



Innovation
Procurement
Empowerment
Centre

A Connected Places
Catapult Initiative

Towards a measurement framework for innovation procurement

Elvira Uyarra and Maria Fernanda Ibarra Gutierrez

Research brief no. 23

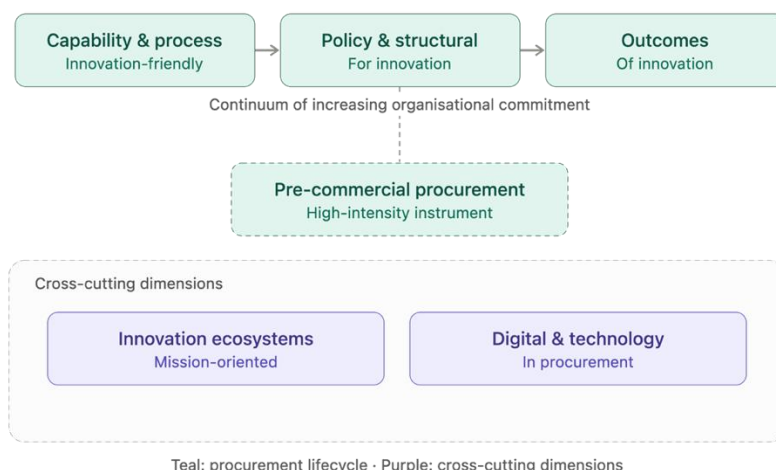
Publication Date: September 2026

Executive summary

Public procurement of goods and services accounts for 13% of GDP across OECD countries and represents approximately one-third of UK public spending. While it is considered "a crucial lever that can unlock growth of innovative science and technology companies" (House of Lords Science and Technology Committee, 2025), in the UK "we lack the data, analysis and impact evaluation case studies to sufficiently understand the adoption and diffusion effects of innovation procurement" (Connected Places Catapult, 2023).

The growing interest in public procurement as an innovation policy lever has led to a proliferation of conceptual frameworks and measurement approaches (Georghiou and Edler, 2007; Kundu et al., 2020; Obwegeser and Müller, 2018), making

it challenging to consolidate research and develop coherent measurement frameworks. This report addresses this by distinguishing five dimensions, three of which sit along a single continuum of increasing organisational commitment across the procurement lifecycle: capability and process (innovation-friendly procurement), strategic intervention and instruments (procurement for innovation, including standards and pre-commercial procurement), and outcomes (procurement of innovation). Two further dimensions, mission-oriented procurement and innovation in the procurement function itself, cut across individual procurement exercises rather than following the lifecycle in sequence. For each dimension we set out the conceptual grounding and a short set of illustrative indicators.



Dimensions, literature and indicators

Considerable conceptual confusion persists in the literature on innovation procurement, with terms often used interchangeably or inconsistently. Rather than treat these as separate categories, we organise the first three as points on a single continuum of increasing organisational commitment: from low-intensity practices that simply avoid excluding innovation, through higher-intensity policy interventions that actively pursue it, to the outcomes that result.

2.1 Capability and process: innovation-friendly procurement

Innovation-friendly procurement emphasises procurement processes that reduce barriers to supplier innovation rather than explicitly demanding it. This is important because procurement practices often inadvertently exclude innovative suppliers, particularly SMEs and start-ups, through rigid specifications and risk-averse evaluation criteria.

Edquist and Zabala-Iturriagagoitia (2020) distinguish functional from product procurement: functional procurement describes needs or functions rather than prescriptive specifications, encouraging

suppliers to propose improved solutions. Preliminary market consultations are central to this dimension, helping avoid specifications that inadvertently exclude innovative solutions (European Commission, 2021); Berkhout et al. (2026) find that the type of market engagement matters, dynamic, two-way engagement supports innovation more than static, one-directional information exchange, and Merisalo et al. (2026) highlight buyer practices such as scaling-oriented market dialogue that extend engagement toward a solution's onward reach.

Procedure and criteria choices also matter. Innovation partnerships, competitive dialogue, and the UK's competitive flexible procedure (introduced under the Procurement Act 2023, see Ibarra et al. forthcoming) enable co-development that open procedures cannot. Krieger et al. (2024) find that price-only award criteria reduce innovation, whereas criteria-based procurement combining price with quality or innovation factors fosters it. Attracting innovative SMEs and start-ups early maximises impact on regional innovation ecosystems, an effect Douglas and Radicic (2016) find directly in their study of procurement's effectiveness for SME innovation

Conceptual indicator	Measurement focus	Key reference(s)
Functional vs. product framing	Tenders framed by outcome/function vs. prescriptive spec	Edquist and Zabala-Iturriagagoitia (2020); Uyarra et al. (2014)
Early market engagement	Tenders with preliminary market consultation; types of market engagement	European Commission (2021); Merisalo et al. (2026); Berkhout et al. (2026)
Evaluation methodology	Criteria-based vs price-only award	Krieger et al. (2024)
Procedure choice	Use of competitive flexible/innovation partnership procedures	Ibarra et al. (2026, forthcoming); European Commission (2021)
SME/start-up suitability	SME suitability and participation rate	Douglas and Radicic (2016)

2.2 Strategic intervention and instruments: procurement for innovation, standards, and PCP

Moving along the continuum, procurement for innovation requires explicit organisational commitment to innovation as a strategic goal. The European Commission's 2024 benchmarking of 30 countries assesses this through indicators including spending targets, incentives, and capacity-building measures (European Commission, 2024), highlighting interventions such as explicit innovation targets and innovation-related award criteria.

Allowing suppliers to retain intellectual property rights (IPR) strengthens incentives to commercialise innovations developed under public contracts (OECD, 2017), leading to

recommendations that procurement should default to supplier IPR retention (European Commission, 2021). Standards play a related role: referencing technical, environmental or organisational standards in tenders shifts competition beyond price toward innovation and sustainability (Rainville, 2017).

At the highest-intensity end sits pre-commercial procurement (PCP), treated here as a distinct instrument. PCP is the purchase of R&D services to develop a prototype, recognised by the European Commission (2007) as falling outside standard procurement directives when it involves risk-benefit sharing without exclusive rights, though implementation in practice has proved difficult to sustain (Apostol, 2017).

Conceptual indicator	Example measurement	Key reference(s)
Explicit innovation targets	Proportion of tenders with explicit innovation targets or spending targets	European Commission (2024)
Innovation-related award criteria	Proportion of tenders weighting award criteria toward innovation/quality	OECD (2017)
Use of standards	Proportion of tenders referencing technical/environmental/organisational standards	Rainville (2017)
IPR retention by suppliers	Proportion of contracts with supplier IPR retention	European Commission (2021)
PCP-type contract structures	Proportion of contracts with phased, multi-supplier R&D structure	European Commission (2007); Apostol (2017)

2.3 Outcomes: procurement of innovation

At the outcome end of the continuum, public procurement of innovation refers to the commissioning of goods and services that are new to the purchasing organisation and enable a novel or more efficient service. The OECD's framework (2016) covers direct innovation outputs, business performance, and diffusion effects. Public procurement is also linked to patent creation (Crespi and Guarascio, 2019; Orsatti et al., 2020) and private R&D spending (Slavtchev and Wiederhold, 2016).

Kundu et al. (2025), in a methodological review, find most studies show positive impacts of firm participation in innovation-requiring public contracts, generally stronger

than other financial support programmes; similar effects are found in the US (Radicic, 2019) and across Central and Eastern Europe, where PPI has a larger impact on innovative sales than financial support (Stojčić et al., 2020). Beyond innovation outputs, procurement participation is linked to easier access to finance through signalling effects (Chiappinelli et al., 2025; Dai et al., 2021) and improved export competitiveness (Georghiou et al., 2014). Recent work also distinguishes diffusion from scaling, buyers' deliberate efforts to extend an innovation's reach through practices such as phased contracting and demand aggregation (Merisalo et al., 2026), offering a more precise basis for measuring diffusion than repeat procurement alone.

Conceptual indicator	Measurement focus	Key reference(s)
Direct innovation outputs	Patents, R&D expenditure, product launches linked to contracts	OECD (2016); Crespi and Guarascio (2019); Orsatti et al. (2020); Slavtchev and Wiederhold (2016)
Business and market performance	Supplier R&D/revenue change; sales from new products; finance and export effects	Kundu et al. (2025); Radicic (2019); Chiappinelli et al. (2025); Georghiou et al. (2014); Stojčić et al. (2020)
Diffusion and scaling	Repeat/coordinated procurement; adoption by other buyers	Merisalo et al. (2026)

2.4 Mission-oriented procurement

Mission-oriented innovation policy, reinvigorated by Mazzucato (2018), provides a governance logic that situates individual procurement exercises within a broader policy mix aimed at system-level transformation and cross-sector coordination around grand challenges (Kattel and Mazzucato, 2018). This dimension is defined less by the intensity of any single procurement than by how procurement aligns with other instruments pursuing a shared societal goal. Three features indicate mission orientation. First, directionality: the procurement explicitly names the societal goal it serves and structures the search for solutions around it (Wanzenböck et al., 2020). Second,

coordination with the wider policy mix: mission-oriented procurement is deliberately aligned with funding, regulatory or delivery mechanisms aimed at the same goal, and coordinated across national, regional and local levels (Uyarra et al., 2020; Flanagan et al., 2023). The València 2030 Climate Mission illustrates this: its preliminary market consultations were organised around specific climate challenge areas and coordinated with other funding instruments rather than left to individual buyers (CPI València, 2023). Third, long-term strategic commitment: because missions require effort beyond a single contract cycle, procurement duration or its place within a multi-year commitment can indicate mission intent.

Conceptual indicator	Example measurement	Key reference(s)
Directionality (societal impact reference)	Proportion of tenders/contracts citing an explicit societal goal	Mazzucato and European Commission (2018); Wanzenböck et al. (2020)
Coordination with the wider policy mix	Evidence of deliberate alignment with other funding/regulatory instruments and across levels of government (national, regional, local)	Kattel and Mazzucato (2018); Uyarra et al. (2020); Flanagan et al. (2023); CPI València (2023)
Long-term strategic commitment	Proportion of contracts with duration/commitment beyond typical cycles	CPI València (2023)

2.5 Innovative public procurement

Innovation in the procurement function itself, the use of digital technologies and AI in procurement processes, is a distinct dimension focused on modernising procurement operations rather than stimulating external innovation (Patrucco et al., 2017).

Andersson, Arbin and Rosenqvist (2025) identify significant potential for operational improvement and predictive analytics, but highlight low current AI maturity within government agencies. OECD (2025) similarly finds AI could support procurement decisions throughout the cycle but stresses that data fragmentation and digital skills gaps constrain adoption.

Conceptual indicator	Example measurement	Key reference(s)
Digital procurement process	Proportion of fully digital procurement processes	Patrucco et al. (2017)
AI/digital tool adoption	Presence and scale of AI/digital tool use across procurement activities	Andersson et al. (2025)
Automated analytics for monitoring	Use of automated analytics for spend/risk monitoring	OECD (2025)

3 Discussion and conclusion

This framework accommodates the conceptual diversity in innovation procurement while maintaining analytical coherence, presenting some of the dimensions as a continuum of increasing commitment rather than unrelated categories, and treating mission orientation and digital transformation as dimensions that shape, and are shaped by, that continuum without needing to be folded into it.

Each dimension presents distinct measurement challenges. Text-based indicators require keyword dictionaries validated through manual coding. PCP indicators face a harder classification task than most others, since identifying phased, multi-supplier R&D structures from text is not yet a solved problem. Outcome indicators require linking procurement data to external R&D and patent records and remain descriptive rather than causal. The mission-oriented dimension is easier to verify against stated intent than actual systemic impact. The digital dimension currently has no administrative data source and depends on survey instruments.

These limitations point to a broader gap: buyers, policymakers and evaluators currently have very little systematic way of knowing

where an organisation, sector or region sits on this continuum, or how that position changes over time. A framework of this kind only delivers value once operationalised into a diagnostic tool that turns these dimensions into trackable, comparable indicators updated from administrative data, allowing buyers to see where their practice is strong or lagging and giving researchers a consistent evidence base against which harder causal questions can eventually be tested.

Acknowledgements

The authors thank Ian Brotherson and Pelle Berkhout for their valuable comments and feedback on earlier drafts of this report.

References

- Andersson, P.E., Arbin, K. and Rosenqvist, C. (2025). Assessing the value of artificial intelligence (AI) in governmental public procurement. *Journal of Public Procurement*.
- Apostol, R. (2017). *Trials and Tribulations in the Implementation of Pre-Commercial Procurement in Europe*. T.M.C. Asser Press, The Hague.
- Berkhout, P., Rainville, A., Janssen, M. and Frenken, K. (2026). Does market engagement in public procurement foster innovation? Results from a Pan-European survey. *Research Policy*, 55, 105372.
- Chiappinelli, O., Giuffrida, L.M. and Spagnolo, G. (2025). Public procurement as an innovation policy: Where do we stand? *International Journal of Industrial Organization*, 100.
- CPI València (2023). *Preliminary Market Consultation – València 2030 Climate Mission*.
- Crespi, F. and Guarascio, D. (2019). The demand-pull effect of public procurement on innovation and industrial renewal. *Industrial and Corporate Change*, 28, 793-815.
- Dai, X., Li, Y. and Chen, K. (2021). Direct demand-pull and indirect certification effects of public procurement for innovation. *Technovation*, 101, 102198.
- Douglas, D. and Radicic, D. (2016). Effectiveness of public procurement in stimulating innovation in small and medium-sized enterprises (SMEs). *Institute for Small Business and Entrepreneurship*.
- Edler, J., Georghiou, L., 2007. Public procurement and innovation—Resurrecting the demand side. *Res. Policy* 36, 949–963. <https://doi.org/10.1016/j.respol.2007.03.003>
- Edquist, C. and Zabala-Iturriagagoitia, J.M. (2020). Functional procurement for innovation, welfare, and the environment. *Science and Public Policy*, 47, 595-603.
- European Commission (2007). *Pre-commercial Procurement: Driving innovation to ensure sustainable high quality public services in Europe*, COM(2007) 799 final, Brussels, 14 December 2007.
- European Commission (2021). *Guidance on Innovation Procurement*. C(2021) 4320 final, Brussels.
- European Commission (2024). *Synthesis report for the benchmarking of national policy frameworks for innovation procurement*.
- Georghiou, L., Edler, J., Uyarra, E. and Yeow, J. (2014). Policy instruments for public procurement of innovation: Choice, design and assessment. *Technological Forecasting and Social Change*, 86, 1-12.
- Ibarra Gutierrez, M.F., Uyarra, E. and Berkhout, P. (2026, forthcoming). *Competitive flexible procedure*. IPEC Research Brief, Connected Places Catapult.
- Kattel, R. and Mazzucato, M. (2018). Mission-oriented innovation policy and dynamic capabilities in the public sector. *Industrial and Corporate Change*, 27, 787-801.
- Krieger, B., Fünér, L. and Prüfer, M. (2024). *Which Start-Ups Win Public Procurement Tenders?*
- Krieger, B. and Zipperer, V. (2022). Does green public procurement trigger environmental innovations? *Research Policy*, 51, 104516.
- Kundu, O., James, A.D. and Rigby, J. (2020). Public procurement and innovation: a systematic literature review. *Science and Public Policy*, 47(4), 490-502.

References

- Mazzucato, M. and European Commission (eds.) (2018). Mission-oriented research & innovation in the European Union: a problem-solving approach to fuel innovation-led growth. Publications Office, Luxembourg.
- Merisalo, M., Pihlajamaa, M., Uyarra, E., Valovirta, V. and Oksanen, J. (2026). Scaling innovation through public procurement: Market acceleration, building, and transformation. *Research Policy*, 55, 105563.
- Obwegeser, N., Müller, S.D., 2018. Innovation and public procurement: Terminology, concepts, and applications. *Technovation* 74–75, 1–17.
<https://doi.org/10.1016/j.technovation.2018.02.015>
- OECD (2016). Measuring the Link between Public Procurement and Innovation. OECD Science, Technology and Industry Working Papers, 2016/03.
- OECD (2017). OECD Public Governance Reviews. Public Procurement for Innovation: Good Practices and Strategies. OECD.
- OECD (2025). Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions. OECD Publishing.
- Orsatti, G., Perruchas, F., Consoli, D. and Quatraro, F. (2020). Public Procurement, Local Labor Markets and Green Technological Change. *Environmental and Resource Economics*, 75, 711-739.
- Patrucco, A.S., Luzzini, D. and Ronchi, S. (2017). Research perspectives on public procurement: Content analysis of 14 years of publications in the Journal of Public Procurement. *Journal of Public Procurement*, 17, 229-269.
- Radicić, D. (2019). Effectiveness of public procurement of innovation versus supply-side innovation measures in manufacturing and service sectors. *Science and Public Policy*, 46, 732-746.
- Rainville, A. (2017). Standards in green public procurement – A framework to enhance innovation. *Journal of Cleaner Production*, 167, 1029-1037.
- Slavtchev, V. and Wiederhold, S. (2016). Does the Technological Content of Government Demand Matter for Private R&D? *American Economic Journal: Macroeconomics*, 8, 45-84.
- Stojčić, N., Srhoj, S. and Coad, A. (2020). Innovation procurement as capability-building: Evaluating innovation policies in eight Central and Eastern European countries. *European Economic Review*, 121, 103330.
- Uyarra, E., Edler, J., Garcia-Estevez, J., Georghiou, L. and Yeow, J. (2014). Barriers to innovation through public procurement: A supplier perspective. *Technovation*, 34, 631-645.
- Uyarra, E., Zabala-Iturriagagoitia, J.M., Flanagan, K. and Magro, E. (2020). Public procurement, innovation and industrial policy: Rationales, roles, capabilities and implementation. *Research Policy*, 49(1), 103844.



Innovation
Procurement
Empowerment
Centre

Elvira Uyarra
Maria Fernanda Ibarra Gutierrez

IPEC website: <https://www.ipec.org.uk/>

IPEC LinkedIn: <https://www.linkedin.com/company/93121184>

IPEC email: contact@ipec.org.uk