	<p>Improve the sustainability of NHSScotland's activities.</p>	<p>NHS Forth Valley initiative: partner organisations work to address fragmentation and duplication of property assets within the different organisations, the potential for more space efficient ways of working, the accumulated value of backlog maintenance and the need for a combined and overall property and asset database.</p>
<p>Scottish Government. <i>State of the NHSScotland Estate 2011 (Incorporating an</i></p>	<p>Reports on asset management performance, highlights areas of best practice, and sets target areas</p>	<p><i>'The sustainability and environmental performance of NHSScotland as a major public sector body is coming under increasing scrutiny at the present time for a number of reasons:</i></p>

<p>update on NHSScotland Facilities Services).Edinburgh: Scottish Government; 2012.⁴⁷</p>	<p>for improvement which align with the aims of the ‘Healthcare Quality Strategy’ and ‘Better Health, Better Care’.</p>	<p>› <i>Sustainable Economic Growth is at the core of the Scottish Government's Purpose and Economic Strategy. The Scottish Government has set a High Level Target on Sustainability in the National Performance Framework, supported by 15 national outcomes.</i></p> <p>› <i>Good environmental performance contributes to the achievement of a number of these national outcomes, in particular:</i></p> <p><i>Outcome 14: We reduce the local and global environmental impact of our consumption and production; and</i></p> <p><i>Outcome 15: Our public services are high quality, continually improving, efficient and responsive to people's needs.’ (p.39)</i></p>
<p>Scottish Government. <i>Low Carbon Scotland: The Draft Report on Proposals and Policies Scotland – A Low Carbon Society</i>. Edinburgh: Scottish Government; 2010.⁴⁸</p>	<p>Describes the policies that are in place to reduce emissions in addition to detailing further proposals to enable Scotland to meet the annual emissions targets from 2010 to 2022.</p>	<p>- <i>‘The transition to a low carbon society is already underway, and with pace. It will only accelerate in the future. Scotland's Climate Change Delivery Plan was published in June 2009, and described the four transformational outcomes needed in order to meet the 2050 target:</i></p> <ul style="list-style-type: none"> › <i>A largely decarbonised electricity generation sector by 2030;</i> › <i>A largely decarbonised heat sector by 2050, with significant progress by 2030;</i> › <i>Almost complete decarbonisation of road transport by 2050 with significant progress by 2030;</i> › <i>A comprehensive approach to ensure that carbon (including the cost of carbon) is fully factored into strategic and local decisions about rural land use.’ (p.8)</i>
<p>Scottish Government. <i>Best Value in Public Services – Guidance for Accountable Officers</i>. Edinburgh: Scottish Government; 2011.¹¹</p>	<p>Provides guidance on the duty of Best Value and how this can be secured in public services.</p>	<p>Five principles of sustainability:</p> <ul style="list-style-type: none"> › <i>‘promoting good governance;</i> › <i>living within environmental limits;</i> › <i>achieving a sustainable economy;</i> › <i>ensuring a stronger healthier society; and</i> › <i>using sound science responsibly.’(p.19)</i> <p>› Sustainability reports should be included in the Annual Reports and Accounts of affected bodies. These sustainability reports should include performance against sustainability targets for greenhouse gas emissions, waste minimisation and management and the use of finite resources, and their related expenditure.</p>

<p>Scottish Government. <i>Carbon Assessment of the 2011-12 Draft Budget.</i> Edinburgh: Scottish Government; 2010. ⁴⁹</p>	<p>Provides a carbon assessment of the Draft Budget calculating the direct and indirect emission consequences of the Government's spending proposals.</p>	<p>The report describes the impact of the Scottish Budget expenditure on greenhouse gas emissions.</p>
<p>Scottish Government. <i>Carbon Assessment of the 2012-13 Draft Budget.</i> Edinburgh: Scottish Government; 2011. ⁵⁰</p>	<p>Details the emission consequences of the Government's spending proposals.</p>	<p>The report describes the impact of the Scottish Budget expenditure on greenhouse gas emissions.</p>
<p>Scottish Government. <i>Summary of the Draft Health and Environmental Sustainability Framework.</i> Edinburgh: Scottish Government; 2012. ⁵¹</p>	<p>Describes how measures to address health and environmental sustainability issues can be integrated.</p>	<p>The framework provides guidance on the integration of measures to support health and environmental sustainability.</p>
<p>The Centre for Sustainable Development, University of Westminster and the Law School, University of Strathclyde (on behalf of the Scottish Executive Social Research Group). <i>Sustainable Development: A Review of International Literature.</i> Edinburgh: Scottish Executive; 2006. ⁵²</p>	<p>Provides a review of the international literature and policy on a number of different sustainable development issues.</p>	<p>The review found that in terms of the Scottish perspective, <i>'there is at the very least a strong commitment to more holistic thinking and promoting integration rather than about making trade-offs.... Furthermore, the latest Executive thinking contains a strong commitment to social and environmental justice as well as intergenerational equity and respect for the carrying capacity of the planet.'</i> (p.37)</p>
<p>Wilkes L and Max C, with Bristol City Council. <i>Bristol City Council and mainstreaming environmental</i></p>	<p>Provides an overview of Bristol's sustainability objectives and how these are being used to reduce the carbon footprint.</p>	<p>In order to support sustainability within social care it is important to: involve all partners; personalise care and share targets.</p>

<p><i>sustainability: a case study in sustainable social care.</i> London: Social Care Institute for Excellence; 2011.⁵³</p>		
<p>World Health Organisation and Health Care Without Harm. <i>Healthy Hospitals, Healthy Planet, Healthy People. Addressing climate change in health care settings.</i> World Health Organisation and Health Care Without Harm; 2009.⁵⁴</p>	<p>Provides rationale for climate-friendly practice.</p>	<p>There are many opportunities for action including those for health professionals themselves: <i>‘Encourage the health facilities where you work to lead by example and adopt measures to reduce their climate footprint. Encourage professional associations to explore and address the issue of climate change and the role the health sector can play in mitigation. Work with associations of health professionals and teaching institutions to make climate literacy a mandatory requirement for all clinical education programmes. Become an informed advocate for climate mitigation and adaptation efforts. Set an example: do your part to understand and minimize your own climate footprint.’</i> (p.24)</p>

Appendix 2

Table 2: Literature Review - Studies

<u>Study</u>	<u>Design</u>	<u>Main objective or article focus</u>	<u>Conclusions</u>
Barlow J, Singh D, Bayer S and Curry R. A systematic review of the benefits of home telecare for frail elderly people and those with long-term conditions. <i>J TelemedTelecare</i> . 2007; 13 (4): 172-179. ¹⁴	Systematic review	To identify the benefits of telecare for frail elderly people	With regard to reducing health service use, most benefit was from automated monitoring of vital signs and nurse follow-up. There was insufficient evidence regarding the effectiveness of home alarms.
Cannaby S. <i>Delivering the climate change agenda – is the NHS ready?</i> The Association of Chartered Certified Accountants; 2010. ⁵⁵	Survey	Presents the results of a survey of NHS organisations in England. The survey was carried out to determine existing knowledge on the links between emissions management and financial benefits.	Some of the major findings were: 'organisations are currently focussing on quick wins that deliver immediate cost benefits, such as tighter energy management very few of the organisations surveyed appear to have properly considered the impact that climate change will have on local service delivery staff in the estates departments are leading the climate change agenda.' (p.5)
Evans S, Hills S and Orme J. Doing more for less? Developing sustainable systems of social care in the context of climate change and public spending cuts. <i>Br J Soc Work</i> . 2012; 42 (4): 744-764. ³	Case study review	Describes a number of examples of good practice supporting sustainability within both the commissioning and delivery of services within social care.	<i>'The ageing of the population is another factor in the sustainability of social care; people aged over sixty-five make up 72 per cent of all social care clients and it has been estimated by the Association of Directors of Adult Social Services that councils would need to spend an extra 1 per cent per year to meet further increases in demand.'</i> (p.2) The authors concluded that, 'social care can only be sustainable if an integrated approach is taken that combines environmental, economic and social

			<p><i>considerations. The current fiscal crisis has added urgency to the need to develop innovative systems of social care based on co-production, mutualism and localism. Piloting and mainstreaming approaches such as these can only be done with strong leadership, long-term thinking and meaningful incentives.’ (p.1)</i></p>
<p>Evans S, Hills S and Grimshaw L. <i>Sustainable systems of social care.</i> Social Care Institute for Excellence (SCIE). Report number: 35, 2010.10</p>	<p>A mapping of key strategies and policies relating to sustainable development was followed by interviews with commissioners, providers and service users in several local authority case study sites.</p>	<p>To explore the opportunities and challenges of delivering a model of adult social care that meets the individual needs of current and future generations while protecting and enhancing the environment.</p>	<p><i>‘Sustainable development is often mistakenly interpreted as being driven by a purely environmental agenda.’ (p.2)</i> <i>Sustainable development focuses ‘on the relationship between social justice, human health and well-being, economic development and the need to pursue these agendas in ways that can be supported by the natural environment indefinitely.’ (p.2)</i> <i>There is a need to focus on the whole system. ‘This means ensuring that apparent benefits in one part of the system are not working against the outcomes you wish to achieve somewhere else in the system. For example, replacing people with technology in an advice service context might appear to reach more people at lower cost but at expense of earlier decline into dementia for people for whom the advice service was one of their few chances for social interaction.’ (p.3)</i> <i>The Department of Adult Care and Support within Cornwall County Council is ‘considering a proposal to move from six large centres to a model comprising six hubs and ten local drop-in centres. This model would allow more service users to access centres via public transport, thus promoting greater independence of the individuals concerned, savings for the council in terms of taxis and</i></p>

			<p><i>minibuses and a reduction in the carbon emissions associated with user travel to centres.’ (p.15) ‘All forms of assistive technology have the potential to contribute towards delivering social care in a sustainable way. Any devices that are preventative in that they promote independent living can help to prevent or delay the need for someone to receive more intensive levels of care. These more intensive levels of care are inevitably more expensive and they can lead to reduced social interaction. For example, being admitted to hospital or moving into a care home can disconnect people from existing social networks. At the same time, telecare solutions such as alarms and medication reminders can provide reassurance to carers that their relative is not at risk. By reducing carer burden and carer breakdown, this can contribute towards social sustainability.’ (p.25)</i></p> <p><i>Telecare may also have the potential to contribute to environmental sustainability, largely through reducing the number of ‘care miles’ required to deliver some elements of social care. It could also be argued, however, that by supporting individuals to remain living in their own homes, telecare might actually increase the number of care miles, compared to a scenario where support is delivered to many people in a single residential care setting.’ (p.25)</i></p> <p><i>Telecare has been piloted by the county council in North Yorkshire. Financial savings of £6,800 per service user were made. The service was rated as excellent or very good by 91% of those questioned. According to findings from Essex County Council, ‘if only two per cent of those using telecare are</i></p>
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			<p><i>enabled to remain in their homes this equates to a saving of approximately £2 million in one year.'</i> (p.26)</p> <p>A recent assessment from Bristol found that, <i>'comparing the costs of the equipment, installation and maintenance with reduced spending on home care, residential care, nursing care and hospital admission indicated total savings per installation of approximately £600 in the first month and £3,800 over a six-month period.'</i> (p.27)</p> <p>Although a considerable programme of work has been conducted in relation to cutting carbon emissions within the NHS it is important not to underestimate the challenge of replicating this within social care systems given their complex nature. <i>' In 2009, £16.1 billion was spent on delivering Adult Social Care (ASC) in England, by 13,000 provider organisations, many of them small and/or independent, some providing residential services and an increasing number delivering care in people's own homes.'</i> (p.28)</p> <p><i>'Personalisation needs to be implemented carefully and imaginatively if it is to support systems of adult social care that are sustainable. One of the clear conclusions from this study is that implementation of the personalisation agenda could impact both positively and negatively on sustainability. For example, greater choice for people who use services could mean increased provider travel, but it could also lead to more localisation if people choose to purchase care from friends and neighbours. It is important to explore how more innovative approaches such as co-production and timebanking can be integrated more systematically into the way</i></p>
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			<i>that personalisation is implemented.'</i> (p.41) A number of case studies were detailed including Time Together Gorseinon and the Sustainable Outcomes Commissioning Model developed by the London Borough of Camden.
Naylor C, Appleby J. <i>Environmentally sustainable health and social care: Scoping review.</i> Final Report NIHR Service Delivery and Organisation programme. 2012.4	Scoping review	<i>'To map existing evidence base on environmental sustainability in the health and social care sectors. To identify what research will be needed to support a more environmentally sustainable approach towards health and social care and to develop a framework to coordinated future research. To explore and highlight the connections between sustainability and productivity.'</i> (p.11)	Key recommendations: <ul style="list-style-type: none"> ➤ measure environmental impact and use for planning; ➤ promote self-care; ➤ explore new opportunities such as telehealth and power generation; ➤ engage with supplier to reduce waste and secure sustainable practice in procurement.
Nottingham Energy Partnership (NEP). <i>Carbon, Cost and Care; Environmental impacts of residential social care in the UK. Carbon reduction project - Phase 2.</i> NHS East Midlands; 2012. ¹⁵	Case study	<i>'To build up a comprehensive picture of how the development and operation of a sustainable care home could be realised, through both internal management of resource flows and through influence and engagement with external agencies.'</i> (p.7)	<i>'A home that manages its natural environment and its environmental impacts, through extending the concept of care to a more holistic approach, can benefit residents in terms of wellbeing and home operators in terms of running costs and reducing impacts on the local and global environment.'</i> (p.8)

<p>Osman LM, Ayres JG, Garden C, Reglitz K, Lyon J and Douglas JG. A randomised trial of home energy efficiency improvement in the homes of elderly COPD patients. <i>EurRespir J.</i> 2010; 35 (2): 303-309.¹⁵</p>	<p>Randomised controlled trial</p>	<p>To determine whether improving home energy efficiency improves health-related quality of life in COPD patients.</p>	<p><i>'At baseline, the average annual cost for all homes in the study to achieve guideline warmth was £600. Mean estimated annual fuel cost to achieve guideline warmth in privately owned homes was significantly greater than for social housing homes (£676 pa compared with £483 pa: difference £193, SE £44.8, p<0.001). 40% of privately owned homes would have needed to spend >£600 for guideline warmth, compared with 12% of council/housing association homes.'</i>(p.305) <i>'The results of this study indicate that the majority of elderly patients with COPD are unlikely to take up energy efficiency upgrading if this is offered to them. However, the minority who do respond to encouragement to seek home energy efficiency action may achieve clinically significant improvement in respiratory health status.'</i> (p.308)</p>
<p>Sreeharan V, Carmichael C and Murray V. <i>Evaluation Report: Warm Homes, Healthy People Fund 2011/12.</i> Health Protection Agency; 2012.¹⁶</p>	<p>Mixed-methods approach: -online questionnaire to local authority Warm Homes, Healthy People Fund leads -document analysis of local evaluation reports -semi-structured telephone interviews to local leads.</p>	<p>To assess implementation of the Warm Homes, Healthy People Fund.</p>	<p><i>'The Warm Homes, Healthy People Fund was a useful financial adjunct to the Cold Weather Plan. However, its impact on cold-related morbidity and mortality has not yet been assessed.'</i> (p.2)</p>





Appendix 3

Key Indicators

Scotland Performs. National Indicators¹⁹ - adapted to list the key indicators for sustainable development

- | | |
|---|--|
|  Improve digital infrastructure |  Reduce deaths on Scotland's roads |
|  Reduce traffic congestion |  Improve people's perceptions of the quality of public services |
|  Improve Scotland's reputation |  Improve the responsiveness of public services |
|  Increase research and development spending |  Reduce the proportion of individuals living in poverty |
|  Improve knowledge exchange from university research |  Reduce children's deprivation |
|  Improve the skill profile of the population |  Improve access to suitable housing options for those in housing need |
|  Increase physical activity |  Increase the number of new homes |
|  Improve self-assessed general health |  Widen use of the Internet |
|  Improve mental wellbeing |  Improve people's perceptions of their neighbourhood |
|  Reduce premature mortality |  Increase cultural engagement |
|  Improve end of life care |  Increase people's use of Scotland's outdoors |
|  Improve support for people with care needs |  Improve the condition of protected nature sites |
|  Reduce emergency admissions to hospital |  Increase the abundance of terrestrial breeding birds: biodiversity |
|  Improve the quality of healthcare experience |  Reduce Scotland's carbon footprint |
|  Increase renewable electricity production |  Increase the proportion of journeys to work made by public or active transport |
| |  Reduce waste generated |

Key to arrows

- | | |
|---|--|
|  Performance Improving |  Performance Maintaining |
|  Performance Worsening |  Performance Data currently being collected |

Appendix 4

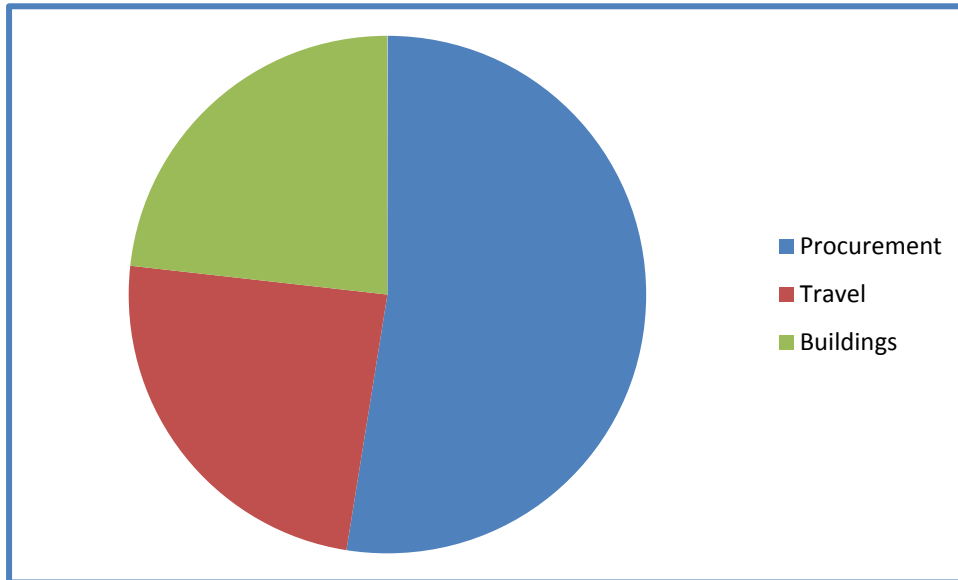
Table 3: Older peoples service models of care – sustainability aide memoire^{20,21}

To what extent does the model of care address the following?

Environmental	Consider	Yes (Y); No (N); Don't Know (DK)	Notes
Energy	Heating, lighting, cooking; insulation, building quality; offices; residences; energy production		
Waste	Reduce, re-use, recycle		
Water	Wholesomeness; flooding		
Transport	Road/rail; active transport – walking, cycling; air quality; individual, care givers, visitors; proximity of services		
Procurement	Local food and products;		
Social			
Autonomy	Undertake activities associated with daily living;		
Access to social networks	Opportunity to contribute to society; value contributions, diversity and local distinctiveness		
Opportunity to be physically active	Access to greenspace - growing produce; exercise; community links; biodiversity; community safety		
Happiness/wellbeing outcomes			
Personalisation of services	Engage individuals, carers, communities		
Economic			
Cost/affordability/savings to individual	Residence and care costs		
Costs/affordability/savings to society	Technology e.g. telecare		
Improve local conditions	Develop business, social enterprise, workforce, labour market; inequalities		

Appendix 5

NHS Scotland Carbon Footprint



**Health Facilities Scotland, a Division of NHS National Services Scotland.
A Sustainable Development Strategy for NHSScotland. Glasgow: Health
Facilities Scotland; 2012.56**

The carbon footprint of NHSScotland in 2004 was estimated at 2.63 million tonnes of carbon dioxide (MtCO₂). This represented 23% of Scotland's public sector emissions and 3.6% of Scotland's total carbon footprint.

Procurement of goods and services (52%, half of which were from pharmaceuticals and medical equipment)

Travel (24%)

Buildings (23%)

Glossary

ASC	Adult Social Care
GCCM	Good Corporate Citizenship Model
GHG	Green House Gas emissions
NHS	National Health Service
SCIE	Social Care Institute for Excellence
SD	Sustainable Development - (Sustainable development can be defined as development that aims to allow everyone to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations).
SG	Scottish Government

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For further information contact:

ScotPHN

NHS Health Scotland

Meridian Court

5 Cadogan Street

Glasgow

G2 6QE

www.scotphn.net
www.healthscotland.com