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## **Environmentally Sustainable Health Services: Scoping Review**

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# Environmentally Sustainable Health Services: Scoping Review

## ***Aims/Objectives***

The aim of this scoping review is to support the NHS management community in creating an environmentally sustainable health system, by informing and shaping a research agenda for this area.

Objectives:

- To map the existing evidence base on environmental sustainability in the health care sector
- To identify what research will be needed in the short- medium- and long-term to support the NHS in becoming a more environmentally sustainable organisation
- To develop a framework to coordinate future research in the area
- To explore and highlight the connections between sustainability and the productivity or 'QIPP' agenda

## ***Background***

The concept of sustainability refers to meeting the needs of today without compromising the ability of future generations to meet their needs (UN 1987). The Department of Health has embraced this concept, committing itself to sustainable practices in the delivery of health services (DH 2008), and establishing the NHS Sustainable Development Unit (SDU) to drive this agenda forward.

The scale of the NHS means that it has a significant environmental impact. In terms of carbon dioxide emissions it is the biggest public sector polluter in Europe, and accounts for 25% of UK public sector emissions. This has grown in line with increased investment in the NHS since 1997 (SDU 2009). An analysis conducted for the NHS Carbon Reduction Strategy indicated that the major sources of emissions are pharmaceuticals, food and other goods procured by the NHS (60%); direct energy use (22%); and transport of patients and staff (18%) (SDU 2009).

Health systems in several countries are beginning to grapple with the question of what implications environmental change and related policy will have for the future delivery of health care (Dhar et al 2009; Pencheon et al 2009). The NHS is coming under increasing pressure to reduce its environmental impact as efforts to mitigate climate change gather pace. The overarching UK target is to reduce total carbon dioxide emissions by 34% by 2020, and to reduce emissions of all greenhouse gases by 80% by 2050. As a significant contributor to emissions, the NHS will be expected to play its part in meeting these targets.

The majority of NHS organisations qualify for inclusion in the Carbon Reduction Commitment (CRC). The CRC is a mandatory emissions trading scheme which forms a central plank of the Government's strategy on climate change. An economic analysis conducted for the Department of Energy and Climate Change suggested that by 2015 the NHS stands to lose or gain up to £50 million per year (at current carbon prices) depending on its performance at reducing emissions relative to other organisations participating in the CRC (DECC 2009). The costs associated with poor environmental performance are likely to increase as other policy levers (e.g. 'carbon budgets') are developed and carbon prices become higher. Neglecting the environmental impact of health services will therefore become an increasingly expensive option over time.

Existing publications suggest that a focus on sustainability has the potential to deliver benefits to the NHS beyond environmental impact. The 2010 annual report by the Chief Medical Officer highlights "substantial and fortuitous overlaps" between sustainability and other organisational objectives (DH

2010). For example, many of the approaches proposed in the NHS Carbon Reduction Strategy also offer potential benefits at three levels:

- Improved quality of care - e.g. through transforming care pathways or delivering more care closer to patients' homes.
- Improved public health - e.g. through promoting reductions in meat consumption or walking/cycling rather than using motorised transport.
- Increased productivity - through increasingly efficient use of resources.

The concept of 'carbon productivity' highlights a clear synergy between the environmental sustainability agenda and the productivity challenge currently facing the NHS. Making improvements in terms both of carbon productivity (output per unit of emissions) and of financial productivity (output per pound spent) require the same focus on the efficient use of resources. The 2010 update to the Carbon Reduction Strategy included an analysis of the costs and benefits associated with different approaches to carbon reduction (SDU 2010). This indicated that many carbon-reducing interventions, such as reducing drug wastage or installing Combined Heat and Power units in hospitals, would also deliver net cost savings.

The current evidence-base around environmental sustainability in the healthcare sector is limited. However, wider research has identified sustainability as a key driver of productivity increases in the commercial sector (Nidumolu et al 2009), with sustainable organisations out-performing competitors in financial markets, including in the commercial healthcare sector (Mahler et al 2009). A focus on sustainability may have the potential to act as a similar driver for quality, innovation and productivity within the NHS. This is of clear importance in the current financial climate.

The scoping review will build on the evidence presented here by clarifying what further research is needed to support the NHS in engaging with this increasingly important agenda, and developing a conceptual framework that can be used to coordinate future research.

## ***Need***

The rationale behind this proposal needs to be split into two component questions: firstly, why is research on environmentally sustainable health care needed; and secondly, why begin this research with a scoping review?

### **Why conduct research on environmentally sustainable health care?**

#### 1) Capacity to generate new knowledge

First and foremost, research is needed because the existing evidence base in this area is highly limited, particularly as regards the practicalities of implementing sustainable approaches. Much remains unknown regarding how high-level policy aspirations can be translated into concrete changes and how sustainable practices can be encouraged and implemented in NHS organisations. It is anticipated that research will be required at three levels:

- Technical research - measuring the effectiveness of approaches towards reducing the environmental impact of health services, for example through the use of new technologies and innovative care pathways.
- Behavioural/organisational research - exploring the barriers and facilitators at the individual and organisational levels to the implementation of sustainable approaches.
- Systems research - examining how the wider systems and structures within which NHS organisations operate influence the implementation of sustainable approaches.

Research will be needed to underpin improvements in efficiency in the short-term, and in the longer term will need to go beyond this to ask more fundamental questions about how and where health care is delivered.

## 2) Expressed need

In an SDU consultation requiring Board-approved responses, 95% of NHS organisations expressed strong support for the NHS taking a leadership role on environmental sustainability, indicating a high level of support for action in this area (SDU 2008).

## 3) Sustained interest and intent

There is already considerable interest in the area and we anticipate this will grow in future. As argued in the background section, the NHS will be under strong and increasing pressure to reduce its environmental impact over the next decade. The first 'league tables' comparing the environmental performance of organisations participating in the Carbon Reduction Commitment will be published in September 2011. This is likely to attract much attention and if the NHS performs poorly there will be financial penalties. Furthermore, the close connection between sustainability and productivity means that research in this area can also be expected to help the NHS management community respond to the current financial climate.

## 4) Health need

Many of the actions proposed in the NHS Carbon Reduction Strategy, such as reducing transport emissions by shifting care closer to home, or reducing meat consumption, can also be expected to have other positive effects beyond their environmental impact. Research enabling measures such as these to be implemented in the most effective way would deliver benefits for public health and the quality of health care. There are also predicted to be direct health consequences of climate change in the UK which can be mitigated by reducing the environmental impact of health and other public services.

## 5) Congruence with SDO mission

With reference to the framework used above, the scoping review will acknowledge research needs at all three levels but our approach will give particular emphasis to behavioural/organisational and systems-level research needs, in line with the SDO's remit.

## **Why a scoping review?**

It is clear that there are substantial gaps in the evidence base, and initial exploratory work indicates that an increasing amount of research is being proposed in this area by people in a variety of settings. However, there is not yet a coherent strategy for addressing the knowledge gaps or a consensus regarding the priorities for future research. Commissioning a scoping review is an important step in allowing the current evidence base to be mapped, and gaps to be identified and prioritised. The findings of the review will be highly valuable in informing the commissioning of subsequent research, and in developing a conceptual framework through which future research can be coordinated.

## ***Methods***

### **Research design**

The scoping review will combine a literature and policy review with a structured stakeholder consultation involving qualitative interviews and a prioritisation exercise based on the Delphi method.

### **Conceptual framework**

Conceptual frameworks for sustainable development recognise three interdependent elements - economic development, social development and environmental protection - referred to as the triple bottom line. The scoping review will focus on the environmental element of sustainability, but will also

explicitly and actively make the connection with the economic element by asking how a focus on environmental sustainability can be aligned with solutions to the productivity challenge facing the NHS.

## **Research methods, timeplan & outputs**

### STAGE 1: Literature and policy review (Jan-Feb 2011)

The search strategy will target the following types of literature:

- Academic literature on the environmental sustainability of health services
- Articles from the business and management literature exploring how other sectors are aligning sustainability and productivity
- Grey literature taken from the websites of key organisations
- Relevant policy documents will also be reviewed in order to identify the key policies and levers driving sustainable practices within the NHS, and the research needs arising from these

These will be identified by:

- Searching bibliographic databases covering health and environmental research
- Seeking recommendations from experts in the field
- Using citation indices
- Web searching

Inclusion criteria:

- To be relevant for inclusion in the review, articles must focus either on environmental sustainability in the health care sector, or on the connection between sustainability and productivity/efficiency in other business sectors
- Studies of all methodological types will be included in the review, but brief editorial and opinion pieces will be excluded
- Due to the nature and objectives of the study and the limited evidence-base existing on the subject area, we do not consider it appropriate to use a formal quality assessment tool to include/exclude studies from the review. However, where appropriate we will take the methodological rigour of existing research into account when assessing what future research needs exist.

Data extraction:

- A qualitative data extraction framework will be developed and used to summarise the content of each article in terms of what is known about developing sustainable health services, what is not known, and what research needs are indicated.

### STAGE 2: Qualitative interviews (Mar-Apr 2011)

Interviews will be conducted with approximately 15 representatives of key stakeholder groups including:

- Organisations active in the field of sustainable health care at the level of policy, research and practice, including voluntary sector organisations, and sustainability consultants currently working with the NHS and other large organisations
- Members of the NHS management community
- Clinicians
- Patient groups

The interviews will build on stage one by testing the research needs emerging from the literature and policy review, and will explore stakeholders' perceptions of:

- How the delivery of health services will need to change in the transition to a sustainable society
- What research is needed to underpin this

The interviews will be analysed qualitatively using a thematic coding technique, with the aid of analytical software. The analysis will be framed around our three research questions, and will focus on mapping the existing knowledge base and identifying further research needs.

### STAGE 3: Delphi exercise (May-Jun 2011)

The research needs identified in the first two stages will be prioritised by means of an online Delphi exercise. Participants for this exercise will include interviewees from stage two plus additional experts identified during the research, drawing on recommendations from the NHS Sustainable Development Unit. We aim to recruit around 30 participants for this exercise, but will accept greater numbers if available.

The Delphi method is a systematic means of consulting expert opinion which allows a consensus position to be built iteratively without being imposed by more powerful or influential groups (Keeney et al 2001). The process will involve participants completing a series of short online questionnaires in approximately 3 rounds. In each round, participants will rank and provide comments on the suggested research areas, as well as adding any further research gaps. Scores and anonymised comments are then fed back to participants before repeating the exercise in the next round. As the rounds progress, participants tend to converge towards a consensus position.

This prioritisation exercise will help us to evaluate the relative importance of the research needs identified in the previous stages of the review.

### STAGE 4: Synthesis, writing up & dissemination (Jul 2011)

In producing the final report we will synthesise material from all 3 stages of data collection. The report will include:

- An overview of existing knowledge and research on developing environmentally sustainable health services (primarily based on the literature review)
- A prioritised list of areas in which further research is needed (from the Delphi exercise)
- Expanded detail on priority research areas (based on interview data and literature review)
- An analysis of the connections between the sustainability and productivity agendas (based on interview data and literature review)

In addition to the report to the SDO, we will publish a King's Fund report and hold a conference or seminar to support dissemination.

## ***Contribution to existing research***

Stakeholder engagement throughout the review and dissemination after the review will be core features of the work. Our approach will include consulting specific individuals and organisations, including not only experts in sustainability and related research, but also NHS policy makers, managers, clinicians and patient groups. This is especially important as we know that an increasing amount of sustainability-related research is being proposed and begun. The scoping review will add value to this by providing an overarching framework in order to galvanise and coordinate existing and future research. The engagement and consultation process that will form a central part of our approach will ensure that the scoping review and future research is as relevant as possible for the NHS.

We will work closely with colleagues in the NHS Sustainable Development Unit and other organisations that have demonstrated an interest in the area, to ensure the review is relevant and supportive to a wide audience and complements/coordinates work being done elsewhere. The formal inclusion of the Sustainable Development Unit in our project team will greatly assist with this, as they have the opportunity, mechanisms and channels to ensure that the findings are as relevant as possible to their many partners throughout the NHS and more widely in the research community. This range of engagement and dissemination routes available to the SDU ranges from the NHS

sustainable development regional networks to the most senior policymakers in the Department of Health and elsewhere in Government.

As we hope the SDO will be a key user of the findings of the scoping review, we will keep in close contact with the SDO throughout the project and beyond in order to maximise the relevance of our findings to the future commissioning of research. This is one of the prime objectives of this study and hence this continued engagement with the SDO in particular but also with other research councils and funding bodies will be of special importance. We will ensure that funders such as the National Institute for Health Research and the Living With Environmental Change programme at the Natural Environment Research Council are aware of our work. Our aim is that the scoping review should lead to the creation of a well-established framework for researching sustainability in health care so that researchers and research funders have a better chance of filling important gaps in the knowledge base and avoiding duplication.

The research findings will be shared with policy makers in the Department of Health, the rest of Government and in related policy units nationally and internationally in order to help shape policy, practice and further research. We will also target organisations with a responsibility for system management - particularly NICE, Monitor and CQC - as the role of these organisations in embedding sustainability in the system is likely to be important.

### ***Plan of Investigation***

|                              | <b>Project phase</b>                | <b>Tasks</b>   | <b>Month</b> |
|------------------------------|-------------------------------------|--|--------------|
| <b>Core project period</b>   | 1. Literature & policy review       | <ul style="list-style-type: none"> <li>• Identification of literature</li> <li>• Data extraction &amp; identification of research needs</li> <li>• Participant recruitment (n=15) for phase 2</li> </ul>                                 | Jan-Feb 2011 |
|                              | 2. Qualitative interviews           | <ul style="list-style-type: none"> <li>• Development of interview schedule</li> <li>• Conducting telephone interviews</li> <li>• Qualitative analysis of interview data</li> <li>• Participant recruitment (n=30) for phase 3</li> </ul> | Mar-Apr 2011 |
|                              | 3. Delphi exercise                  | <ul style="list-style-type: none"> <li>• Development of online questionnaire</li> <li>• Running online Delphi exercise</li> <li>• Analysis</li> </ul>  | May-Jun 2011 |
|                              | 4. Completion of SDO report         | <ul style="list-style-type: none"> <li>• Synthesising findings</li> <li>• Completion of report to SDO</li> <li>• Development of communications strategy</li> </ul>   | Jul 2011     |
| <b>Additional activities</b> | 5. Ongoing dissemination activities | <ul style="list-style-type: none"> <li>• Publication of King's Fund report</li> <li>• Seminar/conference</li> </ul>  | Aug-Sep 2011 |

### ***Project Management***

Project management responsibilities have been assigned to a member of the project team with extensive experience of managing research projects of a variety of sizes.

## **Service users/public involvement**

As part of our consultation exercise we will aim to identify patient groups or patient representatives with some knowledge of or interest in the issue of sustainability in health care. We will approach relevant organisations e.g. the Patients Association and/or Healthcare Without Harm for assistance with this.

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## **Disclaimer**

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