



Literature Review

Research Report #1

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SBEnc P2.76 Sustainable Procurement

Date: 10 November 2020

ACKNOWLEDGEMENTS

This research has been developed with funding and support provided by Australia's Sustainable Built Environment National Research Centre (SBEnc) and its partners.

Core Members of SBEnc include BGC Australia, Government of Western Australia, Queensland Government, Curtin University, Griffith University and RMIT University.

Core Partners: This research would not have been possible without the ongoing support of our core industry, government and research partners:



Project Partners: This project has been supported by:



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Citation: Feng, Y., Mohamed, S., Le, T., Zhang, P., Shou, W., Bevan, W., Caldera, S. (2020) Literature Review. SBEnc P2.76 - Sustainable Procurement <https://sbenrc.com.au/research-programs/2-76/>

TABLE OF CONTENTS

EXECUTIVE SUMMARY	5
1 INTRODUCTION	6
1.1 Industry challenges	6
1.2 Aims and deliverables of the project	7
1.3 Structure of the literature review report.....	8
2 INTEGRATING SUSTAINABILITY INTO PROCUREMENT	9
2.1 Concept of sustainable procurement	9
2.2 Benefits of sustainable procurement.....	9
2.3 Procurement process and sustainability considerations	11
3 SUMMARY OF POLICIES AND GUIDELINES	13
3.1 ISO 20400:2017 Sustainable procurement — Guidance	13
3.2 Australia	13
3.2.1 Cross country level.....	13
3.2.2 Federal level.....	13
3.2.3 State/Territory level.....	14
3.2.4 Local council level	17
3.2.5 Organisational level	17
3.3 Overseas.....	17
4 DRIVERS, BARRIERS AND FUTURE OPPORTUNITIES	19
4.1 Drivers of Sustainable Procurement	19
4.1.1 Government Intervention (requirements and policies)	20
4.1.2 Client / Customer Requirements	20
4.1.3 Organisational / Management Pressures	20
4.2 Barriers and Challenges to Sustainable Procurement	20
4.3 Future opportunities	21
5 ASSESSING THE VALUE OF SUSTAINABLE PROCUREMENT	22
5.1 Sustainable procurement assessment framework	22

5.2	Exemplary sustainability indicators and criteria	24
5.2.1	Assessing the value of environmental sustainability.....	24
5.2.2	Assessing the value of economic sustainability.....	25
5.2.3	Assessing the value of social and ethical sustainability.....	25
5.3	Limitations of existing tools and methods.....	26
6	STAKEHOLDERS ROLE IN TRANSFORMING INDUSTRY PRACTICES IN PROCUREMENT FOR SUSTAINABILITY	28
6.1	Government agencies	28
6.2	Client organisations.....	29
6.3	Other stakeholders	30
7	POST COVID-19 IMPACTS FOR ACHIEVING SUSTAINABLE PROCUREMENT	32
7.1	Opportunities and lessons learned	32
8	CONCLUSION	35
9	REFERENCES.....	36
10	AUTHOR BIOGRAPHIES	42

EXECUTIVE SUMMARY

Our community has increasing expectations of government and private industry to support sustainable products and practices. There is also great interest shown by industry to reduce waste and emissions, and improve social outcomes. Driven by industry's desire to modify behaviours that contribute to unsustainable practices, the SBEnc's Sustainable Procurement project is dedicated to examining key issues across the procurement life cycle and focusses on finding practical ways to improve environmental, social, and economic sustainability outcomes in the housing, building and infrastructure sectors in Australia. This report presents a review of literature on key issues around sustainable procurement practices including, the definition, benefits, policies and guidelines, barriers and drivers, assessments, stakeholder's role, and COVID-19 impact on sustainable procurement, nationally and internationally.

Although policies and guidelines have been developed to guide organisations' sustainable procurement practices, the implementation of the policies and guidelines remains problematic in practice.

The complexity of identifying products and services that genuinely support sustainable development goals, while representing value-for-money presents a significant challenge to achieving the sustainable goals of organisations. Despite many efforts in measuring sustainability, most of them failed to consider an integrated approach taking into account of environmental, economic and social aspects. The previous research on sustainable procurement were clearly dominated by environmental dimension, while the social aspects are widely ignored. The shortage of quantitative procurement models concentrating on environmental and social responsibility was also noted.

Sustainable procurement is a major change to industry practices that requires a shift in approach, priorities, and practices of all stakeholders involved. The successful transformation will require synergetic efforts from government, client organisations and other stakeholders.

Covid-19 crisis has brought global economies to a standstill and has created unprecedented challenges too many sectors including housing, building and infrastructure, which highlights the critical need for right time, right place procurement decisions to be resilient and better positioned when the pandemic subsides. It is therefore critical to enhance the traceability and transparency of supply chain management and help to reinforce the path towards the UN's Sustainable Development Goals, setting new industry standards in sustainable practices.

This review has provided the foundation on which empirical study could further explore industry and government experiences of sustainable procurement.

1 INTRODUCTION

1.1 Industry challenges

Considering the environmental and social impacts when making procurement decisions aligns with government's obligation to spend public money efficiently, effectively, economically and ethically. Governments and industry spend billions of dollars on housing, building and infrastructure programs in the built environment. The way those dollars are spent has the ability to influence environmental, social and local (regional) industry capability outcomes.

Sustainable procurement involves a high degree of collaboration and engagement between all parties in a supply chain. Built environment supply chains are increasingly complex and the range of products available is ever growing. The community is becoming increasingly more informed and demanding at identifying products and services that are not up to standard either environmentally or socially. There is an increasing community expectation to support sustainable products and practices and to monitor supply chain activities to achieve sustainable outcomes. Further, if risks are identified in supply chains it is expected that action be taken to mitigate those risks by parent organisations working through their supply chains.

As governments and industry signal intent to support more sustainable products and services, and the market moves to respond, it is challenging to be able to justify decisions for procurement, particularly if decisions become political, and if the right tools or data are not available. There is a trend to the use of products that are ethically-sourced, recycled, low carbon, low pollutant, or have a low 'embodied' environmental impact. It is difficult to navigate through the claims made and identify the products or services that genuinely support sustainable development goals, achieve the targeted outcomes and concurrently represent value-for-money in achieving those goals. Data may not be available for all products and services and often it is open to interpretation.

The need for supply chain oversight is not just limited to justifying environmental credentials. Supply chain also needs to be monitored to track the achievement of social sustainability outcomes. For example, the introduction of modern slavery legislation (e.g. The Modern Slavery Act 2015 UK; Modern Slavery Act 2018, Australia; and various state-based legislation such as the Human Rights Act 2019 QLD) highlights the need to identify and mitigate social risks through supply chains. This is further emphasised by various state-based policy frameworks such as the Ethical Supplier Mandate and Threshold (QLD). More broadly, there is a need to ensure that suppliers comply with internationally accepted labour standards as set out in the UN Global Compact and the UN Guiding Principles on Business and Human Rights.

Technologies or initiatives may be available that can be adapted to the housing, building and infrastructure sectors such as blockchain distributed ledger, chain-of-custody, environmental product disclosures, digital legacy processes, and local industry development methods. In a practical sense, built environment contracting processes employing BIM/DE over the project life cycle may provide an effective digitally-based avenue for tracking progress against sustainability targets.

Through the SBEnrc's National Industry Workshops in July 2019 and subsequent project development workshops in 2020, the major issues related to sustainable procurement in the building and infrastructure sectors have been identified by industry as:

1. There is a lack of knowledge as to what actually constitutes sustainability in terms of the procurement application.
2. It is difficult to verify the sustainability claims made by suppliers of products or services.

3. It is difficult to identify the products or services that genuinely support sustainable procurement goals, achieve the targeted outcomes and concurrently represent value-for-money in achieving those goals.
4. Social sustainability issues are not commonly addressed.
5. Local industry sustainability issues are not commonly addressed.
6. There is a lack of clear guidelines, framework, processes and tool boxes for sustainable procurement across the national spectrum.
7. It is necessary to set specific targets to assess the sustainability components and performance of suppliers.
8. There is a need for an approach to monitor suppliers' practices, evaluate their sustainability performance (KPIs), and identify the risks.
9. There is a need for better mechanisms that encourage recycled or sustainable products.
10. There is a need for sustainability incentives by client organisations aimed at requiring /ensuring /promoting sustainable procurement including sustainable alternate materials use and to drive innovation.
11. There is a need for data on the size and value of the opportunity in addressing sustainable procurement.
12. Whole-of-life waste management and circular economy are important themes.
13. 'Business as Usual' is deeper than a suite of guidelines and frameworks. It is changing the hearts and minds and evidencing this through changed project delivery practices.
14. Consistency and simplification across various levels of government and private sector are needed.
15. The industry needs to respond to changing practices including digitisation.
16. Sustainable procurement in a post COVID-19 setting is an emerging challenge for government and industry. A post COVID-19 world will impact the landscape for achieving sustainable procurement.

1.2 Aims and deliverables of the project

This industry-driven research project will respond to identified industry challenges by examining key issues across the procurement life cycle (i.e., planning, sourcing, and contract management) to improve environmental, social and economic sustainability outcomes in the housing, building and infrastructure sectors in Australia. The key focus areas include:

- To examine the role of clients, stakeholders and suppliers in transforming industry practices in procurement for sustainability in the housing, building and infrastructure sectors;
- To identify the value of sustainable procurement to meet organisational targets, across environmental, social, economic and governance dimensions;
- To examine the specific post COVID-19 impacts for achieving sustainable procurement and how these impacts may be ameliorated;
- To propose a sustainable procurement framework which integrates organisational targets, sustainability value tracking, existing technologies such as Building Information Modelling/Digital Engineering, industry rating tools, policies/ guidelines/ processes and supply chain engagement into procurement life cycle; and
- To demonstrate the application of the proposed sustainable procurement framework by conducting case studies in selected sustainability themes such as green concrete, recycled content (beyond concrete material), Modern Slavery Act, regional participation, and marginalised groups.

The key industry outcomes include:

- A systematic study of key issues across the procurement life cycle to improve sustainability outcomes in the housing, building and infrastructure sectors in Australia;
- An approach to identify and define the value of sustainable procurement to meet organisational targets, across environmental, social, economic and governance dimensions;
- A sustainable procurement framework for clients that recognizes the role of stakeholders, organisational targets, sustainability value tracking, existing technologies and rating tools, supply chain engagement and procurement life cycle; and
- A guide for sustainable procurement for clients that defines best practice for monitoring, managing and improving sustainability outcomes within supply chains offer tools, approaches and case studies to assist in implementing the processes recommended.

1.3 Structure of the literature review report

This report aims to provide a theoretical and practical context for sustainable procurement by reviewing academic literature, grey literature, policies and guidelines in sustainable procurement. The literature review report contains the following five sections:

- Integrating sustainability into procurement
- Summary of policies and guidelines
- Drivers, barriers and future opportunities
- Assessing the value of sustainable procurement
- Stakeholders' role of transforming industry practice
- COVID-19 impacts for achieving sustainable procurement

2 INTEGRATING SUSTAINABILITY INTO PROCUREMENT

2.1 Concept of sustainable procurement

Sustainable procurement first emerged following the Rio Earth Summit in 1992, which led to the introduction of “green procurement” policies, primarily across Europe (McCrudden, 2004; Alden and Appleby, 2018). Soon after, a movement towards “social procurement” saw a similar shift to a consideration of social outcomes and goals (McCrudden, 2004; Alden and Appleby, 2018). Sustainable procurement and current literature on the subject highlights a diversity of terms including, but not exclusive to, ‘green procurement’, ‘green supply’, ‘green purchasing’, and ‘social procurement’ (Wong et al. 2016). However, sustainable procurement differentiates itself from its predecessors in that it attempts to holistically consider environmental, social and economic interests, or “people, planet and profit” (Alden and Appleby, 2018).

In simple terms, sustainable procurement is ‘the pursuit of sustainable development objectives through the purchasing and supply process’ (Walker et al. 2012, p.201). Walker and Phillips (2009) further promote the idea that sustainable procurement aims to satisfy the social, environment and economic aspects of the purchasing and supply process of a business. ‘Sustainable procurement is not just how to buy but how to supply sustainably’ (Walker and Philips 2009, p.43). Similarly, there is also that association of sustainable procurement with the triple bottom line (Meehan and Bryde 2011). In addition, sustainable procurement is suggested simply as integrating sustainability into the procurement process, where the entire ‘end-to-end’ of the project, from planning to the delivery, needs to be considered (GBCA 2017).

ISO 20400 defines sustainable procurement as

“the process of making purchasing decisions that meet an organisation’s needs for goods and services in a way that benefits not only the organisation but society as a whole, while minimising its impact on the environment.” – ISO 20400 Sustainable procurement.

This is achieved by ensuring that the working conditions of its suppliers’ employees are decent, the products or services purchased are environmentally sustainable, where possible, and that socio-economic issues, such as inequality and poverty, are addressed.

2.2 Benefits of sustainable procurement

The benefits of adopting a sustainable procurement approach are numerous. The receiver of the benefits can be the purchaser, the market (or supplier) or the community. The typical benefits are summarised in Table 1.

Table 1: Benefits of adopting a sustainable procurement approach

Purchaser	Supplier	Community
<ul style="list-style-type: none"> Achieving value for money and a more efficient use of public resources Generating financial savings through reduced waste disposal (including reduced packaging to 	<ul style="list-style-type: none"> Increasing the availability of sustainable products and services at more cost-effective prices Expanding the market for sustainable products and services, with potential 	<ul style="list-style-type: none"> Reducing adverse environmental and social impacts arising from procurement decisions Reducing waste going to landfill Saving water and reducing greenhouse gas emissions, and reducing air and water pollution

<p>waste); reduced water use; and reusing materials and products, thereby lowering the cost of a product over its life cycle</p> <ul style="list-style-type: none"> • Achieving positive publicity associated with the purchase and use of products, services and suppliers with good environmental and social responsibility records • Providing government leadership to the community in demonstrating social and environmental responsibility through the purchase of sustainable products and services. 	<p>benefits for local businesses</p> <ul style="list-style-type: none"> • Expanding market opportunities gained from stronger product and service differentiation • Reducing transport-related costs such as fuel, vehicle maintenance and road congestion • Supporting and encouraging innovation through demonstrating preference for more sustainable products and services • Encouraging industry to develop capacity to operate in a clean, green economy. 	<ul style="list-style-type: none"> • Reducing consumption of both natural and processed resources • Promoting health, safety and equality in the community • Influencing purchasing decisions to support issues such as recognising equality and diversity, increasing employment and skills, and developing local communities and their physical infrastructure. • Improving social inclusion and cohesion through creating employment and business opportunities for disadvantaged or marginalised groups.
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(Source: Australian Government Department of Environment and Energy, 2018)

There are many reasons for businesses to practice sustainable procurement. The World Bank (2019) identified five key business drivers:

- Financial :
Reduce total operating costs by procuring more efficient and sustainable goods, works or services.
- Risk management :
Engage in the mapping of economic, legal, environmental and social sustainability threats and opportunities, and develop approaches to manage them
- Commitments and goals :
Reflect the purchasing agency's organizational culture, values, and ethics in accordance with relevant policies. This could include developing sustainable procurement policies that are in harmony with a country's overall strategy; that is, commitments and priorities ought to be clearly stated in the policy and the operational implementation ought to be reflected in procurement practices.
- Responses to increasing stakeholder expectations :
It is important to take account of social responsibility and sustainability issues. Beyond the requirements established by the World Bank in its other policies (e.g., environmental and social), these can be further enhanced by using sustainable procurement approaches.
- Attractiveness :
Performance in terms of social responsibility and sustainability may impact a Borrower's or project's image, enhance competition and provide organizations greater competitive advantage. Implementing sustainable procurement may attract other financial investors, boost labour markets, attract the best organizations to bid, and further drive development goals.

2.3 Procurement process and sustainability considerations

ISO 20400 emphasises the importance of integrating sustainability into organisations’ procurement processes in order to achieve the benefits of sustainability to the purchaser, supplier and community. The procurement life cycle has three stages including planning, sourcing and contract management. Sustainable procurement can be aligned with general stages of the procurement process. Table 2 describes the stages of procurement and activities and sustainable procurement practices associated with each stage of the Procurement Lifecycle.

Table 2: Procurement life cycle states and activities

Procurement stage	Activity	Example of sustainable procurement practices
Planning	<ul style="list-style-type: none"> Agency planning Analyse and define needs Consult stakeholders Analyse supply market Risk assessment Define strategy and plan procurement approach Write specifications and evaluation criteria, draft contract 	<ul style="list-style-type: none"> Understand the potential environmental and social impacts and risks Consider alternatives to buying, e.g., reuse, recycling, or hire of the goods/services Conduct a risk assessment based on the environmental and social impacts of the procurement that were identified as part of identifying the business need. Research alternatives that may offer reduced environmental and social impacts Define the sustainability aspects in the procurement Specify environmental and social requirements as minimum or desirable. Focus on the performance requirements Plan for inclusion of sustainability requirements in the final contract
Sourcing	<ul style="list-style-type: none"> Approach and engage the Market Evaluate, clarify and Negotiate Select and Award 	<ul style="list-style-type: none"> Considering broader economic benefits Prioritise environmental and/or social considerations to assess and compare Assess the price Request documentation to support sustainability attributes Include reporting areas to ensure delivery of environmental and social specifications
Contract management	<ul style="list-style-type: none"> Implement contract Manage transition Manage contract and supplier performance Drive continuous improvement Close out contract 	<ul style="list-style-type: none"> Follow up environmental and social performance Identify areas of continuous improvement Monitor supply chain Reporting and compliance

(Source: Department of Trade, Business and Innovation, 2017; GBCA, 2017)

Integration of sustainability into procurement life cycle is critical in ensuring and maximising the environmental, social and economic benefits of building, housing and infrastructure projects. According to Bielenberg et al. (2016, p. 48), “including sustainability as well as cost criteria in procurement processes would drastically change incentives for the private sector. Adopting a TCO (total cost of ownership) approach rather than a low cost bid process could generate long-term savings

and shift selection toward sustainable projects that are NPV (net present value)-positive but have higher up-front costs. For sustainable infrastructure that does not have a lower TCO in the current policy environment, sustainability criteria could be added to requests for proposals (RFPs). Appropriate criteria could include such measures as TCO, greenhouse gas emissions, water-use intensity, and climate-risk mitigation.”

As a key element of procurement strategies, the choice of procurement form and contract model has been recognised to have significant impact on the achievement of the sustainability goals due to the many manifold impacts on the project delivery life cycle, such as contract clauses, responsibility and risk distribution, and cost among others (Sanchez et al., 2015; Walker and Hampson, 2003). Contract models that stipulate the involvement of contractors at earlier stages of the procurement process have a greater potential to impact on the achievement of the GHG and other environmental goals of a project (Sanchez et al., 2015; Sanchez et al., 2013; Arts and Faith-ElI, 2012). The Australian case studies by Sanchez et al. (2015) support the use of Early Contractor Involvement contracts for better integrating decisions made during the planning phase with the construction activities, and improve environmental outcomes while also achieving financial and time savings. Researchers (e.g., Barraket and Weissman, 2009; Walker and Hampson, 2003) also advocate the use of relational approach to procurement (e.g., partnering and alliancing) in driving social sustainability outcomes. Achievement of social outcomes requires a higher level of stakeholder engagement and collaboration to generate more intensive cooperative behaviour (Montalbán-Domingo et al., 2019). Thus, moving from traditional procurement form and contract models to a relation-based approach and integrated approach may drive the sustainability of the construction industry and ensure the achievement of sustainable outcomes (Naoum and Egbu 2016; Montalbán-Domingo et al., 2019).

3 SUMMARY OF POLICIES AND GUIDELINES

3.1 ISO 20400:2017 Sustainable procurement — Guidance

ISO 20400:2017, the most recent international standard for sustainable procurement, published in April 2017 is the complement to ISO 26000, *Guidance on social responsibility*, by focussing specifically on the purchasing function. It is developed by experts representing more than 40 countries, as well as several influential global organisations including the United Nations Environment Programme, the Organisation for Economic Co-operation and Development and the International Trade Union Confederation. The standard provides guidance for any organisation of any size or type that needs to deliver sustainable outcomes through their supply chains. It is intended for stakeholders who contribute to procurement decisions and/or works with suppliers. It brings in the concepts of complicity and due diligence from the *UN Guiding Principles of Human Rights and Business* and is aligned with the *UN Sustainable Development Goals*.

Great attention from the media and stakeholders has been attracted since the release of this international standard. However, some key misunderstandings need to be clarified, including: 1) it is a guidance standard, not a requirements standard; 2) it is not product-related; 3) societal expectations are at an all-time high.

3.2 Australia

3.2.1 Cross country level

In 2007, the Australasian Procurement and Construction Council (APCC) developed the *Australian and New Zealand Government Framework for Sustainable Procurement* as a set of national and trans-Tasman principles to guide Australian State, Territory and Federal governments and the New Zealand Government in implementing sustainable procurement (APCC, 2007). This Framework is built around four broad principles of sustainable procurement, including:

- Adopt strategies to avoid unnecessary consumption and manage demand;
- In the context of whole of life value for money, select products and services which have lower environmental impacts across their life cycle compared with competing products and services;
- Foster a viable Australia and New Zealand market for sustainable products and services by supporting businesses and industry groups that demonstrate innovation in sustainability; and
- Support suppliers to government who are socially responsible and adopt ethical practices.

It is also recommended by the Framework that these principles should underpin the development and implementation of sustainable procurement strategies, policies, guidelines and tools.

3.2.2 Federal level

As a large procurer, the purchasing power of the Australian Government can be used to promote sustainable procurement. The *Sustainable Procurement Guide, Commonwealth of Australia 2018* is developed based on 1) the Commonwealth Resource Management Framework, which is underpinned by the *Public Governance, Performance and Accountability Act 2013* (PGPA Act), PGPA Rule and supporting directions and guidance; 2) Commonwealth Procurement Rules (CPRs), which are issued by the Minister for Finance under section 105B(1) of the PGPA Act; 3) *2018 National Waste Policy*, which sets a roadmap to improve Australia's waste management and highlights sustainable

procurements by governments, businesses and individuals as important strategies to better manage waste in Australia; 4) *Sustainable Development Goal 12—Responsible Consumption and Production*. This Guide consists of two parts, including (Commonwealth of Australia, 2018):

- Part 1 of this guide outlines the concepts of sustainable procurement, the general principles underpinning it, and options for including sustainability in procurement decisions.
- Part 2 provides information about how to include sustainability considerations in all stages of the procurement process.

Also, in order to align the Department's core objectives with the strategic procurement framework in relation to social impact, the Department of Industry, Innovation and Science (DIIS) issued the *Sustainable Procurement Strategy: Developing Social impact in Procurement* in November 2015. The Department will (DIIS, 2015):

- Use the Social Impact Assessment Tool as part of considering Value for Money
- Advocate second tier arrangements with businesses and initiatives relating to Social Impact
- Utilise businesses supported in this Strategy for corporate managed services related procurement
- Create an awareness campaign and educate staff on Social Impact in Procurement
- Improve reporting and measurement against social impact with a continued focus on improvement.

Furthermore, the Modern Slavery Act 2018 commenced operation on 1 January 2019, creating reporting obligations for entities that have consolidated revenue of at least \$100 million for the relevant reporting period (a financial year), and which are Australian entities, or undertake business in Australia in that financial year.

3.2.3 State/Territory level

3.2.3.1 VIC

In April 2018, the Victorian Government released *Victoria's Social Procurement Framework* clearly signalling the Government's intentions to better leverage its buying power to deliver improved social, economic and environmental outcomes for Victorians. Victorian government buyers are required to consider ways to deliver social and sustainable outcomes in every procurement activity under this Framework. A series of guides have also been provided by the Victorian Government, for example:

- Social procurement framework - suppliers
- Social Procurement Framework – Buyer guidance
- Understanding social procurement
- Social procurement in context
- Scope of the Social Procurement Framework
- Social Procurement Framework – Objectives, outcomes and key focus areas
- Social Procurement – Determining the value of individual procumbent activities
- Social Procurement – Planning requirements
- Social Procurement – Individual procurement activity requirements and detailed guides
- Social procurement – Evaluating social and sustainable procurement objectives and outcomes
- Social Procurement – Contract management
- Social Procurement – Department and agency reporting requirements
- Social procurement toolkit

- Social procurement document library

Local Government Victoria provides a Guide to Social Procurement and a toolkit to assist Victorian councils to deliver effective social outcomes through their procurement processes.

Also, Sustainability Victoria has developed a Social Procurement Strategy to enable a strategic, agency-wide approach to how to deliver social and sustainable outcomes through procurement in accordance with the Framework and beyond.

3.2.3.2 NSW

The *NSW Government Procurement Policy Framework* provides a consolidated view of government procurement objectives and the Procurement Board's requirements as they apply to each step of the procurement process. As one of the objectives of the Framework, sustainable procurement focuses on spending public money efficiently, economically and ethically to deliver value for money on a whole of life basis. This Framework was updated recently as a part of an agreement between NSW government and Social Traders to encourage agencies to consider social procurement.

Also, as a unique collaboration of representatives from Local, State and Federal Government working to promote social procurement practice in NSW, the Social Procurement Action Group (SPAG) developed the *Social Procurement in NSW: A Guide to Achieving Social Value through Public Sector Procurement* in October 2012. The overall goal of the Guide is to assist Government entities to harness their procurement budgets to deliver additional social value into the communities of NSW. The Guide will also assist social benefit suppliers to improve their approach to public sector tendering, and commercial sector entities to develop social procurement strategies that support their corporate social responsibility and social impact objectives.

Furthermore, Local Government NSW developed the *Sustainable Procurement guide for local government in NSW* in 2017. It outlines information on key concepts, certifications, standards and processes and is designed for all council staff involved in any purchasing.

The Modern Slavery Act 2018 (NSW) was passed by NSW Parliament in June 2018. The Act recognises that modern slavery is prevalent around the world and in NSW, and sets out steps to ensure NSW is not contributing to these crimes. The NSW Act is in similar terms to the Federal regime.

3.2.3.3 ACT

The *Sustainable Procurement Policy* was issued by the ACT Government in November 2015. This Policy intent to use procurement to advance the priorities of government and achieve value for money through a consideration of environmental, social and economic cost and non-cost factors on a whole of life basis.

The *Social enterprises panel* has been established by the ACT Government to supply a range of services to government. There are some other policies and guidelines regarding sustainable/social procurement available in ACT, such as *Procurement Circular – PC02: Social Procurement, Aboriginal and Torres Strait Islander Procurement Policy*, and the *Canberra Region Local Industry Participation Policy*.

3.2.3.4 QLD

Policies and guidance documents for government buyers have been developed by the Queensland Government. Here are some examples related to sustainable/social procurement:

- Sustainable procurement product guides
- Ethical Supplier Mandate and Ethical Supplier Threshold
- Supplier Code of Conduct
- Putting Queenslanders first when securing value for money
- Integrate sustainability into procurement
- Local benefits test
- Optimising opportunities for local suppliers
- Probity and integrity in procurement
- Queensland Indigenous Procurement Policy

The Social Traders portal has been established and Social procurement buyer toolkit has been generated. The toolkit consists of 7 documents including:

- Social procurement guide
- Social procurement - example clauses for tenders and contracts
- Diversity in supply arrangements guide
- Social enterprise certification guide
- Sustainability guide
- Ending Domestic and Family Violence
- Frequently asked questions

Furthermore, the Human Rights Act 2019 (QLD) and Ethical Supplier Mandate and Threshold (QLD) highlights the need to identify and mitigate social risks through supply chains.

3.2.3.5 WA

The Western Australia Government published *the State Supply Commission Sustainable Procurement Policy* in March 2020. The objective of this policy is to improve public authorities' sustainability outcomes by requiring public authorities to, wherever possible, undertake procurement that has the most positive environmental, social and economic outcomes, while minimising adverse impacts.

The WA Local Government Association (WALGA) produced a report on sustainable procurement activity in the WA Local Government sector in early 2017, and developed the *WALGA Guide to Sustainable Procurement* in October 2017. With the release of international standard *ISO20400:2017 Sustainable Procurement – Guidance* in April 2017, the *WALGA Guide to Sustainable Procurement* extends the guidance of the ISO Standard on Sustainable Procurement and tailors it specifically to the WA Local Government Sector.

In 2020, based on the *ISO 20400:2017 Sustainable Procurement – Guidance* and *the WALGA Guide to Sustainable Procurement*, the Sustainable Procurement Guideline was developed by WA Department of Finance.

3.2.3.6 SA

The current *Sustainable Procurement Guideline* developed by the Government of South Australia was reviewed in 2018. This guideline provides guidance on how to effectively integrate sustainability features and objectives into the procurement process. This guideline supports the Government's commitment to the *Australian and New Zealand Government Framework for Sustainable Procurement* developed by the Australasian Procurement and Construction Council in 2007.

3.2.4 Local council level

Many local councils have developed their sustainable/social procurement related policies and guidelines, for example,

- City of Swan, WA: *Council Policy – POL-C-116 Procurement*
- City of Fremantle, WA: *Policy – SG24 Sustainable procurement*
- Rottnest Island Authority, WA: *Rottnest Island Authority Policy - Sustainable Procurement*
- City of Ryde, NSW: *Sustainable Procurement Policy*
- Inner West Council, NSW: *Sustainable Procurement Policy*
- City of Melbourne, VIC: *Procurement Policy*

3.2.5 Organisational level

More and more organisations are starting to commit to ensuring sustainability and social objectives are supported through their Procurement. To this end, they have developed their Sustainable/Social Procurement Policy and/or guidelines, for example,

- Melbourne Water: *Sustainable Procurement Policy*
- Boral: *Sustainable Procurement*
- The University of Melbourne: *Social Procurement Framework*
- The University of New South Wales: *Sustainable Procurement Vision 2018-2025*
- Energy Queensland: *Sustainable Procurement Policy*
- Vicinity Centres: *Sustainable Procurement Policy, Version 2.0*
- Dexus: *Sustainable Procurement Policy*

3.3 Overseas

Various sustainable procurement policies and guidelines have been developed and implemented in different countries. Similar to Australia, these policies and guidelines are developed by different level of government and some organisations. Here are some of the sustainable procurement policies and guidelines in the UK:

- *UK Modern Slavery Act 2015*, issued by the UK Government
- *Sustainable Procurement Policy*, issued by the Ministry of Justice, UK
- *Sustainable procurement duty, statutory guidance on the sustainable procurement duty, sustainable procurement duty tools, sustainable procurement supporting guides*, issued by Scottish Government
- *Responsible Procurement GLA Group Implementation Plan 2018-2020*, issued by Greater London Authority
- *Sustainable Procurement Strategy*, issued by BBC
- *HMRC Sustainable Procurement Strategy*, issued by HM Revenue and Customs
- *Sustainable Procurement Policy*, issued by Orkney Islands Council, Scotland
- *Environmental and Sustainable Procurement Policy*, issued by Airedale NHS Trust
- *Deloitte LLP: Sustainable Procurement Policy*, issued by Deloitte LLP

Here are some of the sustainable procurement policies and guidelines in the USA:

- *Federal Acquisition Regulation*, issued by General Services Administration, Department of Defense, National Aeronautics and Space Administration, USA
- *Environmental Purchasing Policy*, issued by the Commonwealth of Massachusetts, USA

- *City of Seattle Sustainable Purchasing Policy*, issued by City of Seattle, Washington, USA
- *Sustainable Procurement Policy*, issued by City of Raleigh, North Carolina, USA
- *Environmentally Preferred Purchasing Policy*, issued by Country of Durham, N.C. USA
- *UC Procurement Policies, UC Sustainable Practices Policy, UC Sustainable Procurement Guidelines*, issued by the University of California
- *Sustainable Procurement Policy*, issued by Bain & Company

4 DRIVERS, BARRIERS AND FUTURE OPPORTUNITIES

4.1 Drivers of Sustainable Procurement

Drivers of sustainable procurement appear to be known as either internal or external (Haake and Seuring 2009). Internal drivers are linked to management systems and organisational structures within a firm. Management intervention is either described as a pressure or a support mechanism, where both can drive and promote the sustainable procurement process. External drivers are connected to government requirements and the need to meet current demands as a key driver (Ruparathna and Hewage 2015); consumer pressures to recognise sustainability actions or a reduction in environmental degradation; and organisational reputation, where the company has an obligation to meet sustainable development goals (SDG) or targets. ISO 20400:2017 identified some examples of sustainable procurement drivers including:

- customer: responding to customer and consumer sustainability expectations, such as safety, environmental benefits and universal design throughout the supply chains;
- competitive advantage: in competitive markets the ability to offer goods or services considering a sustainable value proposition supported by the supply chains can be a differentiator;
- innovation: using sustainable procurement to stimulate innovation from the supply chains in order to gain greater shared value and to generate new markets;
- stakeholder expectations: responding to increasing stakeholder expectations to take account of environmental and social factors, e.g. in order to maintain a societal license to operate;
- legislation and regulation: compliance with legislation throughout entire supply chains;
- public policies: achievement of desired objectives such as promoting competitiveness, creating opportunities for SMOs, indigenous engagement, efficient management of public resources, good governance or social inclusion;
- risk management: sustainability issues can influence brand value and reputation, market share, market capitalization, legal exposures, price volatility and access to supply, financial liabilities, moral/ethical exposures and the risks associated with operating licences;
- security of supply chains: avoiding disruptions due to product recall, financial penalties or supplier failure, implementing continual improvement processes, avoiding depletion of resources;
- investor confidence: sustainable procurement might improve scores from rating agencies and attract investment;
- workers: paying attention to sustainability issues, including promotion of decent work, can lead to greater productivity and attract, motivate and retain talent;
- supplier commitment: paying attention to sustainability issues can lead to improving supplier relationships, leading to an improved supplier contribution to organizational objectives;
- cost optimization: optimizing use of resources can lead to cost savings, reduced environmental impacts, economies of scales and improved return on investment;
- economic value creation: assessing more comprehensive life cycle cost and benefit information can help the organization to be more effective;
- personal leadership: committed leadership from key people in the organization can promote sustainable practices including sustainable procurement;
- organizational ethics: paying attention to sustainability issues can enhance the ethical behaviour of the organization and increase alignment with the organization's culture and values.

4.1.1 Government Intervention (requirements and policies)

There is recognition for the damage that can be caused by the construction industry in terms of carbon emissions, energy use and waste products. Environmental impact from activities within the sector, for example, the manufacture, transport, construction, operation and demolition of material are of interest (Chau et al. 2015), due to intensive energy use, emissions and potential detrimental environmental effects. Ogunsanya et al. (2019) further extend this to suggest that sustainable procurement can aid the meeting of sustainable development goals (SDG) for the sector. More specifically, studies also acknowledge the prominent environmental advantages sustainable procurement can reduce, such as the pressures for environmental protection (Ruparathna and Hewage 2015). These demands align with governmental interventions; one of the key drivers for sustainable procurement. Mandatory environmental regulations, for instance, driven by government pressures is a dominant influence for sustainable procurement (Wong et al. 2016; Belfitt et al. 2011). In contrast, however, Meehan and Bryde (2011), suggest the consideration of future or anticipated regulations for the construction sector, as oppose to the current requirements, is of greater concern. As such, the government is in the unique position to participate in the market as a purchaser, whilst simultaneously regulating the market to produce sustainable outcomes (Alden and Appleby, 2018).

4.1.2 Client / Customer Requirements

Another key driver, also linked to the need to recognise the triple bottom line and environmental advantages that can be gained, connects to the client / customer requirements for sustainable procurement and non-government organisational pressures (Wong et al. 2016). This barrier emphasises the public awareness of environmental issues, consumer demand for organisations to adhere to governmental sustainability requirements and environmental protection (Zhu and Geng 2013). Public recognition of the value and desire for sustainable procurement, the practices and processes involved, can be known as external pressures (Meehan and Bryde 2011; Haake and Seuring 2009). Closely related is the organisational reputation and what can be gained from a company adopting sustainable procurement strategies.

4.1.3 Organisational / Management Pressures

The encouragement and promotion of sustainable procurement can come from within the organisation in regards to higher management (Crespin-Mazet and Dontenwill 2012), also known as internal pressures (Haake and Seuring 2009). Organisational drivers can influence methods of work practices surrounding the actions and employee perceptions of sustainable procurement. Management pressures, along with their success are linked to the organisational structure, the availability of support and its influence on procurement decisions (Belfitt et al. 2011; Brammer and Walker 2011). It should also be noted that a lack of support and structure can be known as a barrier to sustainable procurement (Belfitt et al. 2011).

4.2 Barriers and Challenges to Sustainable Procurement

In comparison to the drivers above, barriers to sustainable procurement appear to be much broader and have variations of ideas within different investigations from the literature. The increased finance required, or often assumed, which can be connected to sustainably sourced products, is one of the key barriers to sustainable procurement (Brammer and Walker 2011), along with the increased cost to meet the sustainable requirements (Ruparathna and Hewage 2015) and sustainable procurement measures (Belfitt et al. 2011). Belfitt et al. (2011) further point out that costs are also more of an issue if the firms that incur the challenge do not experience the benefits.

Another barrier is linked to a lack of information for sustainable procurement (Brammer and Walker 2011), in addition to confusion with how to actually implement and adopt the processes and practices (Ruparathna and Hewage 2015). This barrier is multifaceted. The lack of information can be referring to little explanation and support from policy makers, or pressures from stakeholders for sustainable procurement (Zaidi 2009), firms understanding the policies associated with the need for sustainable procurement (Brammer and Walker 2011) or ideas surrounding sustainability (Ogunsanya et al. 2019). In addition, little institutional communication and lack of co-ordination around the sustainable strategies for procurement can be a challenge (Haake and Seuring 2009).

Finally, the incorporation of sustainable procurement, in regards to the complexity of decisions that are to be made by companies, can be a barrier to its adoption and delivery (Meehan and Bryde 2011). The potential question arises in terms of the additional effort that is required by organisations in order to act upon sustainable procurement. Moreover, closely linked to the management within an organisation and the sustainable workforce, the challenge of employee motivation can also be a great concern, as found in studies by Ogunsanya et al. (2019).

4.3 Future opportunities

Opportunities appear to be associated with the sustainability or environmental advantages that can be achieved when sustainable procurement practices are implemented within a project (Ruparathna and Hewage 2015). Further, from the evidence above, the ability of an organisation to understand consumer demand, in addition to adopting the appropriate sustainable procurement methods, will be seen as advantageous to the firm. This can be of value in connection to organisational reputation and client / customer approval. Finally, to meet the pressures for sustainable procurement and reduce the barriers, advice surrounds the need for tools and knowledge to support sustainable procurement (Ruparathna and Hewage 2015), along with awareness and education for organisational professionals and stakeholders (Ogunsanya et al. 2019).

5 ASSESSING THE VALUE OF SUSTAINABLE PROCUREMENT

5.1 Sustainable procurement assessment framework

The consideration and analysis of economic benefits, environmental objectives and social/ethical conditions have been referred as the triple bottom line for sustainable management (Dyllick and Hockerts, 2002). While environmental issues are key aspects of sustainability, but an integrated view of sustainability of environmental, economic and social is particularly important as the interrelationship. For example, environmental focus can present financial saving, which have the added bonus of contributing to long-term employment opportunities. The purpose of sustainability indicators is to help measure a company's economic, environmental, and social performance and to provide information on how it contributes to sustainable development (Azapagic and Perdan, 2000). The criteria used for sustainable procurement and green procurement in the construction industry have been developed. For example, Sourani (2008) identified 43 sustainable procurement initiatives in a countrywide survey in the United Kingdom, which divided them into the set of social sustainability criteria, economic sustainability criteria, and environmental sustainability criteria. Wilding et al. (2012) have analysed measures for sustainable procurement from 115 papers from 2000–2010 and categorised them into the two fields of environmental and social measures. The result showed imbalance in measures for sustainable procurement with 69% on environmental measures and 31% on social measures. Kalutara et al. (2017) consolidated the measures of sustainability into 18 assessment criteria by factor analysis through a consultation with sustainability experts in six local councils and a country in Australia. The 18 criteria fit into the four aspects of sustainability: environment aspect, economic aspect, social aspect, and functional aspect. Walker et al. (2012) proposed a sustainable procurement framework to frame the multiple and complex issues that arise at different supply chain points and at different levels within sustainable procurement as shown in Table 1.

Table 1: The Sustainable Procurement Framework (Walker et al., 2012)

Dimensions	Individual	Organisational	Buyer–supplier dyad	Supply chain/network	Market/ society/ stakeholders/NGOS
Social/ societal	<ul style="list-style-type: none"> • Impact of fair trade/eco-labels on end-user buying behaviour • CSR purchasing policies 	<ul style="list-style-type: none"> • Integration of sustainability criteria in calls for tender • Child labour • CSR functions are integrated with purchasing 	<ul style="list-style-type: none"> • Supplier selection and qualification criteria (acceptable labour practices, etc.) • Government policy and standards on sustainable purchasing • Supplier training in sustainable practices 	<ul style="list-style-type: none"> • Managing/balancing the supplier portfolio • Under-paid employees in sub-tier suppliers 	<ul style="list-style-type: none"> • NGO practices and impact on fair trade
Environmental	<ul style="list-style-type: none"> • Changing end-user consumption patterns for reduced consumption of resources • Consumer awareness of environmental issues and impact on buying behaviour 	<ul style="list-style-type: none"> • Management of the Purchasing Interface with other functions (with Marketing, R and D) • Policy and practices • Relative to sourcing/use of restricted products (red tuna, palm oil, etc.) • Environmental policy • Recycling strategies 	<ul style="list-style-type: none"> • Buyer and supplier collaborating to reduce packaging, CO2 emissions, energy and water consumption • Buyer and supplier collaborating to increase resource productivity and reduce waste 	<ul style="list-style-type: none"> • Pollution in sub-tier suppliers • CO2 effects across supply chain 	<ul style="list-style-type: none"> • NGO impact on scarce raw materials • Carbon trading practices • Regulatory impacts • Supplier and Buyer • Government lobbying practices
Economic	<ul style="list-style-type: none"> • Reduction in fuel consumption • Qualities and characteristics of the individual members of the responsible purchasing function in the firm 	<ul style="list-style-type: none"> • Development/optimising of the sustainable purchasing function in the firm • Purchase vs. rent strategies and practices (e.g. retailers and consumers) • Purchasing staff skills development, awareness and training 	<ul style="list-style-type: none"> • Supplier/buyer cooperation (R & D, new product design/redesign, etc.) for cost reduction and sustainability • Bribery and corruption • Fair profit issues 	<ul style="list-style-type: none"> • Innovation via design and management of the supply network (multi-partite technical collaboration, etc.) • Fair price practices down the supply channel 	<ul style="list-style-type: none"> • Supporting disadvantaged sections of society through buying from SMEs, minority owned firms etc

5.2 Exemplary sustainability indicators and criteria

The triple bottom lines reinforce the interconnectedness of economic, environmental, and social aspects of construction procurement. An exemplary set of indicators for the procurement developed through review of literature are summarised.

5.2.1 Assessing the value of environmental sustainability

Environment aspect administers the consumption of energy and non-renewable resources, reducing manufacturing waste, and disposing it in a safe and legal manner. It can be restrictions on machines and materials and restrictions regarding emissions, water management, material sustainability, energy-efficient, waste management, air and noise pollution and user comfort (Kalutara et al., 2017). The LEED requirements represent the most common metrics and factors used to evaluate the greenness of a building (Sarkis et al., 2012). Table 2 shows the listing of the factors and sub-factors of the LEED requirements (Council, 2014).

Table 2: A list of the factors and sub-factors of the LEED requirements (Council, 2014).

Factor	Sub-factor
Sustainable sites	<ul style="list-style-type: none"> • Erosion & Sedimentation Control (ESC) • Site Selection (SS) • Development Density (DD) • Community Connectivity (CC) • Brownfield Redevelopment (BR) • Alternative Transportation (AT) • Site Development (SD) • Stormwater Design (SRMD) • Heat Island Effect (HIE) • Light Pollution Reduction (LPR)
Water efficiency	<ul style="list-style-type: none"> • Water Efficient Landscaping (WEL) • Innovative Wastewater Technologies (IWT) • Water Use Reduction (WUR)
Energy and atmosphere	<ul style="list-style-type: none"> • The Building Energy Systems (BES) • Minimum Energy Performance (MEP) • CFC Reduction (CFC) • Optimize Energy Performance (OEP) • Renewable Energy (RE) • Enhanced Commissioning (EC) • Refrigerant Selection (RS) • Measurement & Verification (MV) • Green Power (GP)
Materials and resources	<ul style="list-style-type: none"> • Storage & Collection of Recyclables (SCR) • Building Reuse (BLDR) • Construction Waste Management (CWM) • Resource Reuse (RR) • Recycled Content (RC) • Regional Materials (RGM) • Renewable Materials (RNM)
Indoor environmental quality	<ul style="list-style-type: none"> • Minimum Indoor Air Quality Performance (IAQP) • Environmental Tobacco Smoke Control (ETSC) • Outdoor Air Delivery Monitoring (OADM) • Increased Ventilation (IV) • Construction IAQ Management Plan (CIMP) • Low-Emitting Materials (LEM) • Indoor Chemical & Pollutant Source Control (ICC)

	<ul style="list-style-type: none"> • Controllability of Systems (COS) • Thermal Comfort (TC) • Daylight & Views (DV)
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The factors and sub-factors of LEED are the common understanding regarding environmental sustainability criteria. Sustainability has a huge scope and LEED requirements enable companies to capture the issues included within this scope. For example, the relevant environmental factors that being perceived have been well documented in the literature (Aktin and Gergin, 2016).

Table 3: The Environmental factors adopted in relevant literature (Aktin and Gergin, 2016).

Environmental factors	References
CO2 emissions	Amindoust et al., 2012, Bai and Sarkis, 2009, Büyükozan and Çifçi, 2012, Dai and Blackhurst, 2012, Epstein and Roy, 2001 Gauthier, 2005, Genovese et al., 2013, Govindan et al., 2013, Kermani et al., 2011, Seuring, 2013, Singh et al., 2009, Vachon and Mao, 2008, Wang and Lin, 2007, Zhu et al., 2008
Recycling and waste management practices	Amindoust et al., 2012, Bai and Sarkis, 2009, Büyükozan and Çifçi, 2012, Dai and Blackhurst, 2012, Epstein and Roy, 2001 Gauthier, 2005, Ghadimi and Heavey, 2014, Handfield et al., 2002, Kermani et al., 2011, Singh et al., 2009, Seuring, 2013, Vachon and Mao, 2008, Wang and Lin, 2007, Zhu et al., 2008
Water and electricity consumption	Amindoust et al., 2012, Bai and Sarkis, 2009, Büyükozan and Çifçi, 2012, Dai and Blackhurst, 2012, Gauthier, 2005, Govindan et al., 2013, Kermani et al., 2011, Seuring, 2013, Vachon and Mao, 2008, Wang and Lin, 2007
Sell environmental friendly eco-products	Amindoust et al., 2012, Dai and Blackhurst, 2012, Govindan et al., 2013, Ghadimi and Heavey, 2014, Kermani et al., 2011
Hazardous supply consumption	Amindoust et al., 2012, Bai and Sarkis, 2009, Büyükozan and Çifçi, 2012, Dai and Blackhurst, 2012, Ghadimi and Heavey, 2014, Handfield et al., 2002, Zhu et al., 2008
Apply ecological standards	Amindoust et al., 2012, Epstein and Roy, 2001 Govindan et al., 2013, Handfield et al., 2002, Kermani et al., 2011, Vachon and Mao, 2008, Zhu et al., 2008

5.2.2 Assessing the value of economic sustainability

Economical aspect is concerned with reducing economic scarcity. Economic dimension of decision criteria such as quality, price, delivery, production facilities and capacity, and financial situation can be introduced (Laosirihongthong et al., 2019). Additionally, other measures of economic factors such as market share, profitability, customer loyalty, employee loyalty, periodical captial increase, planning of future periods' action may also be incorporated (Aktin and Gergin, 2016). Agbesi et al. (2018) summarised the criteria that have been adopted by for measuring economic sustainability in construction procurement:

- Clear establishment of need and evaluation of alternative options
- Value for money
- Local/area economic growth
- Consideration of whole life costing
- Use of local material
- Improving the efficiency of the supply side
- Maximum use of limited resources

5.2.3 Assessing the value of social and ethical sustainability

Social sustainability has been characterised by being a key element in the construction industry, boosting the interaction between stakeholders to address the needs of current and future populations

and communities (Valdes-Vasquez et al., 2012). However, environmental criteria are given the prominence in procurement and social criteria are the least attended sustainability criteria in procurement. Montalbán-Domingo et al. (2018) have investigated social sustainability criteria in public work procurement in 10 countries. Table 4 shows the categories of social criteria and sub-category of social indicator with respect to the 451 analysed tenders.

Table 4: The Categories of Social Criteria and Sub-Category of Social Indicator

Categories of Social Criteria	Sub-category of Social Indicators
Cultural heritage	<ul style="list-style-type: none"> • Preservation of historic and cultural resources • Professional expertise in cultural heritage
Employment	<ul style="list-style-type: none"> • Employment created or retained • Employment of vulnerable groups • Job stability • Industry participation plan
Health and safety	<ul style="list-style-type: none"> • Workplace health and safety management plan • Public safety • Occupation health and safety certifications • Professional expertise in health and safety
Local	<ul style="list-style-type: none"> • Local preference • Local participation • Social value
Professional ethics	<ul style="list-style-type: none"> • Non-discriminatory hiring practices • Commitment to anti-corruption • Gender equality • Fair wages
Public participation	<ul style="list-style-type: none"> • Public participation
Training	<ul style="list-style-type: none"> • Technical and sustainability training of workers
Users' impact	<ul style="list-style-type: none"> • Avoiding or minimizing the harm done to the neighbourhood • Avoiding or minimizing the harm done to the existing services • Avoiding or minimizing mobility disruption

The study results show that Australia is more focused on the creation and maintenance of employment. Additionally, Australia is strongly promoting the use of local and employment criteria and is encouraging indigenous opportunity policies and improving opportunities for local people with limited employment and training opportunities (Barraket and Weissman, 2009, Petersen and Kadefors, 2016). Furthermore, state governments and departments have inserted social procurement guidelines or policies into their procurement processes, requiring that procurement officers consider social benefits when awarding contracts (Burkett, 2013, McNeill, 2015).

5.3 Limitations of existing tools and methods

Singh et al. (2009) provided an overview of various sustainability indicators and assessment methods, which claimed that despite many efforts in measuring sustainability, most of them failed to consider an integrated approach taking into account of environmental, economic and social aspects. In most cases, the focus is on one of them. Seuring and Müller (2008) reviewed 191 papers on green and sustainable supply chain management from 1994 to 2007, only 31 of them considered both environmental and social aspects. And Seuring (2013) has advanced the research and concluded that the environmental dimension clearly dominates, while the social aspects are widely ignored. Lozano (2012) highlighted the drawbacks of partially considered of these dimensions and proposed a new framework to incorporate sustainability into the company's system in a comprehensive approach.

(Tang and Zhou, 2012) also pointed out the shortage of quantitative procurement models concentrating on environmental and social responsibility.

6 STAKEHOLDERS' ROLE IN TRANSFORMING INDUSTRY PRACTICES IN PROCUREMENT FOR SUSTAINABILITY

Sustainable procurement is a major change to industry practices that requires a shift in approach, priorities, and practices of all stakeholders involved. The successful transformation will depend of how stakeholders fulfill their roles and responsibilities. It requires actions and participation of all stakeholders (Ruparathna and Hewage, 2015). ISO (2017) groups stakeholders into three categories: internal functions, supply chains, and other stakeholders (that include governments and the public sector). In this review of stakeholders' role, stakeholders are grouped into: 1) government agencies; 2) client organisations; and 3) other significant stakeholders.

6.1 Government agencies

The government plays a critical role in transforming industry practices such as sustainable procurement. It is often argued that the government can and should play a critical, proactive role (Wong et al., 2016; Ruparathna and Hewage, 2015) in creating a regulatory environment for sustainable procurement (Günther and Scheibe, 2006). Agbesi et al. (2018) argued that "the presence of government procurement laws, policies and regulations motivates public sector client organisations to initiate sustainable practices in construction procurement and finally aid adoption and implementation."

In viewing the government as the regulator, Akadiri and Fadiya (2013) go as far as suggesting government regulation be "the most important" determinant in driving the adoption of sustainable procurement. This view is shared by Wong et al. (2016) in their study on the enablers of green procurement in construction projects. These studies tend to suggest that the industry adopts sustainable procurement when they are forced to do so. Scholars argue that "invitations and recommendations" (de Leonardis, 2011) and "voluntary sustainability initiatives" (Ruparathna and Hewage, 2015) are not effective, but "mandatory behaviours with corresponding liability, in green public procurement (de Leonardis, 2011).

Specifically, OECD (2015) proposes having a "legal and policy framework... with understandable definitions, targets and priorities" to assist client organisation in their implementation. Similarly, in their sustainable procurement national action plan "Procuring the Future," the UK government's DEFRA (2006) suggests strategies that include engaging organisations through a framework called "Flexible Framework" and integrating sustainability into the "Gateway Process" of the investment life cycle framework.

Raising awareness through engagement is a strategy for transformation that many organisations support and is backed by research. OECD (2015) argues for raising awareness on sustainable procurement among the market participants and the civil society: "a focused effort on getting the right messages across to government procurement officials and the general public can have a significant impact on the success of GPP." A study by Walker and Phillips (2009) suggests awareness of the "systemic nature of sustainability" needs to be raised by "educating suppliers" and "working with suppliers to encourage innovative responses to sustainability in supply markets." ISO (2017) suggests contributing to the "education of consumers... and communities at all levels, in particular the education of children, women and vulnerable groups, in areas where goods to be procured are being produced."

Any transformation that requires regulations will need some mechanism of evaluating and monitoring to be effective. It is suggested that the practices and results of sustainable procurement be monitored, and feedback provided for policy and regulation making purposes (OECD, 2015). Monitoring can be fulfilled through contract compliance to ensure commitments be "enforced along the supply chain and that responsibility is clearly assigned" (European Union, 2016).

6.2 Client organisations

Client organisations, both public and private, play a vital role in adopting and implementing sustainable procurement practices (Lindblad & Gustavsson, 2020; DEFRA, 2006). Among them, the most significant one is the government who has a massive buying power. In the UK, the public sector's expenditures on goods, services, works and utilities accounts for 13% GDP (DEFRA, 2006). How client organisations initiate, adopt, implement and monitor practices has huge impact on the results of the transformation to more sustainability in procurement.

As the buyer of services and goods, the client organisation has an enormous power in influencing how the supply chain respond to and implement sustainable practices. It is often suggested that multi-criteria procurement methods are used whereas sustainability should be included (Walker and Phillips, 2009; Sporrang & Bröchner, 2009; Ruparathna and Hewage (2015). When seeking best value for money, the client needs to be smart in defining value. The definition (or composition) of value will determine the kind of results the client will receive. European Union (2016) suggests that, apart from the cost of goods and services, best value should consider "quality, efficiency, effectiveness and fitness for purpose" and that environment protection should be one of the factors and of equal importance.

ISO (2017) specifies that the organisation should "take care that the sustainability criteria:"

- Reflect the priorities defined in the sourcing strategy;
- Are objective and verifiable;
- Are clearly defined;
- Are transparently and effectively communicated;
- Allow for fair competition; and
- Identify how far down the supply chains they apply.

It is widely suggested incentives, mostly financial, be used by the client to promote sustainable practices in the supply chain. Sporrang & Bröchner (2009) conclude that the public sector should "create an institutional setting" to incentivise architectural and engineering consultants to "develop skills and practices that contribute to a more sustainable built environment." Some research indicate that incentive schemes may play a significant role in facilitating the wider adoption of sustainable procurement (Wong et al., 2016). Incentives are not necessarily financial. As European Union (2016) rightly points out "as good performance on environmental issues also helps to establish a contractor's reputation, incentives may take the form of positive publicity which highlights this to the public and other contracting authorities." This statement is supported by a research by CCWHSR (2017) that studies health and safety performance of tiers of contractors at the The London 2012 Olympic and Paralympic Games construction program where the transparent publicity promoted exemplary health and safety performance.

As the buyer, especially in the public sector, the client has to address the cost and benefit concerns of various stakeholders in the supply chain because sustainability requirements can be perceived as requiring "extra cost" (Ruparathna and Hewage, 2015). However, Day (2005) argues that "contrary to common belief, environmentally sound procurement is no more expensive than conventional procurement. More efficient use of energy and natural resources, and strategies to cut the amount of waste generated, can in fact save the taxpayer money." That argument can be supported if life-cycle costs are used in the evaluation of alternatives (OECD, 2015).

As sustainable procurement "requires specialised knowledge and skilled multidisciplinary teams," it is essential that the client, especially in the public sector, needs to build the capacity through tools to professionalise and increase "know-how skills" (OECD, 2015). The client also needs to set example for sustainable procurement practices as Day (2005) argues:

"If we are asking citizens to be environmentally responsible, public authorities should also be ready to reduce their own negative impacts. This would have a demonstration effect that could lead to more green procurement by the private sector."

In short, client organisations play a vital role in transforming industry practices in procurement thanks to their huge purchasing power. They can include sustainability criteria in selecting goods and services providers, incorporate financial and non-financial incentives in contracts, use life-cycle costs in the cost-benefit analysis, and promote the acquisition of knowledge and skills needed for sustainable procurement.

6.3 Other stakeholders

There are a significant number of other stakeholders who can greatly influence the practices of sustainable procurement, such as subcontractors, suppliers, local community, non-governmental organisations, investors, to name just a few. Their role in transforming sustainable procurement practices seems to be less emphasised in research as well as government publications. These publications tend to suggest actions to do "with" them rather than "by" them.

One of the most significant stakeholder groups in this category is subcontractors. Yet, according to Loosemore et al. (2020), "the subcontractor's voice is largely absent from the social procurement debate, despite employing the majority of people in the construction industry." This exclusion negatively affects the ability to integrate six disadvantaged groups targeted by social procurement, which could be considered part of (or having significant overlap with) sustainable procurement. For their part, contractors, subcontractors, or those further down the supply chain should share the same responsibility as client organisations in implementing sustainable procurement practices. For example, Ruparathna and Hewage (2015) suggest contractors acquire more experience in order to fulfil sustainability requirements.

However, contrary to the perception that the private sector could be passive and needs regulations from the government to adopt and implement sustainable procurement, the UK government learned that "the public sector is lagging behind leaders in the private sector in its approach to working with the supply chain" (DEFRA, 2006). DEFRA (2006) also suggests that the public sector can learn lessons from leaders in the private sectors in "searching out possible suppliers, signalling future requirements and incentivising suppliers by the promise of current and future business."

Other than stakeholders who directly participate in the delivery of goods and services, stakeholders such as non-governmental organisations, trade unions, professional societies, "can be important stakeholders in assisting an organization to raise awareness of sustainable practices..., creating conditions for a positive dialogue with other stakeholders including the local community" (ISO, 2017).

Given the diversity of sustainable procurement stakeholders and their roles, any effort to engage them in transforming industry practices needs to be inclusive and comprehensive. A summary of categories of stakeholder, their interests and strategies useful in driving behaviour change is created with input from the international standard ISO20400:2017 (ISO, 2017) and the UK government's sustainable procurement national action plan "Procuring the Future" (DEFRA, 2006). The result is presented in Table 6, accompanied by the list of examples of actions corresponding to the strategies.

Table 6: Stakeholder categories, examples of interests and strategies for behaviour change

Category of stakeholder	Examples of interests	Strategies for behaviour change			
		Enable	Encourage	Engage	Enforce
Government agencies	Protect the environment Protect human rights Delivery economic and social benefits	X			
Client organisations	Pursue financial benefits Increase investor confidence Support innovation	X			
Other stakeholders (e.g., subcontractors, suppliers, local community, NGOs, investors)	Have fair contracting conditions Pursue financial benefits Create awareness for a more sustainable society		X	X	X

Examples of actions in the strategies for behaviour change (adopted from DEFRA, 2006):

- Enable:
 - Commit leadership to sustainable procurement
 - Clarify ownership within government
 - Set clear policy priorities within a sustainable procurement framework
 - Develop capabilities to deliver sustainable procurement
 - Ensure budgetary mechanisms enable and support sustainable procurement
 - Put in place delivery team to support change
- Encourage:
 - Use incentive systems to reflect sustainable procurement
 - Create internal rewards linked to performance
 - Showcase and recognise good practice
- Engage:
 - Engage organisations through a framework
 - Support and stimulate innovation
 - Integrate sustainability into investment life cycle process
 - Build long-term supplier relations through dialogue with key markets and early contractor involvement
- Enforce:
 - Monitor performance against regulations and sustainable requirements
 - Sanctions for not meeting mandatory standards and targets

7 POST COVID-19 IMPACTS FOR ACHIEVING SUSTAINABLE PROCUREMENT

Covid-19 crisis has brought global economies to a standstill and has created unprecedented challenges to many sectors including housing, building and infrastructure (Mace, 2020, Organisation for Economic Co-operation and Development, 2020a, Karmaker et al., 2020). Many business and government organisations have experienced some form of supply chain disruption – either through suppliers going offline, a sudden spike in demand or both (Deloitte, 2020a). For example, impacts to trade through transportation limits and production slowdown are impacting business productivity, with 94% of the Fortune 1000 seeing supply chain disruptions (Sherman, 2020). According to a survey conducted by the Institute for Supply Chain Management last month, reveals that 75% of companies are reporting supply chain disruptions due to impacts of the covid-19. This crisis and the associated regulatory responses have created another layer of complexity to sustainable procurement due to process delays, loss of efficiencies, and cost impacts (Loosemore, 2020). Within this context, many suppliers struggle to meet their contractual obligations with government entities, and this may put their financial viability, ability to retain staff and their supply chains at risk. Furthermore, suppliers may not be able to fulfil their contracts due to action taken elsewhere in the public sector and restrictions that are now in place, or that may be in place in the future (Australian Government Department of Finance, 2020). While there is very limited to no precedent to assist organisations to clearly understand what the potential future impacts may be, it becomes more challenging to be prepared for and adapt for such disruptions (Deloitte, 2020b). This highlights the critical need for right time, right place procurement decisions to be resilient and better positioned when the pandemic subsides.

7.1 Opportunities and lessons learned

While there were more efforts directed towards resilient supply chain, the impacts of COVID-19 were something many organisations were unprepared for (Mace, 2020). This crisis has however created an impetus for some businesses to benefit from pivoting to more localized value chains, and some to do global supply chains. After COVID-19, relationships between public granting authorities and private contractors will possibly change, with more focus on investing in delivery in a collaborative way (Organisation for Economic Co-operation and Development, 2020b). In order to achieve a more interest-aligned approach as opposed to an adversarial contractual relationship, both the public and the private sector should be investing in productivity measures, training, skills and capability, different risk allocations and new methods of construction and contracting. For the private sector, there will be a substantial difference between investing in availability-based projects as opposed to demand-based projects. For the latter, the dramatic decline in traffic will pose a significant challenge (Organisation for Economic Co-operation and Development, 2020b).

Looking at some international examples, the UK government is expecting to see supply chains in the infrastructure sector becoming more locally based in order to increase resilience. One of the main changes stemming from this crisis will be the way in which governments will contract for infrastructure. Some of the factors to consider will include which projects will provide the substantial increase in productivity and will rely more on modern methods of construction. Infrastructure projects like fast broadband, 5G, net zero carbon are gaining momentum and expected to have more interest and investments. For instance, the private sector in Japan is increasingly playing a more prominent role in the fulfilment of national development and sustainable growth goals and will be expected to bring into the execution of infrastructure projects its expertise and cross-sectoral knowledge in areas such as urban planning, technology, environmental protection, health and safety (Organisation for Economic Co-operation and Development, 2020b).

Learning from the challenges related to Covid-19, government and industry needs to re-assess their supply chain risks and need to determine the supply chain design that will deliver the most resiliency in the event of another large-scale disruption. To achieve that there are multiple, immediate, end-to-

end, sustainable supply chain actions that should be considered. These actions will enable government authorities and industrial practitioners to develop as targeted responses to address COVID-19 impacts and better prepare for possible future disruptions (Alicke, Azcue,, & Barriball,2020; Queensland Government, Department of Housing and Public Works 2020a; Civil Service World, 2020; UNCTAD, 2020). These actions include: 1) Creating transparency on multitier supply chain; 2) Optimising production and distribution capacity; 3) Assessing realistic final-customer demands; 4) Leveraging technologies to support goals; 5) Utilising multi-level risk assessment; and, 6) Ensuring the organisations are aligned most innovative initiatives to support sustainability and the green economy (United Nations, 2020). These actions will uncover opportunities for sustainable procurement (Australian Government Department of Agriculture, water and Environment, 2018) through improving productivity, assessing value and performance, enabling communication between purchasers, suppliers and stakeholders, and by encouraging innovation (Manta, 2020). Figure 1 presents a summary of these actions to consider in response to Covid-19.

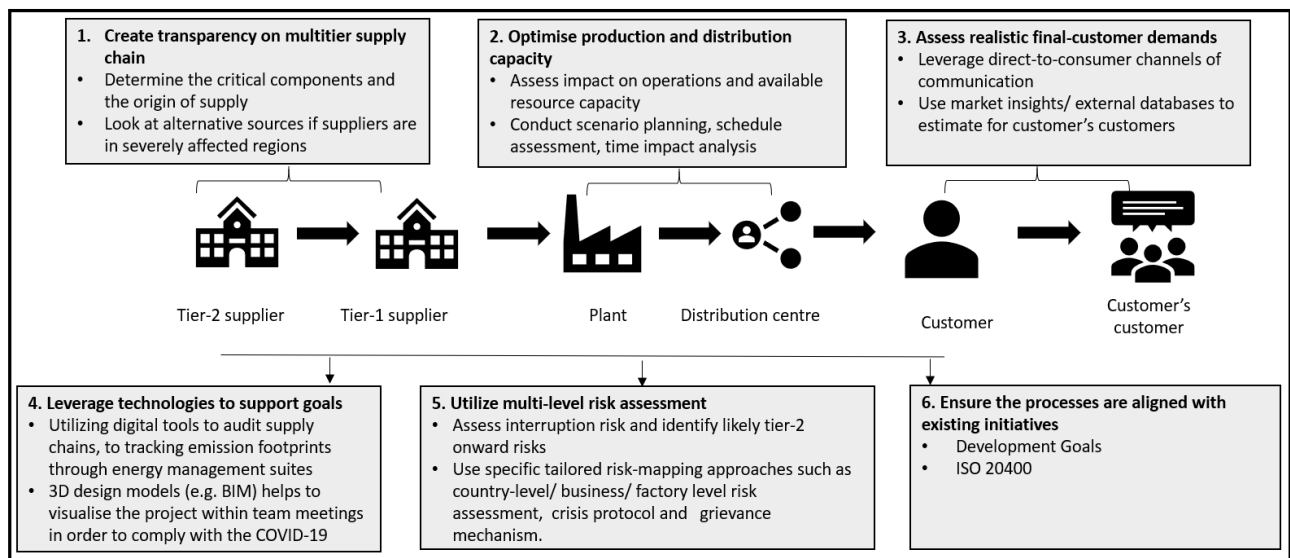


Figure 1: Actions to consider in response to COVID-19 (Synthesizing findings from Alicke, Azcue,, & Barriball,2020; Queensland Government, Department of Housing and Public Works 2020b; Civil Service World, 2020; United Nations Conference on Trade and Development, 2020b; World Economic Forum, 2020b; Jallow et al., 2020)

The responses to Covid-19 has demonstrated parallel Responses to climate change. Delayed efforts to action on climate change may also lead to impacts such as destroyed livelihoods and shrinking economies. Whether it is a global pandemic or extreme climate events, it is likely that supply chains may no longer be cost-effective endeavours for businesses, where they pivot their procurement towards cheaper labour and materials located in one or two locations. Instead, businesses may well be willing to pay an upfront premium to futureproof their supply chains, by spending more on mapping and angling procurement towards certified and sustainable sources that are better equipped to deal with the challenges posed by climate change and natural disasters (Mace,2020).

Going forward, businesses entities and government will seek to modernise supply chain practices, regardless of whether they are global or local. Key approaches such as Industry 4.0 enable these entities to create more transparency in supply chains. For example, large businesses (e.g: M&S and Primark) have launched digital supply chain mapping exercises to enhance transparency and disclosure, while the some other organisations (e.g.: Unilever and Sainsbury's) have opted to use to blockchain technology to enhance the sustainability of supply chains. Turbo Carbon tool has also emerged as a popular method streamline carbon reporting (Mace, 2020; Civil Service World, 2020). Within this context, digitally enabled transparency facilitates data-driven decision making and provides deeper insights to decision makers in government authorities and industrial practitioners to make

sustainable procurement decisions. Emerging technologies such as Artificial intelligence (AI), Building Information Modelling (BIM) and other Digital Engineering (DE) technologies are paving the way forward enabling decision makers to mitigate risk and drive value. For example, from utilizing digital tools to audit supply chains, to tracking emission footprints through energy management suites and AI which can drive efficiency (Mace,2020; Civil Service World, 2020; Deloitte, 2020a).

The construction sector is a large contributor to employment and the economy, and COVID-19 has significant implications for– government, owners, principals, contractors and the entire supply chain – that need to be dealt with commercially, respectfully and pragmatically (Hider et al., 2020). It is important to understand how the effects of COVID-19 may affect the procurement processes of government authorities and business organisations and position it to be resilient for future challenges (KPMG, 2020). While this global pandemic has created unprecedented challenges, it has also prompted government and industries around the world to develop more resilient approaches and leverage digital technologies to make more data-driven decisions.

8 CONCLUSION

Our community has increasing expectations of government and private industry to support sustainable products and practices. There is also great interest shown by industry to reduce waste and emissions, and improve social outcomes. Driven by industry's desire to modify behaviours that contribute to unsustainable practices, the SBEnc's Sustainable Procurement project is dedicated to examining key issues across the procurement life cycle and focusses on finding practical ways to improve environmental, social, and economic sustainability outcomes in the housing, building and infrastructure sectors in Australia. This report presents a review of literature on key issues around sustainable procurement practices including, the definition, benefits, policies and guidelines, barriers and drivers, assessments, stakeholder's role, and COVID-19 impact on sustainable procurement, nationally and internationally.

Although policies and guidelines have been developed to guide organisations' sustainable procurement practices, the implementation of the policies and guidelines remains problematic in practice. The complexity of identifying products and services that genuinely support sustainable development goals, while representing value-for-money presents a significant challenge to achieving the sustainable goals of organisations. Despite many efforts in measuring sustainability, most of them failed to consider an integrated approach taking into account of environmental, economic and social aspects. The previous research on sustainable procurement were clearly dominated by environmental dimension, while the social aspects are widely ignored. The shortage of quantitative procurement models concentrating on environmental and social responsibility was also noted. Sustainable procurement is a major change to industry practices that requires a shift in approach, priorities, and practices of all stakeholders involved. The successful transformation will require synergetic efforts from government, client organisations and other stakeholders. Covid-19 crisis has brought global economies to a standstill and has created unprecedented challenges too many sectors including housing, building and infrastructure, which highlights the critical need for right time, right place procurement decisions to be resilient and better positioned when the pandemic subsides. It is therefore critical to enhance the traceability and transparency of supply chain management and help to reinforce the path towards the UN's Sustainable Development Goals, setting new industry standards in sustainable practices.

This review has provided the foundation on which empirical study could further explore industry and government experiences of sustainable procurement. Case studies will be conducted in selected sustainability themes such as green concrete, recycled content (beyond concrete material), the Modern Slavery Act, regional participation, and marginalised groups.

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