

Towards a Sustainable Future: Decarbonising the Healthcare Sector

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Summary

The National Health Service (NHS) is one of the largest employers of labour in the United Kingdom but also a major contributor to the greenhouse gas emissions. In response to this, the NHS has set a target to become the first net-zero health care system globally by 2040, positioning itself as a leader in the cores of sustainability. To accomplish this goal, this research aims to develop a comprehensive methodology towards decarbonising the NHS using the innovative concept of Renewable Energy and Re-useable Resources. The measurable objective of this paper is firstly, to investigate the current carbon footprint of the NHS and determine the major contributing factors. Secondly, identify and evaluate the challenges and limitations associated with decarbonisation of the Health Service. Thirdly, to identify existing practices and innovative strategies to reduce the carbon footprint of the NHS. Lastly, recommending guidelines for future implementation towards sustainability, to aid policymaking among stakeholders of the health sector. This research will adopts a mixed method research methodology. It stresses the importance of transitioning to an eco-friendly approach of energy generation and a sustainable way of reducing waste, through the proper sensitisation of all health sector stakeholders of the concept of Re-useable resources. It elaborates on the need for a greener NHS, its general impact on human and environmental health and the need for policy review geared toward a sustainable and resilient health sector.

Keywords: Climate change, Net zero, Decarbonisation, Healthcare sector, and United Kingdom.

Track 30: Sustainable and Responsible Business

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Introduction

Fossil fuel combustion contributes to the annual atmospheric emission of roughly 30 billion tons of carbon dioxide (CO₂) (IPCC, 2022). At the forefront of climate change and the current rise in global temperatures is CO₂, a naturally occurring greenhouse gas (Crowley and Berner, 2001). This greenhouse gas emissions have led to a global Planetary and Human health threat according to the Intergovernmental Panel on Climate Change's 2018 promptings (IPCC, 2018). This threat can be seen in its possible global temperature increase of 4 degrees within the century – a far stretch from the IPCC threshold of 1.5 degrees to maintain planetary habitability (Hanna and Victor, 2021). In response to this, the NHS has set a target to become the first net-

zero health care system globally by 2040, positioning itself as a leader in the cores of sustainability. Therefore, decarbonisation of the health service is a complex idea that involves both biophysical and technological challenges as well as problems and solutions (Grubler, 2012). Additionally, Decarbonisation highlights the value of a transdisciplinary and systemic approach that cooperatively takes into account the different players and components involved in the design and execution of policies (Bale et al., 2015; Fazey et al., 2020). A comprehensive framework is outlined, comprising three key principles. Firstly, reducing the demand for excessive material or resource use is imperative. Instituting the innovative approach of the fundamentals of sustainability by achieving greater effectiveness while using less resources. Secondly, becoming a completely green NHS through total transitioning to renewable energy sources and decarbonising its direct service operation. Lastly, recommending guidelines for future implementation of sustainable policies, to aid proper decision making among stakeholders of the health sector.

As the detrimental consequences of climate change on human health have become more evident, it is clear that the medical community needs to critically evaluate how its own operations effect both human and environmental health (Costello et al., 2009; Watts et al., 2015). Hence the NHS Since 2008, has tracked its carbon footprint and reduced its carbon emissions. Emissions from NHS facilities, energy supplies (mostly electricity), waste, supply chain production and manufacture, medications, and travel have all been recorded using an advanced methodology to determine the NHS Carbon Footprint. In an operational context, the boundaries for a Net Zero Emission building should aim to achieve an annual zero emissions balance for all areas under operational control (Satola et al., 2021). By addressing these issues, this research aims to advance the measurement of carbon emissions associated with healthcare and their possible incorporation into renewable energy and the idea of reusable resources, enabling well-informed decision-making that takes sustainability and health into account when making healthcare decisions.

Research Methodology

This study will employ a mixed method of research, which combines qualitative and quantitative techniques to collect data on the present carbon footprint and the most effective strategy for achieving the sustainable goal of net zero. The quantitative technique would involve collecting numerical data for unbiased study on energy consumption, carbon emissions, cost, source of waste, etc. While the qualitative method would guide in recognising the obstacles, viewpoints, and attitudes of stakeholders (such as patients, legislators, and healthcare professionals) on decarbonisation initiatives in the NHS. The focus of this study would be the NHS trusts, existing literature review on decarbonising the NHS, decarbonisation measures that have already been implemented, analysing their strategies, successes, and challenges.

Findings and Discussion

In order to achieve a net zero health service, it is crucial to have discussions about the opportunities and difficulties of implementing the “Greener NHS” policy. Tennison et al. (2021) pointed out that a large portion of carbon equivalents can be linked to visitor travel, building energy use, food and catering, and the acquisition of medical equipment and prescription drugs required to maintain a busy ward. Hence, it is critical to lower the demand for healthcare services. Decreases in health service carbon intensity can be feasible when the rising healthcare needs brought on by population increase, aging, and treatment complexity is successfully tackled.

The failure to adopt innovative and green strategies for better efficiency has been considered as a moral problem among stakeholders (Wilkinson, 2022; Zils et al., 2022). This is evident in the variations in the carbon reduction measures across stakeholders, this disparity highlights the complexity of achieving uniform sustainability practices across the NHS. It highlights the importance of engaging healthcare professionals in sustainability efforts and identifies potential barriers to effective implementation, such as resource constraints and the need for education on sustainable practices (Sinha et al., 2024).

MacNeill et al., (2017) highlighted the need to consider the substantial environmental impact of surgical services and suggested that targeted strategies, such as reducing the use of high-emission anaesthetic agents could reduce the carbon footprint. The study stresses on the need to evaluate clinical practices and infrastructure within surgical settings to align with global efforts in mitigating climate change.

Grose and Richardson (2013) elaborated on the role of the supply chain players to meet the “Greener NHS” which cannot be underestimated, achieving sustainable healthcare or meeting the net zero emissions target can only be feasible if the suppliers, manufacturers or partners of the NHS are in support of the goal. Four areas of concern were identified: procurement was unclear and led to multiple approaches to buying bulk items at low cost; internal organisational systems needed to be reconsidered in order to embed sustainability; and contradictions with government legislation created confusion regarding the best way to deliver sustainable solutions. Grose and Richardson (2013) further highlighted the crucial need for local solutions, as well as national guidelines and an awareness of the supply chain’s external variables. Healthcare providers may integrate sustainability into all purchasing decisions and collaborate with local suppliers by leveraging local knowledge.

Healthcare facilities in general, and hospitals in particular, have specific consumption patterns and unique challenges. The demand for energy spans electricity, heat, and cooling (Kahwash et al., 2021). Dependence on alternative sources of operation would require acceptance by the stakeholders. The perception of the professionals to transition into green energy would require much sensitisation and proper awareness, the purchase of more sustainable equipment for more efficiency and lower cost (Tudor et al., 2015). Device recycling (Bartels et al., 2020), the use of renewable anaesthetic gases (Chambers et al., 2022), the implementation of greener procurement standards (Walker and Brammer, 2021), and green building infrastructure (Alkhatami et al., 2022) is the path to sustainable future of the NHS and all stakeholders have a part to play in meeting the target.

Achieving a net zero NHS requires comprehensive policy reforms that integrate sustainability across all aspects of health and social care delivery. This reform needs to focus on regulatory frameworks, financial incentives, procurement policies, workforce engagement and technological innovation (Greener, 2002).

Conclusion

The transition to renewable energy and reusable resources is essential for the NHS to achieve its net zero targets while maintaining high standards of patient care. The healthcare sector is a significant contributor to carbon emissions, primarily due to energy-intensive operations, medical waste, and high resource consumption. Shifting towards renewable energy sources can drastically reduce reliance on fossil fuels, cutting emissions and enhancing long-term energy security. Additionally, the adoption of energy-efficient technologies, such as LED lighting, smart heating systems, and advanced ventilation, will further improve sustainability and cost-effectiveness. Beyond energy, integrating circular economy principles in procurement and waste management is critical. Reducing single-use plastics, promoting the reuse of medical

equipment, and implementing biodegradable alternatives can significantly lower environmental impact. A comprehensive approach to sustainable supply chain management including local sourcing and green manufacturing practices will further contribute to reducing the NHS's carbon footprint. A strategic transition to renewable energy and resource-efficient practices will ensure the NHS remains both environmentally responsible and financially sustainable. By embedding sustainability into healthcare operations, the NHS can lead by example, demonstrating that high-quality care and environmental stewardship can coexist, ultimately contributing to a healthier population and a more resilient healthcare system.

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