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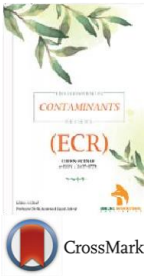

REVIEW ARTICLE

THE ROLE OF DECARBONISATION IN ENHANCING SUSTAINABLE PROCUREMENT PRACTICES IN THE U.S

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ABSTRACT

In an era marked by escalating environmental concerns and the pressing need for sustainable practices, this paper delves into the transformative potential of decarbonisation in enhancing sustainable procurement practices, with a specific focus on the U.S. context. The study commences with a comprehensive overview of the prevailing procurement practices in the U.S., elucidating their environmental ramifications, particularly in terms of carbon emissions. The discourse then transitions to the broader implications of decarbonisation on a global scale, highlighting its multifaceted benefits beyond mere carbon reduction. Central to the paper's narrative is the exploration of how decarbonisation can catalyse sustainable procurement. By integrating decarbonisation strategies into procurement processes, entities can mitigate their environmental footprint, realise long-term economic advantages, foster innovation, and fortify stakeholder relationships. However, this metamorphosis lacks challenges, ranging from organisational inertia and economic considerations to stakeholder apprehensions. The paper furnishes a blueprint for policymakers and industry leaders, guiding them through sustainable procurement's intricacies and spotlighting its potential boons and inherent challenges. The study offers tangible exemplars of sustainable procurement's potential through real-world case studies, illustrating how diverse entities can effectuate meaningful change. The paper concludes with a call to action for stakeholders, emphasising the collective effort required to transition towards sustainable procurement practices. This study underscores the pivotal role of sustainable procurement, underpinned by decarbonisation, in steering the U.S. and, by extension, the global community, towards a sustainable and prosperous future.

KEYWORDS

Decarbonisation, Sustainable Procurement, Environmental Impact, Stakeholder Engagement, U.S. Procurement Practices.

1. INTRODUCTION

1.1 Background on Sustainable Procurement.

Sustainable procurement, also known as green procurement or environmental purchasing, is a concept that has gained significant attention in recent years due to its potential benefits in preserving the environment and promoting sustainable development (Zambika, 2022). It involves integrating social, economic, and environmental factors into organisations' procurement processes and procedures (Guandalini, 2022). Sustainable procurement aims to develop environmentally friendly products and collaborate with suppliers to acquire green materials and services (Esfahbodi et al., 2016).

The theory of planned behavior is often used to understand developers' green procurement behavior. It suggests that attitudes, subjective norms, and perceived behavioral control influence individuals' intentions and behaviors related to sustainable procurement (Yang et al., 2019). Research has shown that sustainable procurement initiatives, such as collaboration with suppliers and the adoption of innovative environmental technologies, can improve the environmental performance of manufacturing firms (Esfahbodi et al., 2016). Additionally, sustainable procurement can have an impact on cost performance by acquiring green materials and services (Esfahbodi et al., 2016).

The implementation of sustainable procurement policies, such as Community Benefits (CBs), can bring about both positive outcomes and challenges. CBs are socio-economic criteria inserted into supply contracts to ensure that public expenditure not only procures goods and services but also brings tangible benefits to the local community (Waris et al., 2019). These benefits can manifest in various forms, such as suppliers offering apprenticeships or public sector buyers engaging with social enterprises or the voluntary sector (Waris et al., 2019).

However, the implementation of CBs is not without complexities. A study focusing on the implementation of CBs in Wales highlighted several challenges. While CBs have enhanced economic and social outcomes, tensions can arise due to conflicts between CBs and other policies, differing perspectives between buyers and suppliers, and unforeseen consequences when promoting one form of CBs over another (Waris et al., 2019).

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In the public sector, sustainable procurement has been less commonly implemented compared to private firms (Zambika, 2022). However, there is a growing recognition of the importance of sustainable procurement in public institutions. It is recommended that public institutions provide comprehensive skills development and training in sustainable procurement to foster implementation and awareness across the organisation, especially among procurement professionals (Zambika, 2022).

1.2 Environmental challenges of current procurement practices.

Significant advancements have marked the global landscape of industrial development, but these have come at a cost. The environmental repercussions of current procurement practices, especially in rapidly industrialising nations, are becoming increasingly evident. A deep dive into the environmental challenges posed by these practices, particularly in the context of China, offers valuable insights into the broader implications for global sustainability.

Environmental pollution, primarily affecting air, soil, and water, stands as a monumental challenge to sustainable industrial development. As the world's population continues to grow, there is an escalating demand for more industrial production units equipped with advanced technology to meet societal needs. While socio-economic development is intrinsically linked to industrial capabilities, it is undeniable that such development brings with it a plethora of environmental sustainability challenges (Khan & Chang, 2018).

China, a major global player, exemplifies this conundrum. The nation's industries are legally permitted to produce specific quantities of greenhouse gases. However, a unique system exists wherein if an industrial entity manages to reduce its air pollution, it can trade or sell the extra pollution allowance to another industry. This approach, while innovative, underscores the magnitude of the environmental challenge at hand. China accounts for nearly a quarter of the world's greenhouse gas emissions, evaluating its environmental protection mechanisms crucial for sustainable economic development (Khan & Chang, 2018).

The International Energy Agency (IEA) has critically assessed the global outcomes of energy-oriented carbon dioxide (CO2) emissions. Their findings spotlighted economic growth as China's leading domestic priority. The challenges of energy and climate security, primarily stemming from fossil fuels, were identified as significant impediments to sustainable economic development. China has implemented a multi-tiered approach to combat these challenges, incorporating regulatory, administrative, and political measures at national, provincial, and district levels (Khan & Chang, 2018).

China's commitment to environmental sustainability is further evidenced by its Five-Year Plans (FYPs). These strategic documents highlight the nation's ongoing efforts to minimise the environmental impact of its industrial development. The National Climate Change Programme (NCCP), launched in 2007, and the 'China's Policies and Actions for Addressing Climate Change' white paper from 2008 underscore China's dedication to balancing economic growth with environmental stewardship (Khan & Chang, 2018).

In conclusion, the environmental challenges posed by current procurement practices are vast and multifaceted. At the forefront of global industrial development, nations like China serve as a microcosm of broader global challenges. Addressing these issues requires a harmonious blend of policy, innovation, and international cooperation.

1.3 Objective and significance of the paper

This paper aims to critically examine the role of decarbonisation in enhancing sustainable procurement practices within the U.S. context. By delving into the current procurement practices and their environmental implications, this paper seeks to elucidate how decarbonisation can serve as a transformative force, steering these practices towards greater sustainability.

Objective

The primary objectives of this paper are:

1. To provide a comprehensive overview of the current procurement practices in the U.S. and their associated environmental impacts.
2. To explore the concept of decarbonisation, its global relevance, and its potential benefits beyond mere carbon reduction.
3. To analyse how the integration of decarbonisation strategies can lead to more sustainable procurement practices in the U.S., highlighting both the opportunities and challenges involved.

Significance

The significance of this paper lies in its timely focus on a pressing global issue. As the world grapples with the challenges of climate change, the need for sustainable practices across all sectors becomes paramount. Procurement, a substantial component of organisational and governmental operations, profoundly impacts environmental sustainability.

1. Relevance to Policymakers and Industry Leaders: With the U.S. being one of the world's largest economies, its procurement practices have a ripple effect on global supply chains. This paper offers insights that can guide policymakers and industry leaders in making informed decisions that align with global sustainability goals.
2. Contribution to Academic Discourse: While there is substantial literature on sustainable procurement and decarbonisation individually, this paper bridges the two, offering a holistic perspective on how they intersect and influence each other.
3. Promotion of Sustainable Practices: By highlighting the benefits and challenges of integrating decarbonisation into procurement practices, this paper can catalyse organisations and governments to adopt more sustainable approaches.

In conclusion, the objective and significance of this paper are intertwined, aiming to contribute to both academic discourse and practical applications. By focusing on the U.S. context, this paper offers valuable insights that can have broader global implications, given the interconnected nature of today's global economy and environment.

2. Current Procurement Practices in The U.S.

The United States, as one of the world's largest economies, has a complex and multifaceted procurement system. This system, which encompasses the processes of sourcing, acquiring, and managing goods and services, is influenced by a myriad of factors, including technological advancements, global supply chain dynamics, regulatory frameworks, and sustainability considerations.

2.1 Overview of prevalent practices.

The U.S. procurement landscape is marked by its diversity, spanning various sectors and industries. One of the notable areas of procurement is in the realm of global information technology outsourcing (GITO). For instance, there has been a significant shift towards impact sourcing in the GITO sector, understood as GITO offering social value for marginalised groups. This approach not only focuses on the economic benefits of outsourcing but also emphasises the social implications, ensuring that the benefits of GITO are more equitably distributed (Malik & Nicholson, 2020).

Another critical sector that showcases the intricacies of U.S. procurement practices is the healthcare sector, particularly in the domain of organ procurement. Organ Procurement Organisations (OPOs) play a pivotal role in managing the complex process of organ donation, ensuring that the organs are procured, stored, and transported under stringent quality and safety standards. The practices and guidelines followed by these OPOs are crucial in ensuring the success of organ transplantation procedures (Ream & Armbrecht, 2018).

Furthermore, the U.S. has also witnessed a shift towards local sourcing in the global health sector. Initiatives such as the Supply Chain Management System's local procurement in various countries emphasise the importance of sourcing locally, ensuring that the benefits of global health initiatives are felt at the grassroots level. Such practices bolster the local economy and ensure that health commodities align with local needs and contexts (Yadav et al., 2018).

Lastly, in the realm of environmental sustainability, forestry best management practices (BMPs) in the U.S. highlight the importance of sustainable procurement in conserving aquatic systems. These BMPs, which focus on reducing nonpoint source pollution, are crucial in ensuring that forestry practices do not adversely impact aquatic ecosystems (Schilling, Larsen-Gray, & Miller, 2021).

In conclusion, the U.S. procurement landscape is marked by its diversity and complexity. As the global emphasis on sustainability and social responsibility grows, it is imperative to continually evaluate and refine these practices, ensuring that they align with the broader goals of economic growth, social equity, and environmental stewardship.

2.2 Economic and operational drivers

The procurement landscape in the U.S., like many other facets of the economy, is influenced by a myriad of economic and operational drivers. These drivers, which can be both internal and external to the procurement process, play a pivotal role in shaping the decisions and strategies adopted by organisations and governmental entities.

Economic Drivers

1. Macroeconomic Volatility: The volatility of macroeconomic variables can have profound implications for procurement practices. A time-series model that delves into the structural shocks affecting macroeconomic variables reveals that the total volatility can be decomposed into two components: an idiosyncratic component and a component common to all variables. This common component, often interpreted as a measure of uncertainty, is driven by the volatilities of demand, supply, and monetary/financial shocks (Carriero, Corsello & Marcellino, 2020). Such economic uncertainties can influence procurement decisions, especially in sectors sensitive to macroeconomic fluctuations.

2. Economic Cycles: The Great Moderation debate, which revolved around the origins of reduced macroeconomic volatility, highlighted the role of economic cycles in shaping economic activities. The 2007 financial crisis underscored the importance of accounting for economic and financial shocks with large variances during crisis periods (Abbate, Eickmeier, Lemke & Marcellino, 2016).

Operational Drivers

1. Technological Advancements: Integrating advanced technologies into procurement processes can streamline operations, enhance efficiency, and reduce costs. Technologies such as artificial intelligence, blockchain, and advanced analytics are reshaping the procurement landscape, enabling organisations to make data-driven decisions.

2. Supply Chain Dynamics: The dynamics of the global supply chain, influenced by factors such as geopolitical tensions, trade policies, and global economic shifts, can impact procurement strategies. Organisations must be agile and adaptive, ensuring their procurement practices can withstand disruptions and capitalise on opportunities.

3. Regulatory Frameworks: Regulatory considerations play a crucial role in procurement, especially in sectors such as healthcare, defense, and energy. Compliance with local, national, and international regulations is paramount, and procurement practices need to be aligned with these regulatory frameworks.

4. Sustainability Considerations: With the growing emphasis on sustainability and corporate social responsibility, organisations increasingly integrate sustainable practices into their procurement processes. This includes environmental impact, social equity, and economic viability considerations.

In conclusion, the economic and operational drivers shaping the U.S. procurement landscape are multifaceted and interconnected. Organisations and governmental entities need to adopt a holistic approach, ensuring that their procurement practices are resilient, adaptive, and aligned with broader economic and operational considerations.

2.3 Key sectors with significant procurement activities

The U.S. economy, characterised by its vastness and diversity, encompasses many sectors that engage in significant procurement activities. These sectors, driven by demand and supply-side factors, play a pivotal role in shaping the country's economic landscape. This section delves into some of the key sectors that have been at the forefront of procurement activities, highlighting their significance and the factors that drive their procurement decisions.

1. Tourism and Hospitality: The tourism sector stands out as one of the major contributors to growth and employment in the U.S. Before the pandemic, tourism accounted for a significant portion of global GDP and employment. The World Travel & Tourism Council estimated that tourism contributed to 10.4% of global GDP and 10.6% of employment. Moreover, international travel expenditures constituted 6.8% of the world's total exports and 27.4% of services exports (WTTC, 2021). However, the COVID-19 pandemic brought about a sharp decline in tourism activities, with international tourism arrivals plummeting by 73% in 2020. The decline in tourism activities during the pandemic had multiplier effects on domestic product, employment, and the external sector of the U.S. economy (Rodousakis & Soklis, 2021).

2. Construction and Built Environment: The construction sector, especially in regions affected by external factors such as the COVID-19 pandemic, has seen shifts in its procurement processes. The pandemic has impacted sustainable procurement in the construction and built environment sectors, leading to changes in supply chain dynamics and procurement strategies (Caldera, Mohamed & Feng, 2022).

3. Healthcare: With its intricate supply chain and procurement processes, healthcare is another key sector with significant procurement activities. From pharmaceuticals to medical equipment, the procurement decisions in this sector are influenced by regulatory frameworks, technological advancements, and global supply chain dynamics.

4. Technology and Information Systems: The rapid technological advancements and the increasing reliance on digital solutions have propelled the technology sector to the forefront of procurement activities. From software licenses to hardware components, the procurement processes in this sector are driven by innovation, competition, and global demand-supply dynamics.

In conclusion, with its diverse sectors, the U.S. economy engages in a wide range of procurement activities. These sectors, each with its unique challenges and opportunities, shape the procurement landscape of the country. As external factors such as global pandemics and economic shifts influence these sectors, it becomes imperative to understand and adapt to the changing dynamics of procurement activities.

3. Environmental Impact of Current Procurement Practices

The environmental impact of procurement practices is a topic of growing concern, especially in the context of global sustainability goals and the increasing awareness of the carbon footprint associated with various sectors. As economies evolve and industries expand, the procurement processes they employ can have significant implications for the environment, both in terms of resource consumption and emissions. This section delves into the environmental repercussions of current procurement practices, with a particular focus on assessing the carbon footprint.

3.1 Assessment of the Carbon Footprint.

The carbon footprint of an activity or process refers to the total amount of greenhouse gases, primarily carbon dioxide, that are emitted directly or indirectly. It measures the environmental impact, particularly in terms of contributing to global warming and climate change. In the context of procurement, the carbon footprint can be influenced by various factors, including the source of materials, transportation, manufacturing processes, and end-of-life disposal or recycling.

In today's interconnected global economy, the energy sector stands as a cornerstone, playing a pivotal role in carbon trading markets and mitigation actions. A study exploring the impact of Corporate Social Responsibility (CSR) governance on carbon footprints in the energy sector across 45 countries from 2002 to 2017 found that the presence of a CSR committee within firms improved their social responsibility and effectively reduced their carbon footprint. Interestingly, larger CSR committees with more experienced board members were found to be more effective in implementing sustainable business practices. However, when energy firms had more powerful CEOs, even experienced CSR committees did not mitigate environmental and social concerns as effectively. This suggests that while governance structures can play a role in reducing carbon footprints, leadership dynamics and corporate culture are also crucial determinants (Saeed et al., 2021).

The Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 further underscore the importance of addressing the environmental impact of economic activities. These goals aim to strike a balance between economic, environmental, and social development, emphasising the interconnectedness of these three pillars. Several of these goals, such as SDG 13 (Climate Action) and SDG 15 (Life on Land), highlight the importance of reducing carbon footprints and promoting environmentally responsible practices across sectors (Saeed et al., 2021).

In conclusion, assessing and mitigating the carbon footprint of procurement practices is not just an environmental imperative but also a

business one. As global sustainability goals gain traction and consumers become more environmentally conscious, organisations prioritising sustainable procurement will be better positioned to thrive.

3.2 Other Environmental Consequences

Beyond the carbon footprint, procurement practices in the U.S. have a range of other environmental consequences. The intricate web of production, transportation, and consumption associated with procurement touches upon various facets of the environment, from water quality to biodiversity and soil health to air quality.

One of the most pressing concerns is the degradation of water quality. The extensive use of fertilisers and pesticides in agriculture, a significant component of procurement for the food industry, leads to runoff that contaminates rivers, lakes, and groundwater. This affects aquatic ecosystems and poses risks to human health when these water sources are used for drinking or recreation. For instance, the expansion of cropland in the U.S. Western Corn Belt has been linked to increased soil erosion and subsequent sedimentation in water bodies, which can disrupt aquatic habitats and contribute to the proliferation of harmful algal blooms (Lu et al., 2018).

Biodiversity loss is another significant consequence. As procurement practices drive the expansion of agricultural and industrial activities, habitats are fragmented or lost. The conversion of grasslands and wetlands to cropland in the U.S. Corn Belt, for example, threatens the survival of various wildlife species and reduces the ecological services these habitats provide, such as water filtration and carbon sequestration (McGuire, Morton, & Cast, 2013).

Soil health is also at risk. Intensive farming practices, driven by the demand for higher yields, often lead to soil degradation. The loss of organic matter, compaction, and reduced microbial activity compromise the soil's ability to support plant growth, filter water, and sequester carbon. In the long run, this can reduce agricultural productivity and increase the vulnerability of crops to pests and diseases (Saeed et al., 2021).

Air quality is yet another concern. The transportation of goods, a key procurement component, results in emissions of pollutants such as nitrogen oxides and particulate matter. These pollutants can exacerbate respiratory conditions in humans and contribute to environmental issues like acid rain. Historical data suggests that agricultural greenhouse gas production in the U.S. Great Plains has been a significant contributor to this issue, especially between 1870-2000 (Parton et al., 2015).

In conclusion, while the carbon footprint of procurement practices is a critical concern, it is essential to recognise and address the broader environmental consequences. A holistic approach to sustainable procurement, which considers all environmental impacts, is crucial for the planet's and its inhabitants' well-being.

3.3 Case studies of specific sectors

The environmental implications of procurement practices are not uniform across sectors. Different industries have unique challenges and opportunities when it comes to sustainable procurement. This section delves into case studies from specific sectors to provide a nuanced understanding of the environmental consequences of their procurement practices.

3.3.1 Infrastructure Construction: The Case of Bridges

The construction sector, particularly infrastructure construction, significantly contributes to carbon emissions. Traditional decision-making in this sector has been predominantly focused on technical, economic, and safety perspectives. However, with growing societal concerns about environmental performance, there's a shift towards more sustainable practices. A study on road bridges presents a comprehensive Life Cycle Assessment (LCA) framework, which is an internationally standardised method for quantifying the environmental impact of a product throughout its life cycle. The study, which focused on the Karlsnäs Bridge in Sweden, analysed 20 types of environmental indicators among five proposed bridge designs. The results highlighted that factors like the monetary weighting system, uncertainties in key variables such as steel recycling rate and cement content, can significantly influence the LCA outcome (Du et al., 2014).

3.3.2 Manufacturing: Agile Project Management in SMEs

In the dynamic world of manufacturing, companies need to be agile to manage changes effectively. Traditional project management approaches that emphasise planning are becoming obsolete, necessitating the adoption of more flexible agile project management (APM) approaches. A case study of a Slovenian medium-sized manufacturing company revealed that even by implementing only certain APM practices, the company achieved significant benefits, including improved communication, faster discrepancy detection, more effective problem-solving, and enhanced flexibility. The study underscores the potential of APM practices to foster an economically, socially, and environmentally sustainable workplace (Žužek et al., 2020).

3.3.3 Public Infrastructure Projects

Public infrastructure projects have a substantial environmental footprint. A study that analysed the implementation of international policies for reducing carbon emissions in infrastructure construction emphasised the importance of stringent procurement requirements. The research, which included case studies from Australia, the Netherlands, Sweden, the UK, and the US, highlighted the role of projects as drivers of policy goals, frontrunners in industry-level development processes, or translators of national policy. The study underscores the importance of long-term learning processes across multiple implementation levels for advancing carbon reduction (Lingegård et al., 2021).

In conclusion, these case studies underscore the diverse environmental challenges and opportunities across sectors. They highlight the need for sector-specific strategies and policies to drive sustainable procurement practices that align with broader environmental goals.

4. Understanding Decarbonisation

Decarbonisation, as a term, has gained significant traction in recent years, especially in the context of global efforts to combat climate change. It refers to the process of reducing carbon emissions, particularly from energy sources and industrial processes. This concept is pivotal for environmental sustainability and has profound implications for economic and social dimensions.

4.1 Definition and Broader Context

Decarbonisation is critical in addressing climate change, as it involves reducing or removing carbon dioxide from energy sources. Carbon dioxide is a primary greenhouse gas responsible for global warming (Kern & Rogge, 2016). The urgency to decarbonise arises from the increasing concentration of carbon dioxide in the atmosphere, which has exceeded levels considered safe for limiting global temperature rise to below 2°C, a target established by the Paris Agreement (Kern & Rogge, 2016).

The broader context of decarbonisation encompasses the environmental imperative and the economic and social dimensions. Environmental regulations, for instance, play a pivotal role in shaping firm performance and investment behavior. A case in point is the German water withdrawal regulation managed at the state level. Firms' reactions to an increase in the water tax were analysed using a regression-adjusted difference-in-differences approach. The study distinguished between add-on and integrated environmental investments, allowing for the inclusion of intra-firm innovations, which are crucial for enhancing resource efficiency. The results indicated that the regulation did not affect firms' competitiveness adversely. Instead, it underscored the potential of environmental regulations to foster sustainable competitiveness without compromising economic performance (Stoever & Weche, 2018).

Furthermore, the Porter hypothesis challenges the traditional view that environmental regulations hamper firms' competitiveness. Instead, it posits that strict environmental regulations can enhance a firm's competitive advantage. Empirical evidence suggests that the impact of such regulations is highly case-specific, with results varying based on the type of regulation, specific circumstances of its introduction, and the estimation approach used (Porter & van der Linde, 1995).

In conclusion, understanding decarbonisation requires a holistic approach considering environmental, economic, and social implications. As the world grapples with climate change challenges, decarbonisation's role in shaping sustainable futures becomes increasingly paramount. The urgency to decarbonise arises from the increasing concentration of carbon dioxide in the atmosphere, which exceeds safe levels for limiting global temperature rise. The Paris Agreement provides a framework for accelerating decarbonisation processes and emphasises the need for international cooperation and coordinated actions.

4.2 Global push towards decarbonisation

The global push towards decarbonisation has been driven by a growing recognition of the urgent need to address climate change and its

devastating impacts on the environment, economies, and societies. This urgency has been underscored by international agreements and initiatives that aim to limit global warming and reduce greenhouse gas emissions.

The Paris Agreement, for instance, has set an ambitious target to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels. However, achieving this target requires substantial reductions in carbon emissions across various sectors, including agriculture. A study by Clark et al. (2020) highlighted that even if fossil fuel emissions were eliminated immediately, emissions from the global food system alone would make it impossible to limit warming to 1.5°C and challenging to achieve the 2°C target. This underscores the need for comprehensive strategies that address emissions from all sectors, not just energy and industry.

Furthermore, the interplay between climate change and international trade presents both challenges and opportunities for global decarbonisation efforts. While international trade can contribute to a carbon-efficient allocation of global production resources, it can also undermine climate goals if carbon-intensive production is outsourced to countries with less stringent mitigation policies. Nielsen et al. (2020) emphasised the risk of carbon leakage through emission outsourcing, where emission reductions in countries with rigorous climate policies are offset by increased emissions in countries with less stringent policies. Their analysis of the Paris Agreement's nationally determined contributions (NDCs) revealed that the risk of carbon leakage is not adequately addressed, highlighting the need for a more integrated approach to climate and trade policies.

Moreover, the aviation industry, closely linked to global tourism, is a significant contributor to carbon emissions. Leal Filho et al. (2022) explored the implications of climate change for global tourism and the aviation industry. They highlighted the industry's efforts to adopt Sustainable Aviation Fuels (SAF) as an alternative to reduce carbon emissions. However, the voluntary alignment and commitment to long-term targets remain inconsistent across airlines, emphasising the need for a strategic approach to building sustainable infrastructures and achieving transformational adaptation in the sector.

In conclusion, the global push towards decarbonisation is a multifaceted challenge that requires coordinated efforts across sectors and countries. International agreements, sector-specific initiatives, and integrated policies are crucial to achieving the global climate goals and ensuring a sustainable future.

4.3 Benefits Beyond Carbon Reduction

Decarbonisation, while primarily aimed at reducing carbon emissions to combat climate change, brings a plethora of additional benefits across various sectors. These direct and indirect benefits contribute to the overall well-being of societies, economies, and the environment.

One of the most immediate benefits of decarbonisation is improving air quality. Reduced carbon emissions mean fewer pollutants in the air, which directly translates to better respiratory health for the population. The recent COVID-19 pandemic provided an inadvertent glimpse into this benefit. During the lockdowns imposed in various countries, including Pakistan, a significant reduction in human activities led to a noticeable improvement in the air quality index of urban centers (Rasheed et al., 2021). This improvement, although temporary, showcased the potential health benefits that can be achieved with sustained decarbonisation efforts.

Beyond the direct health benefits, decarbonisation also offers economic advantages. Cleaner air means fewer health-related expenses, reducing the burden on healthcare systems and the economy. Moreover, transitioning to cleaner energy sources can lead to the creation of new industries and job opportunities. For instance, the renewable energy sector, which is at the forefront of decarbonisation efforts, has the potential to generate employment and stimulate economic growth.

Furthermore, decarbonisation can lead to enhanced biodiversity and conservation efforts. Reduced carbon emissions can mitigate the adverse effects of climate change on various ecosystems, ensuring the survival of numerous species that are currently under threat. This, in turn, can boost sectors like tourism, which rely heavily on regions' natural beauty and biodiversity.

Lastly, the social benefits of decarbonisation cannot be understated. Cleaner environments lead to improved mental well-being. Moreover, as communities come together to combat climate change, social bonds and a collective sense of purpose are strengthened.

In conclusion, while the primary goal of decarbonisation is to reduce carbon emissions and combat climate change, the journey towards a carbon-neutral future offers many benefits that can transform societies, economies, and the environment in myriad positive ways.

5. Decarbonisation and Sustainable Procurement

The integration of decarbonisation into sustainable procurement practices is not just a response to the global climate crisis but also a strategic move that can offer numerous advantages to businesses and economies. Sustainable procurement, especially in the public sector, has been recognised as a potent tool to drive positive change, both environmentally and socially and economically.

5.1 Transformation potential of decarbonisation

Decarbonisation can be seen as a transformative force in the context of procurement. It has the potential to reshape how organisations, especially in the public sector, approach their procurement processes. The emphasis shifts from merely acquiring goods and services at the best price to ensuring that these acquisitions are in line with environmental sustainability and carbon neutrality goals.

A study by Amann et al. (2014) highlighted the increasing momentum of sustainable public procurement (SPP) across European member states. SPP, which encompasses environmental and social responsibility aspects, has been gaining traction, evidenced by various policy changes and initiatives to drive sustainable change across EU countries. The research indicated that public procurement was more effective at influencing socially responsible goals than purely environmental ones. However, when it comes to supplier readiness, vendors have shown more progress in delivering green solutions than in socially responsible operations.

This finding underscores the transformative potential of decarbonisation in procurement. Organisations can push suppliers and vendors to adopt greener practices by integrating carbon reduction goals into procurement processes. This reduces the carbon footprint of the procured goods and services and promotes innovation and sustainability in the supply chain.

Furthermore, the strategic use of public procurement can have a broader societal impact. Public entities can influence market trends by setting standards and requirements that prioritise decarbonisation, promoting the production and consumption of environmentally friendly, socially responsible, and innovative products and services on a large scale (Edler and Georghiou, 2007; Lember et al., 2011).

In conclusion, the transformation potential of decarbonisation in sustainable procurement is vast. It offers a pathway for organisations to align their procurement practices with global sustainability goals, drive innovation in the supply chain, and create a positive societal impact.

5.2 Potential strategies for sustainable procurement

The transition from traditional supply chains to green supply chains is becoming increasingly essential, especially in the context of the growing emphasis on sustainability. This transition is facilitated by various strategies rooted in sustainable procurement practices. One of the pivotal strategies is the integration of green human resources management (GHRM) practices, which play a significant role in fostering an environmental culture within organisations and promoting the adoption of sustainable procurement practices.

Environmental training, a key component of GHRM, aids in developing environmental awareness among employees, enabling them to identify and reduce waste. Such training can significantly contribute to the broader adoption of sustainability practices within organisations (Yusoff et al., 2015). Furthermore, well-trained employees equipped with environmental knowledge can play a crucial role in successfully implementing sustainable procurement, which is an integral part of the broader green supply chain management (GSCM) framework (Sarkis et al., 2011).

The importance of GSCM has been accentuated in recent years, with companies increasingly recognising its potential to mitigate environmental risks, enhance profitability, and improve market share. Sustainable public procurement, a core practice within GSCM, has emerged as a vital tool for environmental conservation and socio-economic development. This practice emphasises the inclusion of environmental, economic, and social criteria during the procurement process, necessitating the training of managers and civil servants to critically evaluate purchases, considering aspects such as product life cycles (Zhu et al., 2008).

However, the adoption of sustainable procurement practices is not without challenges. In the context of public sector organisations in Brazil, for instance, there is a noticeable gap in the literature regarding the integration of GHRM and GSCM practices. In addressing this gap, research questions have been posed to understand the extent of sustainable procurement adoption in these organisations and the role of environmental training in facilitating this adoption.

In conclusion, the strategic orientation towards sustainable procurement, underpinned by robust GHRM practices, can significantly enhance an organisation's environmental maturity and its commitment to sustainability. As the global focus shifts towards a more sustainable future, the strategies discussed herein will be instrumental in driving the green transformation of supply chains.

5.3 Case studies of successful integration

The integration of sustainable practices into supply chains is not just a theoretical concept but has been successfully implemented by various industries. Here, we delve into some case studies that highlight the successful integration of sustainable and green practices into supply chains.

5.3.1 Closed-Loop Supply Chain in the Tire Industry

The tire industry, faced with the challenge of managing end-of-life (EOL) tires and their environmental impact, has shown keen interest in designing sustainable closed-loop supply-chain (CLSC) networks. One such study proposed a sustainable CLSC for the tire industry, considering recovery options like retreading, recycling, and energy recovery. The model was designed to handle random and fuzzy uncertainties, ensuring a reliable and environmentally cautious CLSC. The proposed model was applied to a case study in the tire industry, demonstrating its applicability and efficiency in managing uncertainties and risks associated with the supply chain (Tehrani & Gupta, 2021).

5.3.2 Integration of LARG Supply Chain Paradigms in Iran

A study conducted in Iran aimed to determine the integration of Lean, Agile, Resilience, and Green (LARG) supply chain paradigms with sustainable supply chain performance. The research highlighted the significant role of these paradigms in achieving successful performance and competitive advantage. The integrated model of LARG supply chain paradigms was introduced for the first time in academic literature, emphasising the importance of merging these paradigms for sustainable outcomes (Anvari, 2021).

5.3.3 Green Design in Construction

The construction industry has also shown a growing interest in integrating green practices. A study highlighted the significant barriers influencing the application of Green Design, a part of the construction sector's Green Supply Chain Management (GSCM). The research emphasised the importance of GSCM in improving short- and long-term competitiveness and profitability. The study also underscored the role of Green Design in reducing environmental effects throughout the product lifecycle (Ming, Rashid & Adnan, 2021).

6. Challenges and Barriers

The integration of sustainable practices, particularly decarbonisation, into procurement processes is not without its challenges. While the benefits of such integration are evident, numerous barriers at the organisational and operational levels can hinder the seamless adoption of these practices.

6.1 Organisational and Operational Challenges

Organisational challenges often stem from the very structure and culture of institutions. Many international health policies, for instance, recognise the World Health Organization's vision that communities should be actively involved in shaping primary healthcare services. However, the actualisation of this vision is often met with resistance due to entrenched ways of working and a lack of clarity regarding the objectives and benefits of community participation (McEvoy, Tierney, & MacFarlane, 2019).

Community participation represents a new way of working for many stakeholders, especially in primary healthcare. This unfamiliarity can lead to hesitancy in adoption. Stakeholders might not always possess a clear, shared understanding of sustainable procurement's aims, objectives, and benefits. Sometimes, diving into a specific project can provide this clarity. However, without a unified vision, the integration of sustainable practices can become fragmented and inconsistent.

Operational challenges, on the other hand, are more tangible. They relate to the day-to-day functioning of organisations. Key drivers, such as sustainable procurement champions and strong working partnerships, are essential for initiating and implementing sustainable practices. However, even with these drivers in place, challenges can arise. For instance, while health-promoting activities and healthcare consultation events might succeed, community representation on interdisciplinary teams can be more challenging. The resources required for training, networking, and enacting relevant activities can also be significant, and without adequate funding and organisational support, these resources might be lacking.

Furthermore, while many participants in primary healthcare recognise the benefits of community participation, there are concerns about sustaining these efforts. The transition to sustainable procurement practices requires initial resources and a commitment to ongoing support. Without a 'protected' space and the resources that a dedicated initiative provides, sustaining the momentum of community participation and sustainable procurement can be challenging (McEvoy, Tierney, & MacFarlane, 2019).

In conclusion, while the push towards sustainable procurement, underpinned by decarbonisation, is gaining traction, it is essential to recognise and address the organisational and operational challenges that can impede progress. Only by understanding these barriers can effective strategies be developed to overcome them and realise the full potential of sustainable procurement.

6.2 Economic implications

Economic implications play a pivotal role in the quest for sustainable procurement practices and decarbonisation. While the overarching goal is to balance environmental sustainability and economic growth, the journey towards this equilibrium is fraught with opportunities and obstacles.

One of the primary economic challenges in transitioning to sustainable procurement practices is the initial investment required. For instance, integrating renewable energy sources, such as Concentrating Solar Power (CSP), into the energy mix can have positive economic implications. CSP, which is gaining market acceptance, has the potential to reduce the cost of electricity. Moreover, the cogeneration of electricity and water through CSP can further enhance its economic feasibility, especially in regions with high direct normal irradiation, such as certain parts of Africa (Dall & Hoffmann, 2017).

However, the challenges are not limited to the energy sector. In conflict-ridden areas, such as the eastern Democratic Republic of the Congo, insecurity poses significant barriers to health service delivery. The economic implications of such insecurity can be profound, affecting both the quality and the delivery of essential services. Health care providers in such regions have to adapt their interventions to maintain some level of health service provision, which often comes at an increased cost (Altare et al., 2021).

Furthermore, the challenge of providing essential services, such as sanitation, is exacerbated in urban informal settlements. While private sector sanitation delivery in schools in such areas might seem like a feasible solution, the high capital costs associated with such interventions can be a significant barrier. The balance between the immediate economic challenges and the long-term benefits of sustainability becomes crucial in such scenarios (Snyder et al., 2020).

In conclusion, while the economic implications of transitioning to sustainable practices are multifaceted, they are an essential consideration for industries and policymakers. Balancing the immediate economic challenges with the long-term benefits of sustainability will be crucial in the journey towards a greener and more prosperous future.

6.3 Resistance to change and stakeholder buy-in

In the journey towards sustainable procurement and decarbonisation, resistance to change and the challenge of securing stakeholder buy-in are two of the most significant barriers. These challenges are deeply rooted in human psychology, organisational culture, and the broader socio-economic context.

Resistance to change is a natural human tendency. People, by nature, are creatures of habit, and any deviation from the known and familiar can induce anxiety and apprehension (Dent & Goldberg, 1999). This resistance is not limited to individuals but extends to organisations as well. Organisations, especially those with a long-standing history and established practices, often find it challenging to adapt to new paradigms. The reasons for this resistance can be multifaceted, ranging from a lack of

understanding of the new practices to fears about the potential economic implications of the change (Oreg, 2003).

The resistance can be even more pronounced in the context of sustainable procurement and decarbonisation. For many organisations, especially those in industries with a significant carbon footprint, the shift towards sustainability can entail significant operational and financial changes. The initial costs associated with transitioning to more sustainable practices, the potential disruptions to established supply chains, and the need for new skills and expertise can all contribute to this resistance (Kotter & Schlesinger, 2008).

Stakeholder buy-in is closely related to resistance to change. For any change initiative to be successful, it is imperative to have the support and commitment of all relevant stakeholders. This includes not just the employees and management of the organisation but also suppliers, customers, regulators, and even the broader community (Freeman, 2010). Securing this buy-in can be challenging, especially when the benefits of the change are not immediately apparent or when there are significant upfront costs associated with the transition.

In the realm of sustainable procurement, the challenge of stakeholder buy-in is further compounded by the global nature of many supply chains. With suppliers and customers spread across different countries and cultures, each with its own values, priorities, and regulatory frameworks, achieving a consensus can be daunting (Ehrgott, Reimann, Kaufmann, & Carter, 2011).

However, despite these challenges, numerous examples of organisations have successfully navigated the transition to more sustainable practices. These organisations have managed to overcome resistance to change and secure stakeholder buy-in and reaped significant economic, social, and environmental benefits in the process (Walker & Jones, 2012).

In conclusion, while resistance to change and the challenge of stakeholder buy-in are significant barriers in the journey towards sustainable procurement and decarbonisation, they are not insurmountable. With the right strategies, commitment, and leadership, organisations can overcome these challenges and set themselves on a path to a more sustainable and prosperous future.

7. Recommendations for Enhancing Sustainable Procurement

The transition towards sustainable procurement practices, underpinned by decarbonisation, is not just an environmental imperative but also a strategic necessity for businesses aiming to remain competitive in the 21st century. As the world grapples with the twin challenges of climate change and resource depletion, businesses that can adapt and evolve will be better positioned to thrive. However, the journey towards sustainability is fraught with challenges, as discussed in the preceding sections. To navigate these challenges and harness the opportunities that sustainability presents, a strategic approach is essential. This section outlines a set of recommendations, focusing primarily on policy interventions, to enhance sustainable procurement practices in the U.S..

7.1 Policy Recommendations

7.1.1 Strengthen Regulatory Frameworks

The foundation of any sustainable procurement initiative is a robust regulatory framework. While voluntary initiatives have their place, mandatory regulations can drive systemic change. Such regulations can set minimum sustainability standards for products and services, mandate the disclosure of carbon footprints, and incentivise the adoption of green technologies.

7.1.2 Incentivize Green Innovations

Financial incentives, such as tax breaks or grants, can spur businesses to invest in green technologies and sustainable practices. Such incentives can offset the initial costs associated with transitioning to sustainable practices and can accelerate the adoption of green technologies.

7.1.3 Foster Public-Private Partnerships

Collaboration between the public and private sectors can drive sustainable procurement practices. Such partnerships can facilitate knowledge sharing, leverage public sector purchasing power to drive demand for sustainable products, and develop joint initiatives to address specific sustainability challenges.

7.1.4 Develop a National Sustainable Procurement Strategy

A national strategy can provide a roadmap for businesses, outlining the goals, targets, and timelines for the transition to sustainable procurement practices. Such a strategy can also provide clarity and consistency, enabling businesses to confidently plan their sustainability initiatives.

7.1.5 Enhance Transparency and Reporting

Mandatory sustainability reporting can drive transparency and accountability. By requiring businesses to disclose their sustainability performance, policymakers can ensure that businesses are held accountable for their commitments. Such reporting can also provide valuable data, enabling policymakers to track progress and refine their strategies.

7.1.6 Invest in Capacity Building

The transition to sustainable procurement practices requires new skills and expertise. By investing in training and capacity-building initiatives, policymakers can ensure that businesses have the necessary skills and knowledge to implement sustainable procurement practices effectively.

7.1.7 Engage Stakeholders

Stakeholder engagement is crucial for the success of any sustainable procurement initiative. By engaging a broad range of stakeholders, from suppliers and customers to NGOs and community groups, policymakers can ensure that their strategies are grounded in the realities of the market and have broad-based support.

7.1.8 Foster a Culture of Continuous Improvement

Sustainability is a journey, not a destination. As such, it is essential to foster a culture of continuous improvement, where businesses are encouraged to regularly review and refine their sustainable procurement practices in light of new technologies, market developments, and emerging challenges.

7.1.9 Leverage Technology

Digital technologies, from big data analytics to blockchain, can play a pivotal role in enhancing sustainable procurement practices. Such technologies can drive transparency, enhance traceability, and enable businesses to monitor and manage their sustainability performance in real-time.

7.1.10 Review and Refine

Finally, it is essential to regularly review and refine the policy framework to ensure that it remains relevant and effective. Such reviews can take into account new technologies, market developments, and emerging challenges, ensuring that the policy framework remains fit for purpose.

In conclusion, the transition to sustainable procurement practices, underpinned by decarbonisation, is both a challenge and an opportunity. By adopting a strategic approach, underpinned by robust policy interventions, businesses can navigate the challenges, harness the opportunities, and set themselves on a path to a sustainable and prosperous future.

7.2 Best practices for businesses

The journey towards sustainable procurement, especially in the context of decarbonisation, is a transformative process that requires businesses to rethink and restructure their traditional procurement practices. While policy recommendations provide a macro-level framework, businesses need actionable, micro-level strategies to implement these policies effectively. Here are some best practices that businesses can adopt to enhance their sustainable procurement initiatives.

Firstly, businesses must start with a clear vision and commitment from top leadership. The drive towards sustainability should not be seen as a mere compliance activity but as a strategic imperative. When top leadership, including the board and C-suite executives, are visibly committed, it sends a strong message throughout the organisation, ensuring alignment and dedication at all levels.

Understanding the current state is the next crucial step. Businesses should conduct a comprehensive sustainability audit of their existing procurement practices. This audit will help identify improvement areas, potential risks, and opportunities. Understanding the carbon footprint of

products and services being procured, suppliers' sustainability practices, and the procurement process's overall environmental impact is essential.

Once the current state is understood, setting clear, measurable, and time-bound goals is vital. These goals can range from reducing the carbon footprint by a specific percentage, increasing the procurement of eco-friendly products, or achieving certain sustainability certifications. The key is to ensure that these goals are realistic, achievable, and aligned with the broader business strategy.

Collaboration is at the heart of sustainable procurement. Businesses should actively collaborate with their suppliers to drive sustainability. This can involve joint training sessions, sharing best practices, or even co-investing in green technologies. By fostering a collaborative approach, businesses can ensure that sustainability is embedded throughout the supply chain, amplifying the overall impact.

Technology can be a significant enabler in the journey towards sustainable procurement. Advanced analytics can help businesses monitor and manage their sustainability performance in real-time. Blockchain, for instance, can enhance traceability, ensuring that products are sourced sustainably. Digital platforms can also facilitate collaboration, knowledge sharing, and innovation, driving sustainability across the supply chain.

Training and capacity building are crucial. The transition to sustainable procurement often requires new skills and expertise. Regular training sessions, workshops, and seminars can ensure that employees are equipped with the latest knowledge and best practices in sustainable procurement. This enhances the effectiveness of the sustainability initiatives and fosters a culture of continuous learning and improvement.

Stakeholder engagement is another critical best practice. Businesses should actively engage with all relevant stakeholders, including customers, suppliers, regulators, NGOs, and the broader community. This engagement can provide valuable insights, feedback, and even potential collaboration opportunities. It also ensures that the business's sustainability initiatives are grounded in the realities of the market and have broad-based support.

Continuous monitoring and feedback are essential for the success of any sustainable procurement initiative. Regular reviews, audits, and feedback sessions can help businesses track their progress, identify areas of improvement, and refine their strategies. This iterative approach ensures that the sustainability initiatives remain relevant, effective, and aligned with the changing market dynamics.

Lastly, celebrating successes and sharing stories can drive engagement and commitment. When employees, suppliers, and other stakeholders see the tangible benefits of the sustainability initiatives, it fosters a sense of pride and ownership. Sharing success stories, whether it's a significant reduction in carbon footprint, a successful collaboration with a supplier, or achieving a sustainability certification, can inspire and motivate all stakeholders to strive for greater heights.

In conclusion, the transition to sustainable procurement is a journey that requires a strategic approach, commitment, collaboration, and continuous improvement. By adopting these best practices, businesses can enhance their sustainability performance, drive innovation, reduce risks, and create lasting value for all stakeholders.

7.3 Role of technology and innovation.

In the evolving landscape of sustainable procurement, technology and innovation emerge as pivotal drivers, propelling businesses towards more environmentally conscious and efficient practices. The integration of technology into procurement processes not only streamlines operations but also magnifies the potential for sustainability, ensuring that businesses remain agile and responsive to the dynamic demands of the modern market.

Digital transformation, underpinned by technological advancements, has revolutionised the way businesses approach procurement. Advanced analytics, for instance, allows companies to delve deep into their supply chains, offering insights into the environmental impact at every stage. By harnessing this data, businesses can pinpoint areas that require intervention, ensuring that their procurement practices align with sustainability goals. This data-driven approach facilitates informed decision-making, enabling businesses to prioritise eco-friendly suppliers, products, and services.

Blockchain technology's promise of transparency and traceability has significant implications for sustainable procurement. By creating a tamper-proof record of transactions, blockchain ensures that products and services are sourced sustainably. This level of traceability ensures that businesses and consumers alike can verify the sustainability credentials of products, fostering trust and accountability in the supply chain.

Artificial Intelligence (AI) and Machine Learning (ML) further augment businesses' capabilities in sustainable procurement. Powered by AI, predictive analytics can forecast demand, ensuring that procurement is optimised, reducing waste and excess inventory. Moreover, AI-driven tools can assess suppliers' sustainability performance in real-time, ensuring that businesses collaborate with partners who share their commitment to the environment.

Innovation, hand in hand with technology, plays a crucial role in redefining procurement practices. As businesses grapple with the challenges of sustainability, innovative solutions, from eco-friendly packaging to renewable energy sources, emerge as beacons of hope. These innovations, often driven by startups and research institutions, offer alternatives that are not only sustainable but also cost-effective and efficient.

Furthermore, digital platforms facilitate collaboration and knowledge sharing, creating ecosystems where businesses, suppliers, and innovators converge to drive sustainability. These platforms foster a culture of continuous improvement, where best practices are shared, challenges are discussed, and innovative solutions are co-created.

Technology and innovation are not mere tools but catalysts, accelerating the transition towards sustainable procurement. As businesses navigate the complexities of the modern market, the fusion of technology and innovation offers a roadmap, guiding them towards practices that are not only sustainable but also strategically sound.

8. Conclusion

The intricate relationship between sustainable procurement and decarbonisation is emblematic of the broader shifts occurring within the global economic and environmental landscapes. As the world confronts the multifaceted challenges of climate change, integrating sustainability into core business and governmental operations becomes a moral and strategic necessity. This paper has sought to explore this nexus, with a particular focus on the U.S., a pivotal actor in the global economic and environmental stage.

8.1 Recap and importance of decarbonising procurement

At the outset, this paper aimed to provide a comprehensive overview of the prevailing procurement practices in the U.S., elucidating their environmental implications. It became abundantly clear that while procurement is a cornerstone of economic growth, it also contributes significantly to environmental challenges, particularly in terms of carbon emissions. This realisation underscores the urgency of transitioning towards more sustainable procurement methodologies.

The discourse then shifted to the concept of decarbonisation, exploring its broader implications on a global scale and the myriad benefits it promises beyond mere carbon reduction. As this paper has highlighted, decarbonisation represents a holistic approach to sustainability. It is not just about curtailing carbon emissions but encompasses a broader vision that integrates economic, social, and environmental considerations. The global momentum towards decarbonisation, as evidenced by international accords and grassroots movements, accentuates its pivotal role in contemporary environmental strategies.

Central to this paper's narrative was the exploration of how decarbonisation could serve as a transformative force for procurement practices in the U.S. The potential is vast. By weaving decarbonisation strategies into the fabric of procurement, entities can not only mitigate their environmental footprint but also foster innovation, fortify stakeholder relationships, and realise long-term economic advantages. However, this metamorphosis is not devoid of challenges. From organisational inertia, economic considerations, to stakeholder apprehensions, the pathway to sustainable procurement is laden with potential roadblocks.

Yet, the imperativeness of this shift is undeniable. This paper furnishes a blueprint for policymakers and industry magnates, navigating them through sustainable procurement's intricacies, spotlighting its potential boons and inherent challenges. Given the U.S.'s influential role in global supply chains, the procurement strategies adopted here reverberate globally. This paper bridges the literature on sustainable procurement and decarbonisation for academia, offering a novel perspective on their confluence.

Moreover, by delineating the merits and challenges of integrating decarbonisation into procurement, this paper hopes to galvanise organisations and governments towards sustainable trajectories. The real-world case studies proffered serve as tangible exemplars of sustainable procurement's potential, illustrating how diverse entities can effectuate meaningful change.

In summation, this paper's intertwined objectives and significance resonate with the broader global imperatives of sustainability. While the lens was trained on the U.S., the insights and recommendations proffered have a global resonance. In an era where nations' decisions have planetary implications, the role of sustainable procurement, underpinned by decarbonisation, emerges as a linchpin. It is the fervent hope that this paper serves as both a compass and catalyst, guiding stakeholders towards a sustainable and prosperous future.

8.2 Potential positive impact

The potential positive impact of integrating decarbonisation into sustainable procurement practices, especially within the U.S. context, is multifaceted. Firstly, from an environmental perspective, the reduction in carbon emissions will significantly contribute to global efforts in combating climate change. Given the U.S.'s substantial role in global carbon emissions, even incremental changes in procurement practices can have outsized effects on global carbon metrics.

Beyond the immediate environmental benefits, substantial economic gains must be realised. Sustainable procurement practices, underpinned by decarbonisation, can lead to cost savings in the long run. By investing in sustainable products and services, organisations can reduce their dependency on finite resources, thereby insulating themselves from price volatilities associated with such resources. Moreover, as global markets increasingly value sustainability, businesses prioritising sustainable procurement will likely enjoy a competitive advantage, enhancing their brand value and customer loyalty.

Socially, sustainable procurement practices can lead to more equitable supply chains. By prioritising suppliers who adhere to sustainable and ethical practices, businesses can promote fair labor practices, contribute to community development, and ensure that their operations do not inadvertently support exploitative practices. In essence, the positive impacts of sustainable procurement, bolstered by decarbonisation, span environmental, economic, and social dimensions, reinforcing the triple bottom line of sustainability.

8.3 Call to action for stakeholders

While promising, the journey towards sustainable procurement is not one that businesses or governments can undertake in isolation. It requires a concerted effort from a myriad of stakeholders, each playing a pivotal role in this transformation.

The call is clear to large and small businesses: view sustainable procurement not as an ancillary activity but as a core business strategy. By doing so, businesses can realise the environmental, economic, and social benefits outlined and future-proof themselves against the evolving challenges of the 21st century.

As key stakeholders in the procurement ecosystem, suppliers must recognise the increasing demand for sustainable products and services. Suppliers can ensure that they remain relevant and competitive in the modern market by aligning their operations with sustainable practices.

For policymakers, the onus is on creating an enabling environment for sustainable procurement. This includes formulating policies incentivising sustainable practices, investing in research and development to drive innovation in this space, and fostering public-private partnerships to accelerate the transition to sustainable procurement.

Lastly, to consumers and the general public, the call to action is to prioritise sustainability in their consumption choices. By supporting businesses that adhere to sustainable procurement practices, consumers can drive demand for such practices, thereby catalysing market-wide shifts towards sustainability.

In conclusion, the path to sustainable procurement, undergirded by decarbonisation, is one of promise and potential. However, realising this potential requires collective action. It is a journey that all stakeholders must embark on together, with a shared vision and unwavering commitment to a sustainable future.

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