Future of Green Public Procurement

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Abstract This chapter focuses on identifying future trends in the development of green public procurement. It examines phenomena such as strategic public procurement, artificial intelligence, the Donald Trump era, and more. The chapter was developed through brainstorming. The authors are a mix of established scholars, emerging scholars, and practitioners.

Keywords green public procurement, future, strategy, artificial intelligence, politics

The preceding country chapters have examined the evolution, challenges, and implementation of GPP across diverse national contexts. Many of them already gesture toward the future of GPP, offering insights that, together with the previous chapter, help synthesize a shared trajectory. Over the past decades, GPP has steadily expanded—albeit at varying speeds in different countries. This pace of adoption may continue or slow, but there is little to suggest a global reversal. Building on this momentum, this final chapter looks forward, asking what the future might hold for GPP as a tool for advancing sustainability and driving policy innovation. This chapter is the result of a collaborative exercise. The views expressed herein are collectively presented and should not be attributed in full to any individual author.

Green public procurement in VUCA world

The acronym VUCA characterizes today's world with the words volatility, uncertainty, complexity, and ambiguity. External shocks are coming in quick succession. The COVID-19 pandemic was followed by the war in Ukraine and the energy crisis. In politics, we are seeing a major comeback of charismatic leaders, a shift toward illiberal forms of government and nationalism. In a more populist, nationalist and authoritarian future, some states may internally agree on public interest goals that diverge from this global status quo. For example, a state may adopt the goal of a garbage-free environment within its borders only or seek to accelerate climate change. In response to diverging public interest goals, multiple scenarios seem likely.

- Transformation scenario: Eventually, all states will modify their goals because they cannot be achieved locally, such as slowing global warming. Globally, green public procurement will pursue different goals than it did in 2025.
- Preservation scenario: Some states will stick to the status quo goals, while others will diverge from them. The status quo states will use more demand-side instruments such as green public procurement, because demand-side instruments do not disadvantage locally producing firms compared to firms that produce in less regulated foreign sites.
- Competition scenario: Over time, states become more strongly committed to their distinctive goals due to ideological competition. Stronger commitment will lead to new forms of green public procurement, such as long-term contracts coupled with cheap grants for local investments by firms.

Environmental goals will evolve along with how states conceive of the public interest in a more populist, nationalist, and authoritarian future. In any scenario, justifications for doing green public procurement will likely shift from ‘doing the right thing’ to ‘doing’ industrial policy. Public procurement has always been perceived as neutral, and the market imperative of free competition seemed untouchable. This calls for future research on how public authorities and firms renegotiate environmental goals, and on how green public procurement interacts with other industrial policy tools. Public procurement is now part not only industrial policy, but also security policy. Proximity to politics can bring significant advantages, such as simplifying the procurement process and giving greater discretion to public procurers. On the other hand, however, this raises new demands for transparency and accountability.

The evolution of GPP and the overall maturity of public procurement systems often go hand in hand. When GPP appears to lose prominence for the reasons outlined earlier, public procurement itself is also weakened. This is not only because it risks

losing its strategic dimension when the environmental component is missing, but also because such scenarios tend to undermine fundamental values such as competition, transparency, and value for money — the very foundations upon which the future expansion of GPP can be built.

It is all about strategy?

Strategic procurement is a policy tool that holds out some promise in utilizing government contracting to attain or influence objectives other than simply the purchase of a good or service. Such efforts can involve, for example, minority hiring preferences, regional or specific location-based production requirements, and many other laudable goals. This is very much the case with GPP efforts which aim to ensure that government purchasing and contracting activity promotes goals such as sustainability or the circular economy. But, like any other tool, in itself such procurement is not a magic bullet or a one-size-fits-all approach and must be carefully designed and managed if such goals as regional development or climate change adaptation are to be achieved using these methods. Many of the chapters in this book have highlighted these limitations and the difficulties associated with strategic procurement of all kinds and GPP in particular. It has been noted, for example, that indicators of effectiveness are often lacking or incomplete, and that evaluation of results and public value from these efforts may be incomplete or misleading. One area for future research raised by these studies, however, involves the layering of different strategies on top of each other when, for example, a minority hiring or regional locational strategy is built into or onto a green procurement effort, or vice versa. In such arrangements there are many possibilities for conflicts in objectives, or, overall, for the procurement regime to become ossified and rule bound. This latter situation in particular requires more examination as it can, for example, lead to significant problems in contracting where firms fail to bid on contracts due to the complexity of procurement processes, as has often been the case for IT contracts for governments, which tend to be dominated by large multinationals, or where the growth in rules and regulations leads to the creation of contract bid specialists who then sub-contract work to the actual good or service provider while retaining a significant part of the bid price for their 'overhead' or management work. The growth of such firms can easily defeat the otherwise noble goals that might have underpinned each of the strategic initiatives individually and bring the entire procurement system into disrepute.

The future is now

The future of green public procurement (GPP), or sustainable public procurement, is poised for transformation through the integration of artificial intelligence (AI) and advanced digital technologies. AI is not a singular technology but a broad set of computational techniques — from statistical classifiers and optimization models to large language models (LLMs) and image recognition systems. These systems differ widely in energy use, functionality, and institutional implications, making it essential to be specific when discussing their application. This contribution focuses on a subset of language-based AI tools already in use in public procurement — particularly LLMs and natural language processing (NLP) systems — and their role across the procurement lifecycle.

This transition is particularly promising because embedding sustainability criteria into procurement processes has long required the collection and analysis of complex, data-driven information—ranging from carbon footprints to ethical sourcing certifications—alongside traditional criteria such as cost and quality. AI, including large language models and machine learning, can automate these processes,

dramatically improving the accuracy and efficiency of sustainability assessments. For example, AI-powered tools can scan procurement documents, identify and flag sustainability requirements, and evaluate supplier compliance with environmental and social standards, all at a scale and speed unattainable by manual review.

As governments and public agencies increasingly recognize that procurement decisions account for the vast majority of their carbon emissions and social equity impacts, AI's role becomes even more critical. By automating data collection, spend classification, and supplier evaluation, AI can surface actionable insights, uncover hidden sustainability risks, and recommend greener alternatives in real time. Furthermore, AI can enhance transparency and accountability by maintaining detailed logs of procurement decisions and monitoring supplier adherence to sustainability commitments throughout the supply chain. These capabilities not only reduce administrative burdens and accelerate procurement cycles but also enable agencies to make more informed, equitable, and impactful purchasing decisions.

While attention is often focused on the innovation frontier, the real challenge comes from adoption. As the science fiction writer William Gibson observed, "the future is already here — it's just not evenly distributed." Much of what is branded as 'AI transformation' in procurement involves the uneven diffusion of relatively normal technologies (search, classification, matching), and their integration into fragmented institutional settings. Three recent examples illustrate how AI is already influencing public procurement throughout the procurement lifecycle. In the pre-procurement phase, the Open Contracting Partnership's "Green Cure" tool uses LLMs to identify whether sustainability criteria appear in real-world tender notices — helping procurement officers assess readiness and compliance with green standards. In the procurement phase, Finland's central procurement agency Hansel Ltd has piloted AI tools that support bid evaluation by flagging inconsistencies, checking eligibility, and pre-scoring proposals against defined value criteria, including environmental weighting. Finally, in monitoring and evaluation, the Chancery Lane Project's clause detection model applies NLP to identify the presence of climate-aligned legal language in signed contracts, offering a scalable approach to compliance tracking and impact measurement. These tools are not yet fully tested, widely adopted or standardised. Rather than a seamless transformation, AI's impact on Green Public Procurement will likely be a patchwork of promising tools, shaped by data availability, institutional capacity, and legal interoperability. The future of AI in green public procurement will likely be shaped more by the practice of integration, standards, and scale, rather than breakthroughs at the technological frontier.

However, the widespread adoption of AI in GPP is not without challenges. Barriers such as limited political support, resource constraints, and the need for organizational change remain significant. Nevertheless, as pilot projects and early implementations demonstrate the value of AI-driven procurement for both efficiency and sustainability outcomes, momentum is building. Looking ahead, the synergy between AI and GPP promises to deliver more sustainable, inclusive, and resilient public services—provided that public agencies invest in the right technologies and governance frameworks to harness AI's full potential.

Trapped in the lowest price

Despite the increasing interest in green and sustainable public procurement among scholars and practitioners, the lowest-price tendering method still seems to dominate as the primary approach for selecting suppliers. For example, despite efforts at harmonization within the European Union, we can see significant differences in the use of the lowest-price criterion. There is almost a division between East and West.

In other words, Central and Eastern European countries use the lowest-price criterion excessively. The use of the lowest-price criterion may not be the cause, but merely a symptom of the reluctance to move from a formalized public procurement system to relationship contracting. Despite all its shortcomings, the formalized method of public procurement provides bureaucrats with a greater degree of certainty and protection against risk. This is a complex problem in which cultural factors, such as a zero-error culture or path dependency, can play a surprisingly important role.

As highlighted throughout this book and in previous research, the adoption of sustainable practices is uneven across and within countries, reflecting deep-seated institutional inertia, a lack of consistent frameworks for integrating environmental criteria, and many other challenges in policy adoption and implementation that agencies continue to face. In particular, monitoring and evaluating their impact remains a significant hurdle, making buy-in for these policies difficult. Realizing the transformative promise of GPP will require a more coordinated effort among scholars and universities, procurement agencies, regulators, and professional bodies.

Green Procurement for Circularity

Circular production across sectors has been on the forefront of social attention to combat environmental and natural resource degradation. The concept of circularity has become a slogan. Commitments for a "circular transition" are manifested by producers who keep setting, then repealing, timeframe goals, with numerous displays of support from global governance bodies that operate under the scope of the United Nations Sustainable Development Goals. Yet, the reality is that with all that political showmanship, a negligible part of industrial product is actually part of circular operations management. In the two sectors most often discussed in circular transitions – plastics and apparel – less than 6% of plastics are ever recycled. Less than 1% of apparel is recycled, despite strong ongoing efforts to incentivize recycling.

The reason is that much of the goods on the market cannot be recycled. Innovators that are trying to change that reality struggle to enter the market and compete with the dominant players whose products are much cheaper. This is one reality that green procurement can change. The change can come when governments are pioneering laws that are moving past incentivizing recycling behavior at the consumer level by collecting and sorting waste, and instead legally demand that this waste is recycled into circular products. This has been the goal, but it has not materialized because the market for recycled goods lacks one major consumer – the government.

There has been little commitment in public procurement to source from suppliers that provide products manufactured from recycled inputs. The new Extended Producer Responsibility (ESG) laws that are to be implemented in the European Union can be the harbinger of this much needed change with one key new legal provision. They will require procurement managers to choose recyclable product and provide documentation showing that the goods are also recycled at the end of use.

So far, such dynamics have been voluntary, with government procurement transparency mechanisms for participation in such forms of green procurement policies being delegated from federal directives toward local government implementation. There the system breaks down, as local budgets dictate lowest-price procurement policies because of the general culture of devolution in local government finance. Devolution is the dynamic of having local governments be

primarily responsible for raising most of their own revenue. Even with federal funding, the goal is to keep local government as independent from federal funding as much as possible, under the assumption that this independence, i.e., "devolution," would result in "decentralization," which is the lowering the political control of federal governments and raising the independence of local politicians. The logic is that this system of incentives would create a culture of political representation, increase responsiveness to local needs, and thus ensure democracy.

It may have worked in general, but not when it comes to incentivizing voluntary green procurement. In green procurement, tight budgets, higher social cost expenditures, growing demand for the amount and variety of public goods keep government contracting dynamics based on favoring lowest price contracting bids. Those bids exclude the recyclable/recycling product vendors because their goods carry environmental premiums. Few local governments would willingly legislate the mandate of paying for environmental premiums instead of choosing the lowest-cost supplier.

The future of green procurement must change that culture. That is why the ESG EU "schemes," the legal term used to describe this type of legislation, is transformational. They would change incentives in procurement toward mandating green purchasing. Mandating is key. It does challenge the legacy of decentralization and devolution, but it exemplifies the importance of coordinated, supranational governance response to current climate and environmental urgencies.

So far, resolutions, commitments, and other political manifestations from multilateral organizations to create incentives for the private sector to voluntarily and organically usher in circularity have not worked. Binding, legal action is needed for mandatory recycling policies. Under such policies, public sector purchasing gets to lead the way toward circularity by providing important market power to recycling innovators. It can help change incentives in production in the private sector, with the transformational potential to change the entire system of global value chains (GVCs) that are based on low direct and high social-cost, perverse incentives.

Zoom to the Global South

In light of the diverse national trajectories and institutional frameworks documented throughout this volume, we would argue that the future of Green Public Procurement (GPP) should be grounded both in the development of high administrative capacity and the adoption of an Agile Stability approach (see Kattel et al. 2022), the latter denoting bureaucratic performance that balances long-term structural and substantial validity with the flexibility necessary to respond to uncertain and fast-changing challenges. Given the complex interplay between environmental objectives, economic pressures, and geopolitical volatility, this model offers a realistic, if ambitious scaffolding for GPP reform.

Many contributions to this volume, particularly from the Global South, underscore the fragility of procurement regimes where capacity is uneven, fragmented, or over-reliant on donor logic or normative diffusion. Hence, achieving effective GPP implementation will require institutional architectures capable not only of adopting green criteria, but also of learning, coordinating, and adapting them across policy cycles and administrative tiers. At the same time, any prospective reform agenda cannot assume anymore that Western trajectories – particularly those shaped by EU directives or OECD guidance – are the only games in town. Several chapters in this volume point to instructive, if often uneven, experiences with non-Western models of sustainable governance. The Chinese case, for instance, appears to exemplify the

potential of centralised policy layering and implementation control, with a mature GPP framework embedded within broader ecological modernization goals. Islamic Public Administration potentially offers a moral economy rooted in stewardship and accountability, with principles such amanah resonating with green objectives. Bhutan's "Gelephu Mindfulness City" initiative – even if arguably more rhetorical than real – and, more so, Thailand's Sufficiency Economy reflect a Buddhist perspective, based on moderation and balance. The existence of such models already suggests that GPP can and should draw on a wider conceptual base than typically acknowledged. For future-oriented procurement systems to be both legitimate and effective, they should internalize these global insights into context-sensitive institutional design, ensuring that the green transition is administratively feasible, culturally anchored, and resilient to systemic shocks.

Among these countries, India stands out as a pivotal example. As a fast-growing economy, India's public procurement accounts for nearly 20–25% of GDP, making it a critical lever for sustainability (UNEP 2017). Over the past decade, India's Ministry of Environment, Forest and Climate Change (MoEFCC) and the Ministry of Finance have laid groundwork for GPP through draft guidelines and integration into the General Financial Rules. Although a binding national framework has yet to emerge, state-level pilots in Kerala and Maharashtra are showing early momentum in construction, transport, and energy.

India's trajectory offers an influential model — but it is not the only path. Lessons from Latin American circular-economy policies, African climate procurement pilots, and Southeast Asian community-based approaches suggest that the future of GPP in the Global South will be plural and context-specific. For GPP to scale equitably, it must build on these diverse experiments, adapting global goals to local realities while fostering the administrative capacity needed to make them work.

Looking ahead, across the Global South must adopt a phased and capacity-driven approach to institutionalize GPP. This includes developing a national GPP action plan, mandating minimum environmental standards in public tenders, and incentivizing innovation in green product manufacturing. For the Global South, India's experience can offer scalable models rooted in local contexts, balancing developmental needs with ecological priorities. GPP, if strategically embedded, can transform public expenditure into a powerful tool for sustainable development.

Across the scenarios, technologies, and geographies discussed in this volume, one theme is clear: the future of GPP will not be linear. Its evolution will depend on political will, institutional capacity, and the ability to reconcile global environmental imperatives with local realities. GPP is no longer a peripheral policy tool — it is a window into how governments define public value, manage complexity, and steer markets toward long-term goals. In a world shaped by uncertainty and environmental urgency, green public procurement represents a deeper shift in the role of the state: from passive buyer to active architect of sustainability. By aligning with the UN Sustainable Development Goals and leveraging the power of public spending, GPP can become one of the most strategic levers for innovation, resilience, and inclusive growth in the decades to come.

Competing Interests

The authors have no conflicts of interest to declare that are relevant to the content of this chapter.

References

Kattel, R., Drechsler, W., & Karo, E. (2022). *How to make an entrepreneurial state: Why innovation meets bureaucracy*. Yale University Press.

Ministry of Environment, Forest and Climate Change [MoEFCC]. (2018). *Draft guidelines on green public procurement*. Government of India.

United Nations Environment Programme [UNEP]. (2017). *Global review of sustainable public procurement*. UNEP.