



TOWARD A HOLISTIC PARADIGM: ANALYSING THE INTEGRATION OF ECOLOGICAL AND SOCIO-ECONOMIC DIMENSIONS IN SUSTAINABLE HEALTHCARE POLICY

Article Authors:

Fatimah Akanbi - Sakarya University Turkiye Email: [fatimah.akanbi@ogr.sakarya.edu.tr](mailto:fatimah.akanbi@ogr.sakarya.edu.tr)

Khairat Oluwakemi Akanbi - Faculty of Law at University of Ilorin. Email: [Akanbi.ko@unilorin.edu.ng](mailto:Akanbi.ko@unilorin.edu.ng)

**ABSTRACT**

*Global healthcare systems currently face significant instability due to a design traditionalism that prioritises acute cures over long-term preventative care. This paper explores the transition toward sustainable healthcare, a multidimensional framework that integrates mental, physical, social, economic, and ecological determinants. By examining the Triple Bottom Line approach rebalancing social equity, environmental integrity, and economic viability. The study identifies how technological innovations, such as telemedicine and AI, and operational shifts, like eco-friendly facility management, contribute to systemic resilience. The analysis further emphasises the critical role of multi-stakeholder engagement and interdisciplinary collaboration in overcoming political and fiscal barriers. Thus, this overview synthesises evaluation frameworks, such as the Life Cycle Sustainability Assessment (LCSA), to guide policymakers in developing health systems that meet the needs of both present and future generations.*

**Key Words:** Healthcare, Ecologica, Triple bottom approach

## INTRODUCTION

The contemporary healthcare landscape is increasingly defined by its response to intersecting social, environmental, and political crises. Existing literature suggests that current healthcare designs are precarious and often unsustainable, largely because they remain detached from the broader principles of holistic well-being. In response, the concept of "sustainable healthcare" has emerged not merely as a policy option, but as a functional necessity for maintaining global health.

Sustainable healthcare policy is characterised by its multidisciplinary nature, bridging public health, economics, ethics, and environmental science. It seeks to minimise the environmental footprint of medical delivery, such as carbon emissions and waste, while simultaneously promoting social equity and economic efficiency. Central to this transition is the "Triple Bottom Line" approach, which reframes the traditional "People, Planet, Profit" model into a healthcare-specific focus on social equity, environmental integrity, and economic viability. This paper examines the frameworks, technological drivers, and stakeholder dynamics essential for transforming healthcare from a symptom-focused industry into a resilient, eco-friendly, and socially responsible system.

## AN OVERVIEW OF SUSTAINABLE HEALTHCARE POLICY

As we navigate social, environmental, economic, and political crises, the concept of health system sustainability becomes increasingly important. According to the existing body of literature, the current system is perceived as precarious and unsustainable in many ways. Its current design – focused on 'cure' rather than 'care' – creates a noticeable contradiction with the basic principles and objectives of the healthcare sector (Bocken & Short, 2021; Braithwaite et al., 2019). To resolve these contradictions, a persuasive concept of 'sustainable healthcare' is increasingly being structured, whose first premise is that sustainable healthcare is essential for good health (Shaw et al., 2021; MacNeill et al., 2021). 'Health' is defined holistically; mental, physical, social, economic, and ecological determinants must be weighed equally (Fahmy & Mitchell, 2022). Sustainability encompasses principles for fair resource input, such as care, funding, treatment, and healthy living and working (Abeysekera, 2022). It also involves due diligence (Sanni, 2024), which is also critical to a sustainable health system.

Sustainability in healthcare policy involves addressing environmental, social, and economic factors to ensure the long-term effectiveness of healthcare systems (Tamer, 2018). The principles and frameworks for sustainable healthcare policy focus on minimising environmental impact, promoting social equity, and ensuring economic efficiency (Syed et al., 2022). These frameworks also emphasise the importance of engaging stakeholders, implementing innovative management strategies, and adopting sustainable technologies. The integration of technology is crucial for enhancing sustainable healthcare policies. For

instance, telemedicine and digital health solutions improve access to care while reducing the carbon footprint associated with traditional healthcare delivery methods, such as travel for appointments (Buffoli et al., 2013). By leveraging data analytics and artificial intelligence, healthcare systems can optimise resource allocation and streamline operations, increasing efficiency and reducing waste (Smith, 2012). As these technologies evolve, they have the potential to transform healthcare into a more responsive and eco-friendly system, ultimately benefiting both patients and the planet.

As environmental responsibility has become an essential part of healthcare strategy, there is a need for healthcare organisations to recognize the importance of integrating sustainable practices into their operations and patient care models. Healthcare organisations are encouraged to adopt eco-friendly practices such as sustainable procurement, waste management, and recycling systems (Bhardwaj et al., 2024). Additionally, using eco-friendly materials and techniques in healthcare facility construction, as implementing energy conservation measures like solar energy utilization, is crucial (Ullah et al., 2023). By adopting energy-efficient appliances and promoting indoor plants, healthcare facilities can significantly reduce energy consumption (Rana, 2024), thereby fostering the sustainability of the healthcare system.

Studies have highlighted that sustainable healthcare policies should address social issues, including improving indoor air quality, patient safety, and healthcare accessibility and affordability (Ullah et al., 2023). Moreover, according to Hussain et al (2024), focusing on social policy, health economics, and management is crucial in tackling the rising costs and demand while ensuring sustainability. In another study, stakeholder value maximisation, rather than shareholder profit, should guide healthcare governance, prioritising patient-centred care and social responsibility (Mishra & Quttainah, 2023). Additionally, fostering collaboration among various stakeholders—including government agencies, private sector players, and community organisations—can facilitate innovative approaches that address immediate healthcare needs and long-term sustainability goals (Hussain et al., 2024). This holistic approach enhances the quality of care and fosters community trust and engagement, ultimately leading to better health outcomes and a more resilient healthcare system.

## **DEFINITION AND SCOPE**

Sustainable healthcare policy denotes developing and implementing strategies to promote long-term health outcomes in line with healthcare delivery's economic, social, and environmental perspectives (Deutsch et al, 2015). It requires a multidisciplinary approach that integrates principles of public health, economics, ethics, and environmental science to address the complexity of factors influencing healthcare sustainability (Benito et al, 2025; Lunt et al, 2014). Sustainability involves a comprehensive approach to healthcare management seeking to balance the needs of current and future generations by optimising resource allocation and improving health equity (O'Loughlin et al, 2004; Zhou et al, 2024). Achieving sustainable healthcare policy

necessitates a holistic understanding of the interconnected nature of health systems, requiring a nuanced analysis of the dynamic interactions between various disciplines to effectively address healthcare sustainability challenges (Marimuthu et al, 2016; Zhang, 2024).

The concept of sustainable healthcare policy recognises the interconnected relationships among private and national health, healthcare systems, and social and environmental policies (Berniak-Woźny & Rataj, 2023; Crane et al., 2021). Such healthcare policies aim to offer equal accessibility, high quality, and financially affordable healthcare for the community without negative environmental or social impacts (Whitman et al., 2022). As the concept of sustainability covers a broad spectrum, the definition of sustainable healthcare covers various paths such as an ecologically oriented approach to healthcare management (Hariram et al., 2023), considering public health production as the result of a social and ecological partnership and relying on a wide continuum of human and human-environment integrated system view. (Bruno et al.2024)

Sustainable healthcare can fulfil its needs over time in terms of prevention and cure, balance, obtaining raw materials, and disposing of waste and effluents, in harmony with its natural, ecological, socio-cultural, and economic environment (Mehra & Sharma, 2021). This policy is centred on patients, providers, or society, and belies any form of business-led revalorisation for healthcare providers. These policies integrate economics, environmental studies, public health, and healthcare principles. Strengthening the sustainable approach in disease aetiology, disease treatment, and health promotion complements the integrative approach of the three domains very well (Green et al., 2021). This can also enhance a dynamic relationship between health promotion and health system dimensions, including preventive and curative activities, health management, and policymaking. Health promotion enables people to increase control over and improve their health (Nutbeam & Muscat, 2021). However, it has ceased to define the concept of health. More essentially, it considers the quality of life in all its dimensions and incorporates the premises of modern sustainable healthcare, where prevention and promotion play a significant role. In this way, the principles of a sustainable approach spring from the principles of health promotion.

## **PRINCIPLES AND FRAMEWORKS OF SUSTAINABLE HEALTHCARE POLICY**

Despite the lack of conceptual consensus on the theory and methods of formulating healthcare policies, sustainable healthcare is increasingly recognised as a necessity and not an option, with implications for health and health systems (Shaw et al., 2021). The health sector incorporates economic, social, and environmental perspectives, applying to sustainable healthcare (Hariram et al., 2023). Many countries use frameworks to guide the development of healthcare policies, despite the conceptual and operational flexibility of sustainable development paradigms that shape policies (Jansen et al., 2024). These frameworks offer a comprehensive explanation of what these principles imply regarding healthcare policies and present relevant

indicators highlighting how policy implementation occurs. While some of these frameworks are still in their early stages of implementation, others are already being used to establish healthcare systems or appoint hospitals that explicitly or implicitly support sustainable principles.

Several guiding principles operationalise the conceptual framework. The first is the idea that everyone has the right to obtain a healthy and safe environment; they should have access to healthcare and should not have to fear that the inequity of distribution can impair their odds of success (Turpel-Lafond & Johnson, 2021). The second principle states that healthy living and working environments are realistic and achievable goals. It means that sustainable healthcare policies concentrate on long-term effects and coherent use of systems; the system's participation enhances short-term service delivery. (Zhou et al.2022). In terms of the policy's objectives, these considerations link healthcare results and hidden or explicit objectives of the sustainability of the environment. Thirdly, the main idea is that healthcare and other decision-making processes must be transparent and understandable to patients, the public, health sector employees, and the community or regions that depend on and are affected by their wishes and actions (Schünemann et al., 2022). In this sense, it is equity in access to healthcare.

### **TRIPLE BOTTOM LINE APPROACH**

One way to define a sustainable healthcare policy is the Triple Bottom Line Approach. This concept argues that to be sustainable, financial imperatives need to be balanced alongside two other vital concerns: protecting and improving the quality of life for present and future generations and ensuring that the environment is maintained for these generations. (Challoumis, 2024). Expanding this concept further, the 'Planet' and two other entities are considered in this work to be all ailments in life, including social ones, sounding quite in tune with policy in the health sector. The 'Profit' is reframed here as 'Economy', which seems to make more sense regarding the health systems directly presented. With these reframings in mind, the Triple Bottom Line Approach conceptualises 'sustainable' healthcare policy as policy, which rebalances the economy so that it leads to social equity, environmental integrity, and economic viability. (Alim & Sulley, 2024)

The social, or 'People', imperative stresses addressing health inequalities (Mezzina et al., 2022). Similarly, the environmental, or 'Planet', imperative encourages efforts to build system sustainability by reducing the damage healthcare activities cause to human and ecosystem health and fostering a planet that can promote public health. In doing so, ways of increasing health today do not lead to increased costs for public health and healthcare in the future (Shaw et al., 2021). Finally, plans to ensure the health system is financially sustainable ensure that the economy, or 'Profit', in this case, is not left out (Kilci, E. N,2021, p. 511). The successful application of the Triple Bottom Line in evaluating a policy or as a tool for post-evaluation of one

could assist us in seeing if reaching these three imperatives simultaneously, regardless of balance, leads to or has led to a more sustainable health policy. Hence, at its most basic, the Triple Bottom Line concept requires that the development model be redefined as a healthy, socially, and environmentally sustainable development model.

Therefore, the Triple Bottom Line Approach requires a fundamentally different attitude from all stakeholders, requiring a long-term monetary investment in health outcomes demonstrating this triple value, to provide practical policy encouragement to policymakers. (Jum'a et al.2022; Neri et al.2021). It promotes risk reduction that makes the government, corporations, or third-sector organisations less likely to be fiscally paralysed in the short to long term (Birkel & Müller, 2021). Explicitly making this reorientation ensures the policy has strategically designed health innovation and economic healthcare models that meet those needs (Health Organisation, 2024). It is needed for today and for the generations to come as well. If one examines local growth priorities, one can see a different objective of the initiative that the three internal capital priorities have different objectives.

### **CHALLENGES IN IMPLEMENTING SUSTAINABLE HEALTHCARE POLICIES**

Indeed, over the last few decades, global society has become increasingly involved, especially in the proposal and discussion of environmental and economic policies (Ibn-Mohammed et al., 2021). In addition, healthcare policies have emerged as an interesting and crucial debate due to their impactful implications on social inequalities (Béland et al., 2022). However, the construction of policies and their implementation remain arduous because they deal with essentials for human survival and development, individually and collectively. (Hariram et al., 2023)

Undeniably, technological, environmental, economic, and primarily political challenges are as constant as they are significant (Doğan et al., 2023). In principle, biomedicine, sustainable development, and public health, for example, could and should contribute significantly to this debate. However, healthcare policies that address health from a rare perspective are more common than those directed towards biopsychosocial and environmental sustainability (White et al., 2023). So too are healthcare programs to heal or treat the symptoms and perpetrators of unsustainability. There is also no dearth of public and private security forces allocated to protect goods from the affected populations challenging the cause. Biomedicine, sustainable development, and public health have the potential to make substantial contributions to the ongoing discussion. These fields could play a significant role in shaping the discourse. Their involvement in the debate is crucial for advancing knowledge and finding solutions.

Biomedicine, sustainable development, and public health are key areas for addressing current challenges (Palladino, 2011). However, healthcare policies that address health from a rarity perspective are more

common than those directed towards biopsychosocial and environmental sustainability (White et al., 2023). Healthcare programs frequently focus on addressing the symptoms and causes of unsustainability, often overlooking the importance of prevention and the root causes of these issues. This gap emphasizes the need for a more holistic approach that integrates all facets of health and sustainability to effectively tackle our society's complex challenges (Lee et al., 2017). Achieving this objective requires interdisciplinary collaboration among experts in biomedicine, sustainable development, and public health, enabling the development of comprehensive strategies that recognise the interconnectedness of health and sustainability issues (Lim et al., 2017; Beverley et al., 1997).

### **THE ROLE OF STAKEHOLDERS IN SHAPING SUSTAINABLE HEALTHCARE POLICIES**

Sustainable healthcare policy cannot be developed or achieved in isolation from stakeholders. Several stakeholders are involved in healthcare provision and policy, and the interaction between them is essential in delivering sound, sustainable healthcare policy (Shaw et al., 2021; World Health Organisation, 2022). Governments represent the citizen base and must regulate for efficient and equitable healthcare provision. Healthcare providers are the 'gatekeepers' to healthcare and ultimately the deliverers of all facets of care to the community. Health care insurers share the risk of healthcare provision with governments by funding the health services and often participating in healthcare delivery. Patients consume healthcare. Patients are also electorates who can support or block healthcare policy.

Stakeholder interactions are complex. All stakeholder relationships need to be magnified and put into the context of various relationships. Lack of engagement of any of the stakeholders may compromise and break the system (Masefield et al., 2021). The stakeholders can have different interests that can adversely affect the direction of healthcare policy. Stakeholder relationships must also encompass community engagement (Satizábal et al., 2022; Tembo et al., 2021). Collaboration across multiple disciplines and active involvement from stakeholders are essential for successfully implementing sustainability initiatives (Bhardwaj et al., 2024). Systems thinking and causal loop diagrams can effectively visualize and manage the interconnectedness of sustainability indicators in healthcare (Ullah et al., 2023). Innovative management and policy solutions are also required to promote sustainable practices and enhance healthcare outcomes (Hussain et al., 2024).

Community health needs and values must be considered when formulating healthcare policies. There is evidence that where communities are engaged in healthcare policy decision-making, the collective expertise of the community helps to develop efficient, effective, and relevant policy (Rijal, 2023). Continued political will and public support are also prerequisites for policy sustainability. Policy sustainability relates to the development process and the continuing implementation (Vargas & Cooper, 2024). Ongoing stakeholder

engagement is crucial during policy implementation and post-implementation to ensure adaptability and policy relevance. (Song et al.2022; Peckham et al.2022)

### **GOVERNMENT AND REGULATORY BODIES**

The government's function encompasses formulating policies that reinforce and delineate the national values for its populace. (Abhayawansa et al.2021). At the governmental echelon, such policies can manifest as 'mandates', which serve as directives for healthcare providers and institutions to adhere to designated protocols, maintain specific treatment profiles, or implement diverse supply alternatives in healthcare delivery and ensure that healthcare systems operate in alignment with established ethical standards (Alvarez et al., 2022). This involves collaborating with regulatory bodies to monitor compliance, evaluate healthcare outcomes, and facilitate improvements in patient care quality. Furthermore, these policies may extend beyond state boundaries. Additionally, state policies can influence funding prerequisites for healthcare services, presenting 'options' for supply contingent upon state funding levels and other financial avenues, potentially necessitating the consideration of alternative private sector solutions (Barr, 2023). Furthermore, local government entities, such as city or county administrations, may establish mandated recycling policies, albeit with limited enforcement capabilities (Guarini et al., 2022)

Government policies significantly impact the healthcare sector, presenting various challenges. Existing regulations and requirements primarily promote product development by mandating proof of a product's advantages for patients, which involves the efficacy and safety data through essential clinical trials (Sharma et al., 2021). This environment often leads to a tendency to prioritise compliance with these regulations over sustainability considerations. This includes balancing global budgets alongside the intricacies of healthcare delivery systems, health clinics, and other government-mandated programs, particularly during public health emergencies such as pandemics (Gruber, 2022). The scenario is frequently complicated by competing priorities; often, the most prominent mandates receive the majority of public funding and investments in healthcare. Therefore, formulating coherent healthcare policy is a more complex task than it initially appears (Gruber, 2022, p. 12).

### **MEASURING THE IMPACT OF SUSTAINABLE HEALTHCARE POLICIES**

Several frameworks and methodologies have been adopted to effectively evaluate the impact of sustainability on a health system. Measuring the impact of sustainable healthcare policies involves assessing various domains of sustainability, including social, environmental, and economic factors. Sustainability Indicators and Measurement Scales is one comprehensive approach developed to assess sustainability in healthcare, focusing on social, environmental, and economic performance indicators. This scale aligns with the UN Sustainable Development Goals (SDGS) and is a benchmark for evaluating sustainability-related

performance in the healthcare industry (Rattan et al., 2022). The Life Cycle Sustainability Assessment (LCSA) approach highlights healthcare facilities' environmental and social life cycles. This approach identifies factors like energy consumption and waste management as critical aspects of sustainability. A policy framework is proposed to enhance sustainability through eco-friendly construction, energy conservation, and waste management (Ullah et al., 2023).

Furthermore, Analytical Hierarchy Process (AHP) frameworks prioritise sustainability factors and sub-factors in healthcare systems, providing a structured approach to measuring and implementing sustainability strategies (AlJaberi et al., 2020; Mehra & Sharma, 2021). In another study, the Strong Sustainability Paradigm (SSP-AHP) is used to evaluate the sustainability of healthcare systems by focusing on equity, quality, responsiveness, financial coverage, and adaptability. This framework highlights the importance of balancing social and economic protection to achieve sustainability (Wkatr'obski et al., 2023). However, challenges such as high energy consumption, inadequate management, underfunding, fragmented systems, and translational gaps in evidence-to-practice exist in sustainable performance analysis (Ullah et al., 2023; Zurynski et al., 2022). As proposed by many studies, strategies for improvement include enhancing management practices, promoting public awareness, adopting evidence-based practices, and fostering collaboration among stakeholders (Zurynski et al., 2022; Hussain et al., 2024; Mostepaniuk et al., 2023).

## CONCLUSION

Transitioning to a sustainable healthcare system requires a fundamental shift from fragmented, short-term interventions to a holistic, systems-thinking approach. As demonstrated, the integration of digital health solutions and sustainable procurement practices can significantly reduce the ecological burden of care while enhancing patient access. However, the successful implementation of these policies is not purely a technical challenge; it is a political and social one. It necessitates robust political will, transparent decision-making, and the active engagement of diverse stakeholders—ranging from government regulators and private providers to the communities they serve.

While frameworks like the Analytical Hierarchy Process (AHP) and the Life Cycle Sustainability Assessment (LCSA) provide the tools necessary to measure performance, significant gaps in funding and evidence-to-practice translation remain. To ensure that healthcare remains a right for future generations, policies must prioritise patient-centred care and social responsibility over shareholder profit. By fostering a "social and ecological partnership," healthcare can finally align its operational strategies with its core mission: the long-term health of both the individual and the planet.

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