



ACHIEVING PLANETARY SUSTAINABILITY: A CRITICAL JOURNEY TO SURVIVAL

MEISAM TABATABAEI^{1*} AND HUGH MONTGOMERY^{2**}

¹Higher Institution Centre of Excellence (HiCoE), Institute of Tropical Aquaculture and Fisheries (AKUATROP), Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia. ²Department of Medicine, University College London, London, United Kingdom.

*Corresponding authors: meisam.tabatabaei@umt.edu.my, h.montgomery@ucl.ac.uk

HIGHLIGHTS

- This paper provides a comprehensive exploration of the concept of planetary sustainability, examining its historical evolution and the critical role it plays in addressing global environmental and social challenges.
- The significance of key frameworks and initiatives such as the Sustainable Development Goals (SDGs) and the Brundtland Commission's report is underscored, highlighting their contributions to shaping sustainable development strategies at the local, national, and global levels.
- The paper emphasizes the urgent need for an integrated and multidisciplinary approach to tackle pressing sustainability issues, including climate change, biodiversity loss, and social inequality, recognizing the interconnectedness of ecological, social, and economic systems and the importance of holistic solutions.

GRAPHICAL ABSTRACT



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ABSTRACT

The concept of sustainability has evolved over time as a response to the environmental challenges arising from industrialization and the exploitative use of natural resources. This paper critically examines the history of sustainability, planetary sustainability, and what is required to attain it. It explores the interconnectedness of environmental, social, and economic dimensions, emphasizes the need for an integrated and multidisciplinary approach, and highlights the importance of technological innovation, education and awareness, policy interventions, and individual actions in this regard.

It discusses key milestones in the sustainability discourse, including the Brundtland Commission's report, the United Nations' Sustainable Development Goals, and the role of influential initiatives such as the Intergovernmental Panel on Climate Change and the Lancet Countdown on Health and Climate Change. It underscores the urgent need for action to address the escalating climate crisis, biodiversity loss, and other ecological threats by critically analyzing past efforts, identifying gaps and shortcomings, and proposing innovative solutions; this paper aims to contribute to the ongoing journey toward achieving planetary sustainability.

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Welcome to Planetary Sustainability

Welcome to the inaugural issue of *Planetary Sustainability*, a journal dedicated to exploring and promoting the crucial mission of achieving sustainable development and safeguarding the future of our planet and our own survival. This first editorial sets the scene, critically examining the history of the sustainability concept and shedding light on what is required to attain planetary sustainability.

Evolution of Sustainability: From Industrialization to Planetary Sustainability

If activity is sustainable, it can be 'maintained at a certain rate or level'. It is a binary concept: Something is either sustainable or not. Being 'more sustainable' is by definition, unsustainable.

Planetary sustainability refers to the 'avoidance of the depletion of natural resources in order to maintain an ecological balance' (Oxford English Dictionary) and is a concept rooted in recognition of humanity's interconnectedness with the natural world and a concept that has evolved over time. It emerged as a response to the environmental challenges that arose during the Industrial Revolution. The rapid pace of industrialization, coupled with the exploitative use of natural resources, led to severe environmental degradation and social injustices. In response, thinkers and activists began advocating for a more balanced and holistic approach that considered the long-term impacts of human activities.

Sustainable development emerged as a prominent framework in the late 20th century. The Brundtland Commission's landmark report, "Our Common Future" released in 1987, emphasized the need to meet present needs without compromising the ability of future generations to meet their own (World Commission on Environment and Development, 1987). This holistic approach integrated environmental, social, and economic dimensions, striving for balance and equity. It emphasized the importance of conserving natural resources, promoting social equity, and ensuring economic prosperity for all.

The Roadmap to Planetary Sustainability: Key Frameworks and Initiatives

The Brundtland Commission's report paved the way for global discourse on sustainability, leading to significant international agreements and initiatives. The 1992 United Nations Conference on Environment and Development in Rio de Janeiro, also known as the Earth Summit, resulted in the adoption of Agenda 21, a comprehensive blueprint for sustainable development that outlined strategies for achieving sustainability at the local, national, and global levels. It addressed various sectors, including poverty eradication, sustainable consumption and production, and the conservation of biological diversity (Janerio, 1992).

Building upon Agenda 21, the United Nations introduced the Sustainable Development Goals (SDGs) in 2015. This landmark initiative set forth a universal call to action, aiming to end poverty, protect the planet, and ensure prosperity for all. The SDGs encompass 17 interlinked goals and 169 targets that address a wide range of pressing global challenges, including poverty, hunger, health, education, gender equality, clean water and sanitation, renewable energy, climate action, and biodiversity conservation. By providing a comprehensive framework, the SDGs serve as a roadmap to guide governments, organizations, and individuals toward a sustainable future (Department of Economic and Social Affairs, n.d.).

Strategies for Achieving Planetary Sustainability: Integrated Approaches and Multidisciplinary Solutions

To achieve planetary sustainability, we must adopt an integrated and multidisciplinary approach. One such approach gaining momentum is “One Health”. It recognizes the intricate interdependence between human health, animal health, and the health of our ecosystems and emphasizes the importance of addressing zoonotic diseases, promoting responsible antimicrobial use, and protecting biodiversity as key elements in safeguarding human well-being and survival. By recognizing the interconnectedness of all life forms, we can develop more comprehensive and effective strategies to address sustainability challenges.

However, the path toward planetary sustainability remains challenging. The escalating climate crisis, biodiversity loss, deforestation, and other ecological threats demand urgent action. While significant progress has been made, we must critically reflect on our past efforts and recognize the gaps and shortcomings that hinder progress. It is crucial to learn from both successes and failures to shape a more effective and transformative agenda for the future.

The Intergovernmental Panel on Climate Change (IPCC), a leading international body for assessing climate science, has played a

pivotal role in shaping our understanding of the climate crisis. The IPCC’s reports provide comprehensive assessments of the state of the climate system, the impacts of climate change, and the options for mitigating and adapting to its effects. Their rigorous scientific assessments and policy-relevant findings have informed global climate negotiations, policy decisions, and public awareness. The IPCC’s reports emphasize the urgent need for ambitious emission reductions, adaptation measures, and international cooperation to address the challenges posed by climate change (Biesbroek *et al.*, 2022).

Another influential initiative, the Lancet Countdown on Health and Climate Change, highlights the interplay between environmental sustainability, human health, and climate change. Their reports provide comprehensive analyses of the health impacts of climate change, the progress made in mitigating climate change, and the policy responses required to protect public health (Romanello *et al.*, 2022). In conjunction with the IPCC’s assessments, these reports underline the critical need to integrate health considerations into climate change mitigation and adaptation strategies. They emphasize the importance of fostering resilient health systems, addressing health inequities, and promoting sustainable development that benefits both people and the planet.

Looking ahead, we must embrace a multifaceted approach to achieve planetary sustainability. First and foremost, we need to foster international collaboration, forging partnerships that transcend borders and disciplines. Our collective efforts should be grounded in inclusivity, ensuring the active participation of marginalized communities and indigenous peoples who hold invaluable traditional knowledge. By engaging diverse perspectives, we can develop comprehensive and context-specific strategies that address the unique challenges faced by different regions and communities.

Technological innovation will play a crucial role in driving sustainable development (Herrero *et al.*, 2020). From renewable energy

sources to circular economy practices, emerging technologies can offer transformative solutions to pressing environmental problems. However, technology alone is not a panacea. We must ensure that technological advancements are coupled with social and ethical considerations and that they are accessible to all communities, including those in developing regions.

Education and awareness play a pivotal role in shaping a sustainable mindset. Empowering individuals with knowledge about sustainability principles and fostering critical thinking can drive behavioral changes and promote responsible consumption patterns. It is essential to integrate sustainability education into formal curricula and to promote lifelong learning opportunities that emphasize the interconnectedness of ecological, social, and economic systems (UNESCO, 2018).

Moreover, policy interventions are vital to creating an enabling environment for sustainable practices (Mehrabi *et al.*, 2020). Governments, corporations, and institutions must act independently and collaboratively to develop and implement policies that incentivize sustainability, promote green growth, and integrate sustainability considerations into decision-making processes. This requires robust regulatory frameworks, financial incentives, and innovative governance mechanisms that support sustainable practices and penalize unsustainable ones (Vargas *et al.*, 2019).

Lastly, it is essential to emphasize the importance of individual actions. While systemic changes are crucial, every person has a role to play in promoting sustainability (Pongsiri *et al.*, 2019). From reducing personal carbon footprints to supporting sustainable businesses, our daily choices can contribute to a collective movement toward planetary sustainability. By cultivating a sense of personal responsibility and empowerment, we can foster a culture of sustainability that transcends individual actions and transforms communities and societies.

As we launch the first issue of *Planetary Sustainability*, we invite researchers, scholars, and practitioners to share their knowledge,

insights, experiences, and most importantly, critically explore the challenges we face and the innovative solutions we can implement to safeguard our planet for our own survival and that of future generations. Through rigorous research, interdisciplinary collaboration, and knowledge dissemination, we can bridge the gap between theory and practice and drive positive change at local, regional, and global levels.

Together, we can forge a path toward a sustainable future where environmental integrity, social justice, and economic prosperity coexist harmoniously. The journey ahead may be arduous but with unwavering determination and collective action, we can achieve planetary sustainability.

Achieving planetary sustainability requires a comprehensive transformation of our societal systems, including the way we produce and consume goods, manage resources, and govern ourselves. It calls for a paradigm shift integrating environmental stewardship, social equity, and economic prosperity into all aspects of decision-making and action. This shift demands a critical examination of the current structures and practices that contribute to unsustainable patterns and the identification of innovative solutions that can drive positive change.

One key aspect of achieving planetary sustainability is transitioning to a low-carbon and circular economy. A low-carbon economy entails reducing greenhouse gas emissions by shifting to renewable energy sources, improving energy efficiency, and implementing sustainable transportation systems. This transition not only helps mitigate climate change but also presents economic opportunities by creating green jobs and developing clean technologies.

Simultaneously, transitioning to a circular economy involves minimizing waste generation, promoting recycling and reuse, and designing products with extended lifecycles (Morsetto, 2020). By embracing the principles of the circular economy, we can reduce resource consumption, minimize environmental pollution, and promote sustainable production and consumption

patterns. This transition requires collaboration among businesses, governments, and consumers to develop innovative strategies and technologies that promote a closed-loop system.

Furthermore, achieving planetary sustainability requires addressing social inequalities and ensuring social justice for all. Environmental degradation often disproportionately affects marginalized communities, exacerbating existing social and economic disparities. To address this, sustainability efforts must prioritize inclusivity, equitable access to resources, and the protection of human rights. Indigenous knowledge and traditional practices can provide valuable insights into sustainable resource management and should be respected and integrated into decision-making processes.

Education and awareness play a pivotal role in cultivating a sustainable mindset and empowering individuals to contribute to positive change. Sustainability education should be integrated into formal education systems from an early age, fostering an understanding of the interconnectedness of ecological, social, and economic systems. It should encourage critical thinking, problem-solving skills, and a sense of responsibility towards the environment and future generations. Additionally, ongoing awareness campaigns and public engagement initiatives can raise consciousness and mobilize individuals to adopt sustainable behaviors in their everyday lives.

Institutional and governance structures also play a crucial role in driving sustainability. Governments need to enact and enforce policies that promote sustainability and provide incentives for sustainable practices. This includes implementing regulations to reduce emissions, protect ecosystems, and promote sustainable land and resource management. Additionally, international cooperation and collaboration are vital for addressing global challenges such as climate change, biodiversity loss, and transboundary pollution. Platforms for knowledge exchange and policy coordination such as international agreements and

conventions enable countries to work together towards shared sustainability goals.

Financial mechanisms and investments have a significant influence on sustainability outcomes. Redirecting financial flows towards sustainable projects and initiatives can unlock the necessary resources for transformative change. Here, businesses must take an urgent lead in their own right. In addition, governments, development banks, and the private sector should prioritize investments in renewable energy, sustainable infrastructure, and nature-based solutions. Furthermore, sustainable finance practices such as environmental, social, and governance (ESG) considerations can help align financial decision-making with sustainability objectives.

Innovation and technological advancements are instrumental in driving sustainable development. Research and development should focus on developing and scaling up clean and efficient technologies, as well as creating innovative solutions for resource conservation, waste management, and sustainable agriculture. Furthermore, digital technologies and data analytics can play a transformative role in monitoring and optimizing resource use, enhancing energy efficiency, and supporting informed decision-making processes.

To achieve planetary sustainability, collaboration and partnership among all stakeholders are essential. Governments, businesses, civil society organizations, academia, and local communities must work together to co-create solutions and drive systemic change. Multi-stakeholder platforms and forums can facilitate dialogue, knowledge sharing, and collaboration, enabling diverse perspectives to contribute to sustainable development strategies.

In conclusion, achieving planetary sustainability requires a critical journey that addresses the interconnected challenges of environmental degradation, social inequality, and economic instability. It necessitates transitioning to a low-carbon and circular economy, promoting social justice and

inclusivity, integrating sustainability education and awareness, strengthening institutional and governance structures, redirecting financial flows, fostering innovation and technology, and nurturing collaborative partnerships. By embarking on this journey with determination, openness, and collective action, we can create a better future for ourselves and generations to come. Let us seize this opportunity to transform our world and ensure a sustainable planet for all.

Conclusion

In conclusion this paper highlights the paramount importance of achieving planetary sustainability as a response to the urgent environmental and social challenges we face today. Through an exploration of the historical development of the sustainability concept and an examination of key frameworks and initiatives, we have gained valuable insights into its significance and relevance. The integration of environmental, social, and economic dimensions within the concept of sustainability, as exemplified by the Sustainable Development Goals (SDGs) and the Brundtland Commission's report provides a comprehensive roadmap for a sustainable future. To attain planetary sustainability, it is imperative to adopt an integrated and multidisciplinary approach, recognizing the interconnectedness of human well-being, ecological health, and the health of our planet. Collaboration among diverse stakeholders is essential, as it is a critical reflection on past efforts to shape effective strategies for the future. By fostering international cooperation, innovative solutions, and sustainable practices, we can forge a path toward a harmonious coexistence of environmental integrity, social equity, and economic prosperity, ensuring a sustainable future for generations to come. But let us remember: If something is not sustainable, it will fail. This is true of the ecological and climate systems upon which our lives depend. The stakes could not be higher.

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