



APPLYING PROCUREMENT PORTFOLIO MODELLING IN ORGANIZATIONAL SUSTAINABILITY STRATEGIES

An ESG-Weighted
Procurement Portfolio
Model (PPM) Approach

Sustainable Public Procurement Series

 **SourcingHaus**
Research | Insight | Solutions

CONTENTS

A Sustainability-weighted Procurement Portfolio Model (PPM) Approach	2
Introduction	Error! Bookmark not defined.
Sustainable Public Procurement (SPP).....	2
SPP Implementation Challenges	2
Introducing a Sustainability-weighted Procurement Portfolio Model (PPM).....	3
Procurement Portfolio Model (PPM) Approaches.....	4
PPM Critique and Transaction Cost Theory integration	Error! Bookmark not defined.
Step 1: A segmentation model for category-specific sustainability risk.....	6
Redefining category-specific sustainability risk.....	Error! Bookmark not defined.
A Sustainability-weighted Procurement Portfolio Model.....	Error! Bookmark not defined.
Step 2: Developing market and supplier engagement strategies.....	9
Strategic segment	10
Critical segment	10
Market leverage segment.....	10
Non-critical segment	10
Conclusion & next steps	Error! Bookmark not defined.
Bibliography.....	11
Annex 1: Scope of Sustainability (ESG) Indicators	15

www.sourcinghaus.com

SourcingHaus Research & Analytics delivers strategic sourcing and risk management analytics to industry-wide clients addressing global sourcing and supply chain challenges, leveraging innovative research-based methodologies, while applying a strategic sustainability lens.

The research agenda extends across sourcing risk management considerations, with a specific focus on extended global supply chains, globalization, offshore outsourcing, and climate change.

The research is informed by the UN Global Compact, Guiding Principles on Business and Human Rights, and aligned with the agenda for the 2030 Sustainable Development Goals (SDGs).

For further information contact: adminhaus@sourcinghaus.com

Copyright SourcingHaus, Inc. All rights reserved. No part of this work may be reproduced in any form without the written permission from the copyright holder.

A SUSTAINABILITY-WEIGHTED PROCUREMENT PORTFOLIO MODEL (PPM) APPROACH

By: Dr. Carsten Hansen

Abstract: This paper introduces a Sustainability-weighted Procurement Portfolio Model (PPM) applying a category-specific classification system for mapping and prioritizing sustainability exposure across procurement portfolios. The approach informs organizational sustainable procurement strategies, supplier due diligence reviews, and develops a framework for aligning sustainability integration across the procurement portfolio with corporate sustainability targets and strategies. The model is designed to accelerate sustainable public procurement implementation and position public procurement practitioners to strategically guide organizational efforts towards SDG 12.7.

Keywords: Sustainable Procurement, Transaction Cost Economics (TCE), Procurement Portfolio Models (PPM)

INTRODUCTION

As we approach the final decade in our quest to achieve the 2030 Sustainable Development Goals (SDGs), the importance of procurement has transformed from a cost management tool to a vital ally in advancing organizational sustainability, resilience, and innovation. Drawing on influential frameworks such as the UN Guiding Principles, the UN Global Compact, and the comprehensive SDG Agenda 2030, an increasing volume of national and international legislation is being enacted to propel net-zero objectives and encourage sustainable corporate sourcing practices. Consequently, sustainable procurement has evolved from a mere "nice-to-have" attribute to an indispensable "need-to-have" component, now viewed as a strategic prerequisite for attaining organizational goals. Given the significant role procurement plays in most organizational operations, it is essential to align organizational objectives with the integration of sustainability throughout the procurement function.

This paper presents the innovative Sustainability-weighted Procurement Portfolio Model (PPM), which employs a category-specific classification system to map and prioritize sustainability exposure within procurement portfolios. The methodology aims to guide organizations in crafting sustainable procurement strategies, conducting supplier due diligence assessments, and developing a framework to align the integration of sustainability across the procurement portfolio with organizational sustainability targets. The model is tailored to expedite the implementation of sustainable public procurement and empower public procurement practitioners to proactively work towards SDG 12.7.

Applicable to governments or sub-national entities, the sustainability-weighted model can be utilized to align with national sustainable development priorities and serve as a benchmark tool for SDG 12.7.1, which measures the number of countries implementing Sustainable Public Procurement (SPP) action plans. This approach aids countries in determining the high-priority categories to be incorporated into their action plans, for which they will establish specific sustainable procurement guidelines. Consequently, this model enhances the efficacy of sustainable procurement policies and contributes to the collective pursuit of a more sustainable future.

SUSTAINABLE PUBLIC PROCUREMENT (SPP)

Sustainable procurement (SP) is defined as a process in which organizations fulfill their requirements for goods, services, and utilities in a manner that maximizes value for money over the entire life cycle. This approach not only benefits the organization but also contributes positively to society and the

economy while minimizing environmental harm (UK Sustainable Procurement Task Force, 2006). Building on this concept, sustainable public procurement (SPP) encompasses the integration of broader social and environmental concerns into procurement practices conducted by governments, public sector entities, and international organizations (Brammer & Walker, 2011). SPP is intrinsically linked to the notion of sustainable development, which is founded on the simultaneous consideration of economic factors (economic growth, employment, innovation), environmental factors (climate change, water use, energy, waste), and social factors (basic rights, fair wages, accessibility, social inclusion). This holistic approach is also known as the triple bottom line (Elkington, 1998; Da Costa & Da Motta, 2019).

In accordance with the principles of SPP, various initiatives, such as the EU Public Procurement Directive (2014), the OECD Working Party on Leading Practitioners on Public Procurement (LPP), and the World Bank New Procurement Framework (2015), have broadened the understanding of value for money. Rather than focusing solely on the lowest price at the time of purchase, these frameworks emphasize the overall value for money throughout the life cycle of products and services. This includes considerations of total cost of ownership and quality factors to promote more environmentally and socially sustainable outcomes. In fact, the World Bank's Procurement Framework explicitly states that the primary objective of procurement is "to achieve value for money with integrity to deliver sustainable development."

By incorporating these expanded perspectives on value for money, SPP encourages organizations to make responsible choices that consider the long-term social, environmental, and economic impacts of their procurement decisions.

CHALLENGES IN SPP IMPLEMENTATION

Sustainable Public Procurement (SPP) is widely acknowledged as a potent catalyst for change; however, research on SPP implementation strategies and sustainable procurement practices in the public sector remains scarce (Walker & Brammer, 2009; Grandia & Meehan, 2017). Moreover, the existing SPP literature often exhibits an overly optimistic bias, portraying SPP as an almost certain win-win, whereas actual progress is typically less remarkable (Roman, 2017). Although awareness surrounding sustainable procurement and supply chains has grown, the integration of sustainability into practice is limited and often only implemented in a piecemeal manner, resulting in minimal impact at the category level (Da Ponte, Foley, & Cho, 2020).

One possible explanation for this is the multifaceted and complex nature of sustainable procurement, presenting numerous implementation barriers across legislative frameworks, organizational commitment, practitioner capabilities, and supply market readiness (Hansen, 2020). Given that procurement portfolios comprise a diverse range of categories, each with unique sustainability and category knowledge requirements, a methodological approach is needed to guide the development of sustainable procurement strategies and maximize the impact of sustainability initiatives.

A crucial aspect of implementing any form of strategic procurement is differentiating between category classifications and supplier relationships (Gelderman & Van Weele, 2005). Procurement portfolio models (PPMs) serve as a foundation for creating differentiated strategies for category segmentation (Zolkiewski & Turnbull, 2002). This paper examines the application of PPMs within the

context of sustainable procurement implementation, recognizing that PPM frameworks must be adapted to suit domain-specific content (Luzzini, Caniato, Ronchi, & Spina, 2012).

A SUSTAINABILITY-WEIGHTED PROCUREMENT PORTFOLIO MODEL (PPM)

This paper presents a two-step approach to developing a Sustainability-weighted Procurement Portfolio Model (PPM) for identifying and managing sustainability exposure in procurement portfolios. The model utilizes the portfolio design principles from Krajlic's portfolio model and incorporates segmentation thinking from PPMs into sustainable public procurement practices. The approach assists organizations in identifying procurement categories with the highest sustainability risk exposure, where interventions can yield the highest relative sustainability impact. The approach also supports the development of organization-specific sustainable procurement strategies and supplier due diligence reviews.

In public organizations, procurement is often perceived as a support function, while in the private sector, it has evolved into a more strategic function. This paper aims to further support the re-positioning of procurement as a strategic function in public organizations and guide a strategic application of sustainable public procurement to achieve goal 12.7 of the 2030 SDG Agenda.

This paper is structured as follows:

- Section 1 provides a literature review of Procurement Portfolio Models (PPMs) and integrates Transaction Cost Economics (TCE) as the underlying theory for developing procurement strategies based on sustainability risk.
- Section 2 redefines the concept of risk in the context of sustainability exposure and develops a segmentation model that reflects category-specific sustainability risk profiles.
- Section 3 adopts and operationalizes the PPM approach to develop distinctive strategies for supplier engagement, with the objective of informing market entry opportunities and optimizing purchasing power in the context of sustainability risk management and market transformation.
- Section 4 provides a conclusion on the utility of the model and proposals for further research.

In summary, this paper provides a valuable tool for organizations to manage sustainability risk in procurement portfolios, develop sustainable procurement strategies, and engage with suppliers to optimize purchasing power and transform markets towards sustainability.

PROCUREMENT PORTFOLIO MODEL (PPM) APPROACHES

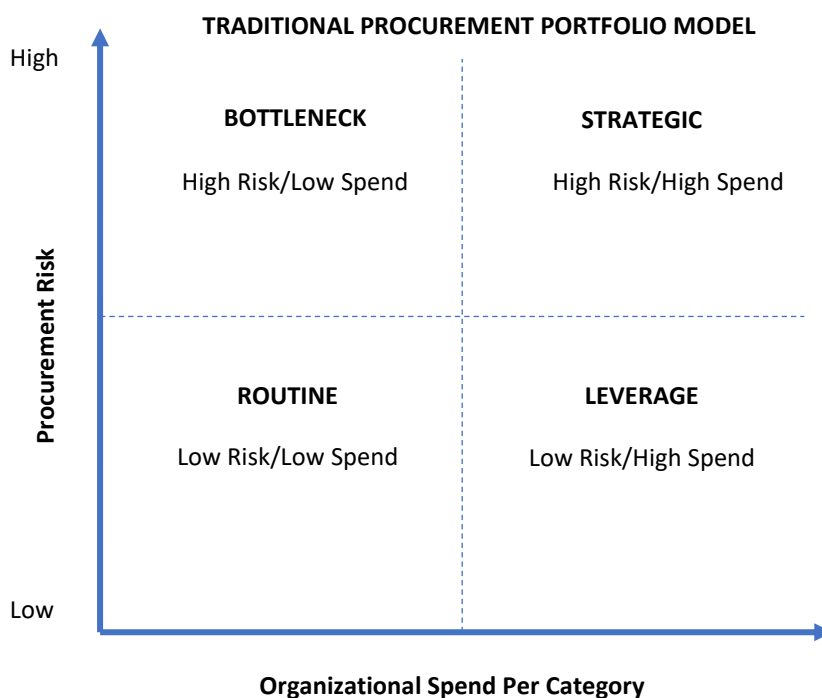
Portfolio theory, originally stemming from the realm of financial investment literature with a focus on managing equity investments (Markowitz, 1952) (Zolkiewski & Turnbull, 2002), has found applications across a diverse range of fields. Notably, it has been employed for account portfolio analysis and customer classification (Fiocca, 1982) and extended to supply chain functions for developing optimal replenishment policies (Martínez-De-Albéniz & Simchi-Levi, 2004), enhancing procurement decisions with value-at-risk measurements (Shi et al., 2011), managing price volatilities (Yuan Shi et al., 2016), and optimizing risk and profit considerations. In essence, portfolio theory facilitates the efficient allocation of resources among a variety of objects (such as securities, markets, products, projects, and suppliers) based on their respective risk levels and anticipated returns (Turnbull, 1989).

In the procurement sphere, portfolio models have been leveraged to classify the purchase of goods and services, thereby determining the most effective approach to managing procurement transactions. This entails identifying suitable suppliers, determining contractual forms, conducting supplier evaluations, and optimizing price, quality, and delivery factors (Monczka et al., 2008). Portfolio models generally aim to develop and implement tailored procurement strategies, serving as a valuable tool for creating classification frameworks that highlight products, suppliers, or relationships requiring heightened attention (Olsen & Ellram, 1997).

Kraljic (1983) pioneered a purchasing portfolio approach that classifies procurement categories based on their specific profit and supply risk profiles. This approach categorizes items as non-critical, bottleneck, leverage, or strategic, with each category necessitating a unique supplier management strategy to minimize supply chain risk and optimize purchasing power (Kraljic, 1983). Subsequent research has validated the utility of this portfolio approach for crafting effective procurement and supplier strategies, as well as empowering the procurement function to adopt a more strategic role within organizations (Gelderman & van Weele, 2002). Kraljic's (1983) portfolio approach has since become a benchmark for strategic planning in the procurement profession and is regarded as an indicator of organizational maturity (Gelderman & Van Weele, 2005).

Numerous adaptations of Kraljic's approach have been introduced, incorporating additional classification dimensions. Procurement portfolio models have been utilized with various classification dimensions, such as purchasing complexity and strategic importance (Olsen & Ellram, 1997), the degree of supplier control required (Stekelenborg et al., 1994), or achieving the optimal balance of supplier relationships during market engagement (Bensaou, 1999). Most recently, a procurement portfolio model (PPM) was employed to design a segmentation model for defense procurement (Ekström et al., 2021).

FIGURE 1: PROCUREMENT PORTFOLIO MODEL (PPM)



APPLICATION OF PORTFOLIO ANALYSIS IN SUSTAINABLE PROCUREMENT STRATEGIES

Portfolio analysis has been employed to support sustainable procurement strategies (Pagell, Wu, & Wasserman, 2010). Utilizing the Kraljic model, PPMs have been applied to incorporate green attributes in supplier selection (Garzon et al., 2019), as well as to prioritize risk management in sustainable supply chains (Rius-Sorolla et al., 2020).

ADDRESSING PPM CRITIQUE AND INTEGRATING TRANSACTION COST THEORY

Despite the widespread application of procurement portfolio models, they have been criticized for lacking a solid theoretical foundation (Gelderman and van Weele, 2005; Cox et al., 2015). Efforts to rectify this issue include integrating transaction cost economics (TCE) (Williamson, 2010) as a conceptual framework for PPM application (Luzzini et al., 2012). The TCE framework supports the connection between uncertainty and strategic procurement decisions, including in the context of sustainability risk. TCE proposes minimizing transaction costs and allocating resources according to the risk-reward balance characteristic of portfolio models. Consequently, organizations will concentrate resources and focus on high-risk portfolio segments, adopting a strategic approach when procurement risk and spend are substantial. Furthermore, TCE readily adapts to using procurement categories as units of analysis since the category itself represents the object of buyer-supplier transactions (Luzzini et al., 2012).

Sustainability risk and uncertainty are closely associated with the concept of bounded rationality employed in TCE, suggesting that procurement organizations make rational business decisions but possess limited information about the actual risks tied to specific categories (Luzzini et al., 2012). This notion directly connects to supply chain transparency and the challenge of monitoring sustainability considerations across multi-tier suppliers in various geographical locations. By integrating TCE concepts into PPM strategic decision-making logic, the model's credibility is bolstered, and supply chain visibility and sustainability risk are conceptually elevated within PPM decision strategies.

PPM approaches have also been criticized for the generic nature of their strategic recommendations, offering only high-level guidance for optimal supplier strategies (Gelderman & van Weele, 2002). Others argue that the two-dimensional model is overly simplistic and static, not allowing for dynamic decision-making (Hesping, 2016). In response, recent research on PPM application in defense supply chains contends that PPMs can be both prescriptive and stimulate in-depth discussions at the practitioner level, while models exceeding four segments would become too complex for practical use (Ekström et al., 2021).

The literature review suggests that PPMs remain effective and practical tools for category differentiation and developing procurement strategies. Additionally, the portfolio model approach serves as a powerful instrument for communicating procurement strategy designs to executive management. Building on this foundation, the paper proposes the creation of a modified sustainable procurement portfolio model to manage sustainability risk and develops a set of propositions for sustainable procurement strategies to enhance sustainable public procurement (SPP). This model is presented in a two-step process: first, by developing a segmentation model reflecting category-specific sustainability risk profiles, and second, by crafting segment-based procurement strategies and providing guidance for management decisions.

STEP 1: DEVELOPING A SEGMENTATION MODEL FOR CATEGORY-SPECIFIC SUSTAINABILITY RISK

The first step in developing a segmentation model involves defining procurement categories and assigning weights to each category based on risk exposure.

REDEFINING CATEGORY-SPECIFIC SUSTAINABILITY RISK

The SDG 2030 Agenda emphasizes the need to redefine risk in procurement management and integrate sustainability concepts into organizational procurement strategies. This can be achieved by modifying traditional supply risk factors into a sustainability-focused procurement risk framework. As procurement categories (e.g., vehicles, construction, ICT, stationary) have varying degrees of sustainability exposure, a category-based risk determination is essential. By applying a category-specific risk classification, organizations can differentiate categories based on individual sustainability risk profiles and develop tailored guidelines for each category. A segmentation model reflecting category-specific sustainability risk profiles is then developed by redefining procurement risk definitions applied against each procurement category.

SUSTAINABILITY RISK RATING SCOPE & METHODOLOGY

Determining appropriate sustainability risk indicators and associated category-specific risk ratings can be subjective. Procurement organizations must agree on the relative importance of each factor (Olsen & Ellram, 1997). For this paper, the category-specific sustainability risk rating is determined across a series of sustainability indicators, encompassing a broad scope of Environmental, Social, and Governance (ESG) related factors (Table 1).

SCOPE OF SUSTAINABILITY RATING

The sustainability indicators are based on UN standards for defining sustainability risks relevant for organizational procurement activities (See full scope of sub-indicators in Annex 1).

The procurement categories are defined as per the UNSPSC coding system but can be converted to any applied category coding system. The model applies ratings at the H2 category level, which is in line with current spend analysis practices. The model currently rates approximately 100 commonly used H2 level categories.

DEPTH OF SUSTAINABILITY RATING

The depth of the category sustainability risk analysis is defined by an A-Z life cycle of the product or service, from raw material extraction to final disposal. The rating considers life cycle impacts across environmental indicators using a hot spot approach. Scientific knowledge from life cycle analysis databases is integrated into the category ratings.

Sustainable procurement risk associated with a procurement action can be determined as the combination of the likelihood that a certain sustainability risk may materialize and the consequences or materiality of the sustainability risk event to the organization. Some risk events may have direct financial implications, while others may carry reputational consequences. A common risk rating matrix is applied to determine the Likelihood of sustainability risk, ranging from Rare to Almost Certain, and Consequence, ranging from Insignificant to Critical (See Table 3 below). The scoring ranges from 1-4, with (1) Low Risk, (2) Medium Low Risk, (3) Medium High Risk, and (4) High Risk.

TABLE 3: RISK RATING SCALE

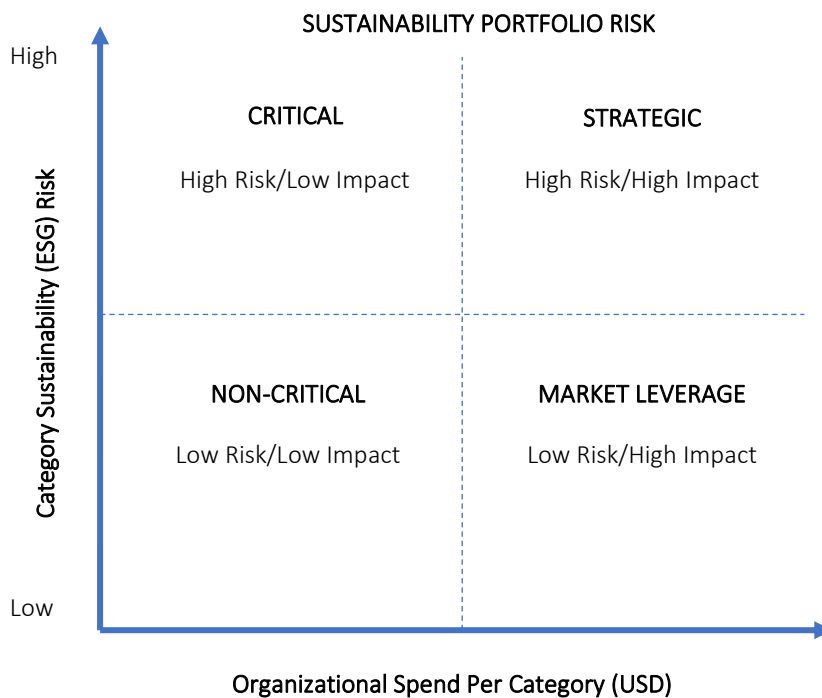
		Consequence				
		Insignificant	Minor	Moderate	Major	Critical
Likelihood	Rare	1	1	1	2	3
	Unlikely	1	1	2	2	3
	Possible	1	2	2	3	3
	Likely	2	2	3	3	4
	Almost Certain	2	2	3	4	4

A SUSTAINABILITY-WEIGHTED PROCUREMENT PORTFOLIO MODEL

By plotting relative expenditure against ESG risk for each category, an organization can map the goods, services, and works categories that represent specific sustainability exposures. As expenditure distribution in the portfolio will differ, the model allows for a unique mapping process, informing prioritization of sustainability efforts within each organization.

The modified Sustainability-weighted Procurement Portfolio Model enables a sustainability risk classification across any organizational procurement portfolio. The dynamic classification system allows for various representations of sustainability exposures requiring specific attention by the procurement organization.

FIGURE 2: SUSTAINABILITY RISK PROCUREMENT PORTFOLIO MODEL (PPM)



The modified Sustainability-weighted Procurement Portfolio Model allows for a sustainability risk classification across any organizational procurement portfolio. The dynamic classification system

further allows for various representations of sustainability exposures, which may require specific attention by the procurement organization. In Figure 3-5, the model is applied against an organizational User Case. In Figure 3, the model presents the segmentation of aggregated sustainability risk across the *sustainability indicators*, capturing all associated risk at equal weighting. This visualization represents a footprint of an organization’s overall procurement portfolio sustainability exposure points.

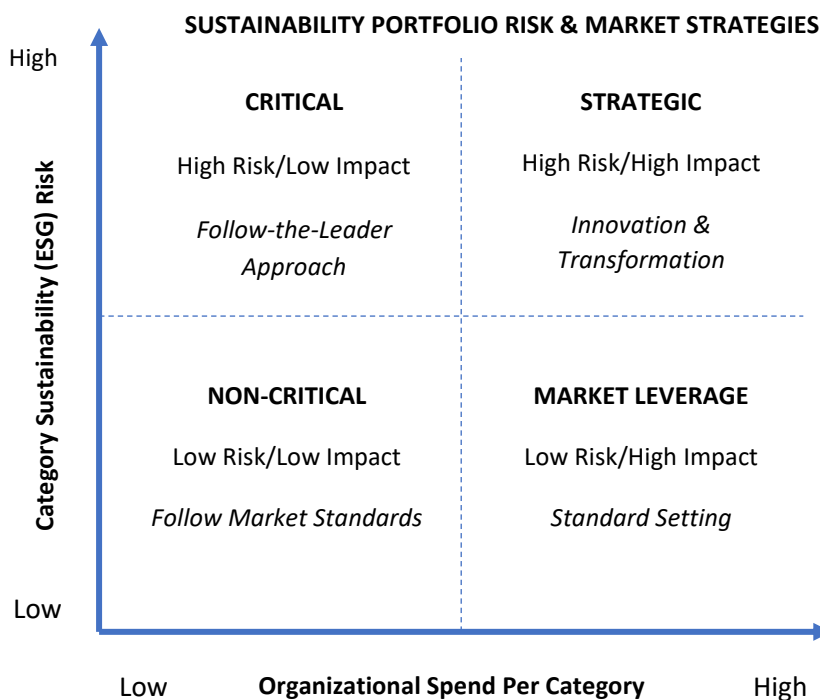
The model also can be applied for various deep dives into specific risk indicators and sub-indicators. For example, the model can capture the category risk ratings across the *Environmental sustainability indicators* only, meaning exposure to (Hazardous Products, Climate Change, Resource Use, Biodiversity & Habitats). Or the model can capture the category risk ratings across the *Labor Rights* indicator only, meaning exposure to sub-indicators on Forced Labor, Child/Youth Labor risk, Working Conditions, and Health & Safety issues.

STEP 2: DEVELOPING MARKET AND SUPPLIER ENGAGEMENT STRATEGIES

The category-level sustainability rating framework developed in Step 1, allows for a sustainability risk mapping across any organizational procurement portfolio. By further adopting and modifying the (Kraljic, 1983) approach of distinguished categories as either non-critical, bottleneck (critical), leverage, and strategic items, it is possible to *develop distinctive strategies for supplier engagement* with the objective of informing market entry opportunities and optimize purchasing power.

The approach allows for developing subsequent risk-informed sustainable procurement strategies, based on organization-specific sustainability exposure in the procurement portfolio, for optimal prioritization and resource allocation. The model proposes four distinct market approaches based on the segmentation of categories in Step 1.

FIGURE 3: SUSTAINABILITY RISK PROCUREMENT PORTFOLIO MODEL (PPM)



STRATEGIC SEGMENT: The segment of High Risk/High Impact categories represent the highest exposure of sustainability risk for the organization, capturing types of procurement activities which are likely to manifest themselves in the supply chain, and with significant consequences. The segment also represents the procurement activities where the organization is most invested, which is both a liability and a strategic opportunity for influencing change in the marketplace.

- In this space the organization would seek to manage sustainability risk through instigating *market innovation and transformation* to reduce risk exposure.

CRITICAL SEGMENT: The segment of High Risk/Low Impact categories also represent significant sustainability risk to the organization, but without the spend volume to influence the market. The segment is critical as even minor volumes of spend with any suppliers associated with ESG violations can have detrimental implications for the organization in terms of reputational damage and liabilities.

- In this situation the preferred strategy for the organization may be to pursue a *Follow-the-Leader Approach*, identifying market sustainability leaders and follow their lead. The organization may also consider combining procurement volume with other organizations to build more leverage to influence the sector.

MARKET LEVERAGE SEGMENT: The segment of Low Risk/High Impact categories represent procurement activities that do not constitute a major sustainability exposure for the organization, however in which the organization wields potential influence due to market share.

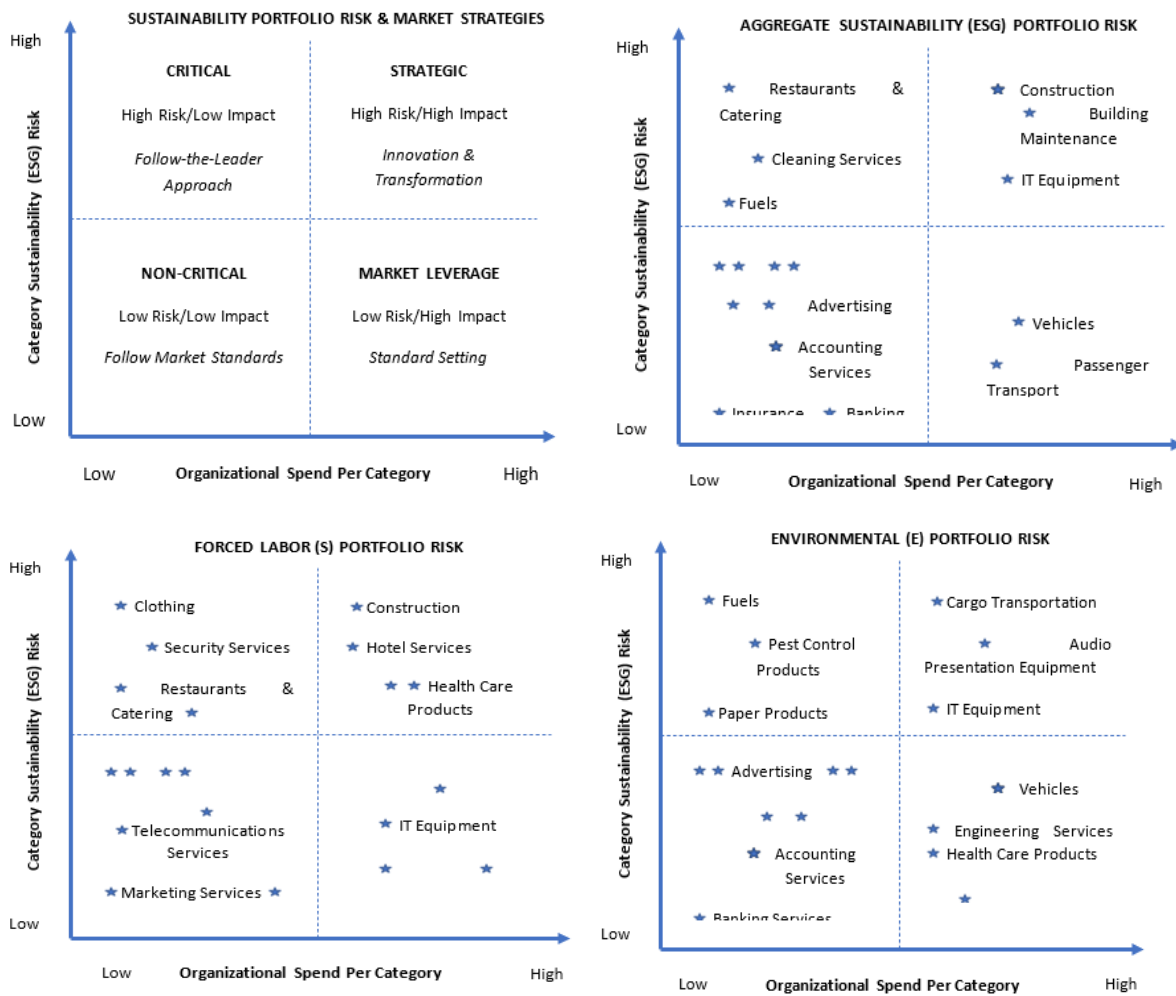
- In this field the organization can *“raise the bar” and set higher standards* for the sector. Through a gradual increase in the sustainability requirements the organization can systematically develop a demand for products/services with, for example, higher recyclable content, less emissions, higher degree of traceability etc.

NON-CRITICAL SEGMENT: The segment of Low Risk/Low Impact categories represents procurement activities that constitutes only a minor sustainability exposure for the organization and limited spend volume.

- In line with traditional procurement strategy practice, the objective would be to reduce the transaction cost of applying sustainability measures. This can be achieved by *following market standards* already established, including use of eco-labels and social responsibility certifications.

The dynamic classification system further allows for various representations of sustainability exposures and deep dives into specific risk indicators and sub-indicators, and subsequent strategies.

FIGURE 4: SUSTAINABILITY RISK PROCUREMENT PORTFOLIO MODEL (PPM)



CONCLUSION & NEXT STEPS

This paper has introduced a Sustainability-weighted Procurement Portfolio Model (PPM) based on category-specific classification systems, inspired by Kraljic's Matrix (Kraljic, 1983) and building on the works of Gelderman and van Weele (2005). The model effectively maps and prioritizes sustainability exposure in procurement portfolios, enabling organizations to align their procurement strategies with the UN's Sustainable Development Goals (UN, 2015).

The model aims to establish sustainability risk visibility within organizational procurement portfolios, allowing for the development of differentiated procurement strategies to optimize sustainability outcomes. By incorporating the Environmental, Social, and Governance (ESG) factors (Eccles et al., 2014), the model can be used independently to determine specific sustainability exposure or in combination with traditional procurement risk as an integrated component of portfolio risk management.

Applying the Sustainability-weighted PPM can help procurement organizations prioritize their sustainability efforts towards high-impact areas, identify categories with high risk and exposure, and develop tailored procurement strategies to address these challenges. This approach aligns with the

growing importance of sustainable supply chain management (Seuring & Müller, 2008) and contributes to a more sustainable and responsible supply chain.

Moving forward, future research and operationalization of the model could focus on:

- Improving the quality of category risk ratings: Enhance the quality and address subjectivity in ESG ratings through a consistent and quality-assured review protocol. Explore opportunities for automating the category scoring mechanism, leveraging expert reviews, and integrating life cycle databases information or knowledge into the ratings.
- Enhancing the agility of the methodology: Develop agile risk ratings that can be modified based on an organization's risk appetite and materiality exposure. Incorporate dynamic factors related to capacity building and market maturity to move categories and/or suppliers between different portfolio segments. Implement real-time risk alerts on changing category risk exposures to continuously re-index risk factors.
- Expanding the portfolio of market engagement strategies: Strengthen the model's management utility by conducting further research on market engagement strategies and best practices for market transformation and innovation uptake, such as eco-technologies and social innovation models.
- Implementing governance mechanisms: Establish robust mechanisms for channeling specialized inputs into the rating process to enhance the credibility of category ratings. Given the wide scope of categories and the subsequent specialization needed, consider an open-source or wiki model to mobilize inputs and expertise from a broad range of stakeholders and knowledge sources.

By addressing these areas, the Sustainability-weighted PPM can become an invaluable tool for procurement organizations to effectively manage and prioritize their sustainability efforts, fostering a more responsible and sustainable supply chain for the future.

BIBLIOGRAPHY

- Bensaou, M. (1999). Portfolios of Buyer-Supplier Relationships. *Sloan Management Review*, 40(4), 35–44.
- Brammer, S., & Walker, H. (2011). Sustainable procurement in the public sector: An international comparative study. *International Journal of Operations and Production Management*, 31(4), 452–476. <https://doi.org/10.1108/01443571111119551>
- Cox, J. C., Sadiraj, V., & Schmidt, U. (2015). Paradoxes and mechanisms for choice under risk. *Experimental Economics*, 18(2), 215–250. <https://doi.org/10.1007/s10683-014-9398-8>
- Da Costa, B. B. F., & Da Motta, A. L. T. S. (2019). Key factors hindering sustainable procurement in the Brazilian Public sector: A Delphi study. *International Journal of Sustainable Development and Planning*, 14(2), 152–171. <https://doi.org/10.2495/SDP-V14-N2-152-171>
- Da Ponte, M., Foley, M., & Cho, C. H. (2020). Assessing the degree of sustainability integration in Canadian public sector procurement. *Sustainability (Switzerland)*, 12(14), 1–19. <https://doi.org/10.3390/su12145550>
- Ekström, T., Hilletoft, P., & Skoglund, P. (2021). Towards a purchasing portfolio model for defence procurement – A Delphi study of Swedish defence authorities. *International Journal of Production Economics*, 233(February 2020). <https://doi.org/10.1016/j.ijpe.2020.107996>

- Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management*, 8(1), 37–51. <https://doi.org/10.1002/tqem.3310080106>
- Fiocca, R. (1982). Account portfolio analysis for strategy development. *Industrial Marketing Management*, 11(1), 53–62. [https://doi.org/10.1016/0019-8501\(82\)90034-7](https://doi.org/10.1016/0019-8501(82)90034-7)
- Garzon, F. S., Enjolras, M., Camargo, M., & Morel, L. (2019). A green procurement methodology based on Kraljic Matrix for supplier`s evaluation and selection: a case study from the chemical sector. *Supply Chain Forum*, 20(3), 185–201. <https://doi.org/10.1080/16258312.2019.1622446>
- Gelderman, C. J., & van Weele, A. J. (2002). Strategic direction through purchasing portfolio management: A case study. *Journal of Supply Chain Management*, 38(1), 30–37. <https://doi.org/10.1111/j.1745-493X.2002.tb00127.x>
- Gelderman, C. J., & Van Weele, A. J. (2005). Purchasing portfolio models: A critique and update. *Journal of Supply Chain Management*, 41(3), 19–27. <https://doi.org/10.1111/j.1055-6001.2005.04103003.x>
- Grandia, J., & Meehan, J. (2017). Public procurement as a policy tool: using procurement to reach desired outcomes in society. *International Journal of Public Sector Management*, 30(4), 302–309. <https://doi.org/10.1108/IJPSM-03-2017-0066>
- Hansen, C. (2020). *Waking the Trillion-Dollar Giant - Sustainable Public Procurement (SPP) and the 2030 SDG Agenda*. Retrieved from <https://www.greengrowthknowledge.org/research/waking-trillion-dollar-giant-sustainable-public-procurement-and-2030-sdg-agenda>
- Hesping, F. (2016). Matching tactical sourcing levers with the Kraljič matrix: Empirical evidence on purchasing portfolios. *International Journal of Production Economics*, 177, 101–117.
- Kraljic, P. (1983). Purchasing Must Become Supply Management. *Harvard Business Review*, (September-October), 109–117. <https://doi.org/10.1225/83509>
- Luzzini, D., Caniato, F., Ronchi, S., & Spina, G. (2012). A transaction costs approach to purchasing portfolio management. *International Journal of Operations and Production Management*, 32(9), 1015–1042. <https://doi.org/10.1108/01443571211265684>
- Martínez-De-Albéniz, V., & Simchi-Levi, D. (2004). A portfolio approach to procurement contracts. *Manufacturing and Service Operations Management*, 6(1), 109–112.
- Monczka et al. (2008). *Purchasing and Supply Chain Management* (Fourth (4t)).
- Olsen, R. F., & Ellram, L. M. (1997). A portfolio approach to supplier relationships. *Industrial Marketing Management*, 26(2), 101–113. [https://doi.org/10.1016/S0019-8501\(96\)00089-2](https://doi.org/10.1016/S0019-8501(96)00089-2)
- Pagell, M., Wu, Z., & Wasserman, M. E. (2010). Thinking differently about purchasing portfolios: An assessment of sustainable sourcing. *Journal of Supply Chain Management*, 46(1), 57–73. <https://doi.org/10.1111/j.1745-493X.2009.03186.x>
- Rius-Sorolla, G., Estelles-Miguel, S., & Rueda-Armengot, C. (2020). Multivariable supplier segmentation in sustainable supply chain management. *Sustainability (Switzerland)*, 12(11). <https://doi.org/10.3390/su12114556>
- Roman, A. V. (2017). Institutionalizing sustainability: A structural equation model of sustainable procurement in US public agencies. *Journal of Cleaner Production*, 143(February), 1048–1059. <https://doi.org/10.1016/j.jclepro.2016.12.014>

- Shi, Y., Wu, F., Chu, L. K., Sculli, D., & Xu, Y. H. (2011). A portfolio approach to managing procurement risk using multi-stage stochastic programming. *Journal of the Operational Research Society*, 62(11), 1958–1970. <https://doi.org/10.1057/jors.2010.149>
- Shi, Yuan, Qu, T., & Chu, L. K. (2016). A dynamic Stackelberg game model for portfolio procurement. *Industrial Management and Data Systems*, 116(3), 350–368. <https://doi.org/10.1108/IMDS-06-2015-0250>
- Stekelenborg, van, R. H. A., & Kornelius, L. (1994). A diversified approach towards purchasing and supply : evaluation of production management methods. *Proceedings of the Evaluation of Production Management Methods : IFIP WG 5.7 Working Conference*, 307–317.
- UK Sustainable Procurement Task Force. (2006). Securing the future. In *Print and Paper Monthly* (Vol. 18).
- Walker, H., & Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector. *Supply Chain Management*, 14(2), 128–137. <https://doi.org/10.1108/13598540910941993>
- Williamson, O. E. (2010). Transaction Cost Economics: The Origins. *Journal of Retailing*, 86(3), 215–226. <https://doi.org/10.1016/j.jretai.2010.07.005>
- Zolkiewski, J., & Turnbull, P. (2002). Relationship portfolios-past, present and future. *Relationship Portfolios - Past Present and Future*, 289–304.

ANNEX 1: SCOPE OF SUSTAINABILITY (ESG) INDICATORS

ENVIRONMENTAL INDICATORS:	
Potential for Environmental Mismanagement:	
Hazardous products:	
	Effluents reaching water bodies including ground water
	Air emissions generated from operations
	Usage, storage, movement, disposal of hazardous materials/chemicals
Climate change:	
	Level of CO2 gas emissions throughout the life cycle
	Emissions levels of gazes with high life cycle global warming potential
Resource use:	
	Potential waste generated
	Potential high level of finite materials uses throughout the life cycle
	Use of water
	Use of land
Biodiversity and natural habitats:	
	Use of land
	Impacts on biodiversity
	Impacts on forests
	Impacts on other natural habitats
SOCIAL RESPONSIBILITY INDICATORS:	
Potential Indigenous Peoples Rights Issues:	
Indigenous Peoples Rights:	
	Risks of violating indigenous people’s rights (e.g., land grabbing)
Potential Labor Rights Issues:	
Forced Labor Risk:	
	Risk of working practices that include abuse of vulnerability, deception, restriction of movement, isolation, intimidation and threats, retention of identity documents, withholding of wages, debt bondage, abusive working and living conditions, or excessive overtime.
Child/Youth Labor risk:	
	Risk of work that deprives children of their childhood, their potential, and their dignity, and that is harmful to physical and mental development.
Working Conditions related risks:	
	Risk of working conditions in supply chains which is not in accordance with national regulations, or minimum international standards.
Health & Safety Risks:	
	Risk of health and safety violations in the production/delivery of services.
Gender Rights and Discrimination Issues:	
Potential Discrimination Risks:	
	Unequal treatment and contracting terms for women
	Unequal treatment and contracting terms for different religion

	Unequal treatment and contracting terms for LGBTQ+
	Unequal treatment and contracting terms based on race
Sexual Harassment and Exploitation Risks:	
	Sexual harassment and exploitation risk
Product/Service Implications for Social Health and Well-being (Societal) Issues:	
Privacy:	
	Potential data privacy risk
Product Development, Advertising, and Use:	
	Potential risks concerning product quality assurance/service testing
	Potential risks related to Intellectual Property (IP)
	Potential unlawful or harmful use of product/service
ECONOMICS:	
Market Structure:	
	Risk of SME exclusion in the market structure
Supply Chain:	
	Risk of low transparency in complex global supply chains
GOVERNANCE:	
Corruption:	
	Potential category-specific corruption risks



[www. sourcinghaus.com](http://www.sourcinghaus.com)

SourcingHaus Research & Analytics delivers strategic sourcing and risk management analytics to industry-wide clients addressing global sourcing and supply chain challenges, leveraging innovative research-based methodologies, while applying a strategic sustainability lens.

The research agenda extends across sourcing risk management considerations, with a specific focus on extended global supply chains, globalization, offshore outsourcing, and climate change.

The research is informed by the UN Global Compact, Guiding Principles on Business and Human Rights, and aligned with the agenda for the 2030 Sustainable Development Goals (SDGs).

For further information contact: adminhaus@sourcinghaus.com