ECONSTOR
Make Your Publications Visible.

A Service of

ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Lappe, Marie-Sophie; Nicoli, Francesco

Working Paper

Advantages and pitfalls of green public procurement as a European strategic tool

Bruegel Working Paper, No. 21/2025

Provided in Cooperation with:
Bruegel, Brussels

Suggested Citation: Lappe, Marie-Sophie; Nicoli, Francesco (2025) : Advantages and pitfalls of green public procurement as a European strategic tool, Bruegel Working Paper, No. 21/2025, Bruegel, Brussels

This Version is available at:
https://hdl.handle.net/10419/333992

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

WORKING PAPER | ISSUE 21/2025 | 24 SEP 2025

ADVANTAGES AND PITFALLS OF GREEN PUBLIC PROCUREMENT AS A EUROPEAN STRATEGIC TOOL

MARIE-SOPHIE LAPPE AND FRANCESCO NICOLI

Public procurement, or the purchasing of goods and services by governments, is among the most powerful policy tools available to the public sector. Accounting for nearly 14 percent of European Union GDP, it shapes markets, signals priorities and can in principle create demand for transformative innovation. Green public procurement (GPP), which aims to include environmental considerations in the procurement process, has been identified as an important lever to deploy public spending in line with the EU's climate goals. In this paper, we examine GPP as a strategic tool to support the EU's decarbonisation, industrial and geopolitical objectives, and assess it in context of the EU's broader policy agenda.

While we acknowledge the importance of GPP in the European decarbonisation process, we argue that its widespread use might also lead to policy tensions with the EU's other strategic objectives, such as fiscal stability and strategic autonomy. Throughout the paper, we illustrate how the interplay of these goals leads to trade-offs that are very complex to accommodate.

While procurement can empower and add financial weight to European actions aimed at achieving strategic goals, including decarbonisation, it can only be effective if the EU's underlying strategic policy goals remain consistent with each other. Trying to fit procurement practices to multiple contrasting objectives might result in longer procurement timelines, less competition, more administrative burden and higher costs for governments. These risk hindering the effectiveness of European public administrations in delivering on the objectives, and also in their daily operations, disrupting the public administration's purchasing practices. Finally, after having illustrated the potential benefits and pitfalls of green procurement, we discuss and evaluate several policy tools that could help the EU resolve the tensions that a widespread introduction of GPP might produce.

This Working Paper has been produced with financial support from the European Climate Foundation.

Marie-Sophie Lappe (marie-sophie.lappe@bruegel.org) is a Research Analyst at Bruegel
Francesco Nicoli (francesco.nicoli@bruegel.org) is a Non-Resident Fellow at Bruegel and Associate Professor of Political Science at Politecnico of Torino

Recommended citation:
Lappe, M. and F. Nicoli (2025) 'Advantages and pitfalls of green public procurement as a European strategic tool,' *Working Paper* 21/2025, Bruegel

1 Green procurement in context: the regulatory and political landscape

Traditionally, national governments and the European Union have seen the rationale for procurement rules as: (1) avoiding spiralling costs for taxpayers, and (2) ensuring a level playing field between companies from different EU countries when accessing national procurement opportunities (Bovis, 2024). Over the years, these cost-efficiency and competition objectives have been complemented by a wide range of additional rules, in part aimed at ensuring certain carve-outs from competition rules and at ensuring sector-specific quality parameters. Consequently, the EU's public-procurement framework is a dense and multilayered legal regime that governs around €2 trillion in annual spending.

The rules are set out by Directive 2014/24/EU on public procurement, Directive 2014/25/EU on procurement in the water, energy, transport and postal sectors, and Directive 2014/23/EU on the award of concession contracts. These are complemented by two main regulations: Regulation (EU) 2016/7, which provides standard forms for procurement notices, and Regulation (EU) 2022/2560 on foreign subsidies. In addition, the framework includes numerous delegated and implementing acts that define technical specifications and administrative procedures, and a very large number of national and local rules, practices, platforms and approaches. The common legal superstructure is further complicated by national transpositions of directives, which often introduce additional procedures, thresholds or interpretation variances. Firms bidding in multiple member states must thus not only navigate EU-level rules but also divergent national and often local practices.

The EU rules promote the use of 'most economically advantageous tender' (MEAT) criteria, which aim to obtain the best value for money taking into account quality, environmental and social factors, lifecycle costs and innovation. While this was a first step towards implementing green public procurement (GPP) practices across the EU, many national authorities still default to awarding contracts based on lowest price for reasons of administrative simplicity and legal risk aversion, effectively reducing the greening effects of the rules. Over 60 percent of contracts in the EU are awarded on price alone, with shares ranging from under 10 percent in France and Croatia, to over 90 percent in Cyprus and Slovakia[1]. This fragmentation undermines the single market, raises transaction costs and limits the ability of procurement to contribute to strategic goals such as decarbonisation and industrial resilience.

The use of GPP is also difficult to track across EU countries, as there are no clear criteria in current tender databases. Rosell (2021) used text-based analysis to identify possible sustainability considerations in tendering data using a database of about 1 million contracts, and found that the proportion of MEAT contracts including green criteria was 7.2 percent. Norway, France and Denmark lead the efforts in implementing green criteria in public procurement (Rosell, 2021). In terms of

[1] See European Commission Single Market and Competitiveness Scoreboard, available at https://single-market-scoreboard.ec.europa.eu/business-framework-conditions/public-procurement_en.

sectors, GPP seems to be more applied in environmental, social protection and general public services sectors – so seemingly focusing on indirect procurement.

Apart from regulatory fragmentation, reliable data is lacking on public procurement. Current data is based on information in calls for tenders, which is the main source used in tracking public procurement at a systematic level. However, there is little detail about GPP, pricing and comparability. In addition, different sources have vastly different coverage and databases are of limited quality, as highlighted by the European Court of Auditors (ECA)[2], the European Commission[3] and others (for example, Open Spending EU, 2023). ECA has evaluated public procurement processes in the EU and found, among other shortcomings, that pricing data is not monitored at all (ECA, 2023). Accordingly, the impact of greening public procurement will likely be difficult to monitor.

In addition, many publicly available databases are maintained at EU level and only require reporting by EU countries above certain thresholds. This leads to limited and uneven coverage across EU countries, as some countries report tenders below the threshold on a voluntary basis. In this paper, we nonetheless use data on calls for tenders to obtain a broad overview of the sector.

The European Commission published a roadmap for overhauling the EU's procurement framework in February 2025 (European Commission, 2025a), focusing on the introduction of binding non-price criteria and the strengthening of joint procurement mechanisms. These reforms will be delivered via three major initiatives: the Industrial Decarbonisation Accelerator, a revision of the public procurement directives and the creation of a Critical Raw Materials Centre. These initiatives are closely aligned with the EU's broader industrial and climate agenda, including the Net Zero Industry Act (Regulation (EU) 2024/1735) and the Green Deal Industrial Plan (European Commission, 2023). In section 4, we discuss these more in detail. However, implementation timelines remain slow, with most binding changes unlikely to take effect before 2028–2029.

Importantly, the Commission does not act in a political vacuum when pursuing decarbonisation of public-sector purchases. Despite the relatively disappointing results for green parties in the 2024 European elections, support for GPP remains high among both experts and the general population. In a limited survey of experts, Lappe and Nicoli (2024, 2025) found that even though expert respondents on average were split equally between focusing EU reform efforts either on competition or on decarbonisation, including GPP criteria causally improved policy support among experts by about 10 percent (Lappe and Nicoli, 2024). Support from the general public is found to be even higher. In France, Germany, Italy, Spain, Poland and the United Kingdom, support for GPP was very high, even if it is associated with extra costs (data from spring 2025; Table 1). Support is highest in France, the country

[2] See ECA dashboard (linked to ECA, 2023), https://public.tableau.com/app/profile/gti1940/viz/eca_dashboard/Story.
[3] See, for example, European Commission, 'Public Procurement Indicators 2022', https://ec.europa.eu/docsroom/documents/60615, which notes that *"Often there are unrealistic low values and reporting mistakes (notably in the form of nonsensically large values)"*.

that currently makes the greatest use of non-pricing criteria in public procurement. Support is below 50 percent only in Poland, which has a historically complex relationship with the green agenda.

Table 1: Public support for GPP

'Governments should purchase sustainable products, even when non-sustainable alternatives are cheaper'

	Italy		Germany		UK		France		Poland		Spain		Total	
	nr	%	nr	%	nr	%	nr	%	nr	%	nr	%	nr	%
Disagree	158	11%	179	12%	202	13%	144	9%	285	19%	171	11%	1,139	13%
Neutral	512	34%	534	36%	485	32%	428	28%	507	34%	474	32%	2,940	33%
Agree	830	5%5	791	53%	813	54%	949	62%	709	47%	855	57%	4,947	55%
Total	1,500		1,504		1,500		1,521		1,501		1,500		9,026	

Source: Politecnico di Torino/Bruegel data, May 2025. Note: data collection was carried out by IPSOS Netherlands on behalf of Politecnico di Torino. Each country sample of 1500 respondents is representative for three age groups, three educational groups, gender and regional distribution.

This strong level of public and expert support show that despite drawbacks (see sections 3 and 4), GPP enjoys a degree of *ex-ante* legitimisation. Yet, what exactly constitutes 'green' procurement often remains hidden in the complex and segmented web of EU and national rules. Before discussing the tensions characterising GPP, the next section defines it more precisely, clarifying the distinction between direct and indirect forms of green procurement.

2 Green public procurement as a lever for decarbonisation and strategic use

Green public procurement (GPP) is defined by the European Commission as a process through which public authorities seek to *"purchase goods, services and works with a reduced environmental impact throughout their life cycle"*[4].

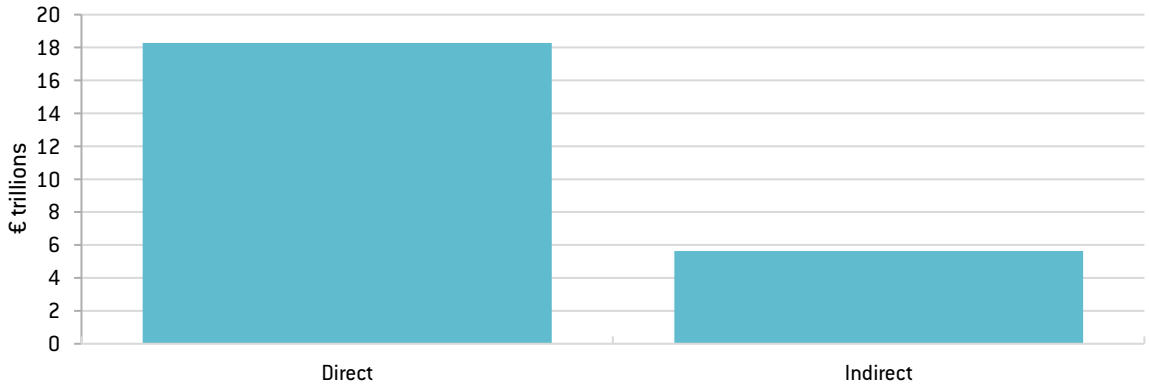
Green procurement can occur through both direct and indirect mechanisms. In the case of direct greening, procurement targets a product whose intrinsic attributes can be made environmentally friendly, such as low-emission vehicles, energy-efficient buildings or recycled construction materials. By contrast, indirect greening refers to actions to 'green' the procurement process involving services that do not lend themselves well to direct greening. Typically, the environmental standards are then applied to the supplier or service provider, such as requiring certifications, greenhouse gas reporting or responsible sourcing protocols, irrespective of the specific good or service procured (Benachio *et al*,

[4] See European Commission website on Green Public Procurement, available at https://green-forum.ec.europa.eu/green-public-procurement_en.

2019). The distinction therefore lies in whether the environmental criteria relate to the object of the procurement (product-level) or to the institutional performance of the provider (organisation-level).

In principle, while 'direct' forms of GPP are open to both product- and organisation-level criteria, indirect procurement, which typically characterises services provision, lends itself best to organisation-level criteria. In practice, however, public administrations typically procure 'packages', 'bundles' or 'projects' that include the provision of professional services (eg an architectural project) and the execution of the package or project. This implies that, from a data perspective, it is hard to disentangle the exact share of each.

Figure 1: Total value of direct and indirect green procurement, 2013-2022



Source: Bruegel based on Tenders Electronic Daily (TED).

Around 24 percent of procurement is indirect, mostly related to services. This distinction has implications for when and how greening occurs within the procurement process. As mentioned, greening can be embedded at either the product level (eg minimum energy efficiency thresholds) or the company level (eg company-wide emissions targets). Moreover, these criteria can be applied at different stages of the process. Criteria can be introduced at the eligibility stage (eg excluding suppliers without sustainability certifications) or at the award stage (eg giving extra weight to low-carbon solutions under MEAT). Each of these configurations presents different trade-offs in terms of enforceability, administrative burden and market impact.

Table 2 maps these configurations in relation to the way in which environmental criteria are applied (eligibility vs. award; see also Appolloni *et al*, 2019) and the level at which they are targeted (product vs. company). This framework helps visualise the main trade-offs: product-level greening may be easier to measure but risks reducing competition and, if coupled with eligibility criteria, may narrow the pool of bidders; company-level criteria may encourage broader transformation but may be harder to enforce. Similarly, eligibility filters can rapidly shape supply chains but may create entry barriers; award-stage greening offers more flexibility but risks dilution if price remains dominant.

Table 2: A basic typology of GPP

Level	Approach	
	Eligibility	**Awarding**
Company level	Tender eligibility includes green criteria at company level. Companies not fulfilling the exclusion criteria are excluded.	Award criteria include green criteria at company level, with a certain weight vis à vis price.
Product level	Tender eligibility includes green criteria at product level. Companies not offering products fulfilling the exclusion criteria are excluded.	Award criteria include green criteria at product level, with a certain weight vis à vis price.

Source: Bruegel.

Two fundamental functions underpin the effects of GPP. The first function of GPP posits that changing procurement practices will impact the carbon content of public expenditure through direct or indirect channels. The second function pertains to the strategic use of GPP to create demand and market for certain products, allowing producers to scale up. Typically, the academic literature focuses on this second function, describing GPP as a demand-side policy instrument that stimulates markets for sustainable goods and services. These are often referred to as strategies aiming to 'lead market creation'. For instance, the OECD (2015) frames GPP as a strategic tool for eco-innovation and sustainable consumption, while Testa *et al* (2016) stressed that GPP allows public buyers to exert environmental influence through tender requirements.

2.1 The procurement-decarbonisation link

In the EU, public procurement accounts for about 14 percent of GDP, while accounting for 10 percent of the EU's carbon emissions (Aulanier *et al*, 2024). This indicates that the public procurement component of the public sector is already fairly efficient from a carbon intensity standpoint, not because of any inherent feature of public procurement practices, but because the carbon intensity of the goods and services procured by the public sector is lower, on average, than the carbon intensity purchased by other consumers. For instance, the European Parliament estimates that agriculture is responsible for 10 percent of EU emissions but accounts for only 1.4 percent of GDP, and manufacturing is about 23 percent of EU GDP, but accounted for more than 20 percent of total emissions in 2022 (and 30 percent on average between 2013 and 2022)[5]. However, manufacturing is important in public procurement, while agriculture is not, and manufacturing is still quite carbon-intensive compared to other important parts of procurement, such as services (Figure 2, both panels). In turn, this implies that public procurement can only be further 'greened' if decarbonisation takes place in those parts of the economy that are both large emitters and heavily featured in public

[5] See European Parliament, 'Greenhouse gas emissions by country and sector (infographic)', last updated 2 December 2024, https://www.europarl.europa.eu/topics/en/article/20180301ST098928/greenhouse-gas-emissions-by-country-and-sector-infographic.

procurement activities. These are the sectors in the upper-right corners of Figures 2a and 2b – primarily manufacturing but also construction, utilities and transportation.

In other words, in order to maximise the impact of GPP on the reduction of emissions, any green procurement criteria should be particularly suited for application to sectors that account for: (1) large parts of public procurement, and (2) large shares of emissions. Note that this is an illustrative comparison, as emissions data displayed does not necessarily reflect purchasing patterns in public procurement[6].

When 'filtering' data for these two criteria (finding an overlap between above-average values for (1) and (2)), the following sectors can be identified: utilities (related to energy products) and manufacturing (which includes medical equipment and transport vehicles). In Figure 2a, we show the shares of these sectors in public procurement and their CO2 emissions. Apart from the sectors mentioned above, construction stands out as an important sector for public procurement and its potential impacts on indirect emissions reduction through, for example, energy-efficient buildings, while transportation is an important sector for CO2 emissions. In aiming to decarbonise, public procurement can be a strong lever, in particular in sectors such as manufacturing, construction and utilities, to which a large part of public procurement is directed. GPP and regulation around it should prioritise focusing on areas where its impact can be high. In balancing administrative burden, effectiveness and feasibility of cross-cutting green criteria, these sectors could be treated as priorities in terms of monitoring the effectiveness of GPP and developing first ideas on implementation.

[6] Note that, for example, medical equipment is a very important part of procurement associated with the manufacturing sector, which is not reflected in the aggregate sectoral data.

Figure 2a: Simultaneous importance of sectors in public procurement and CO2 emissions (%)

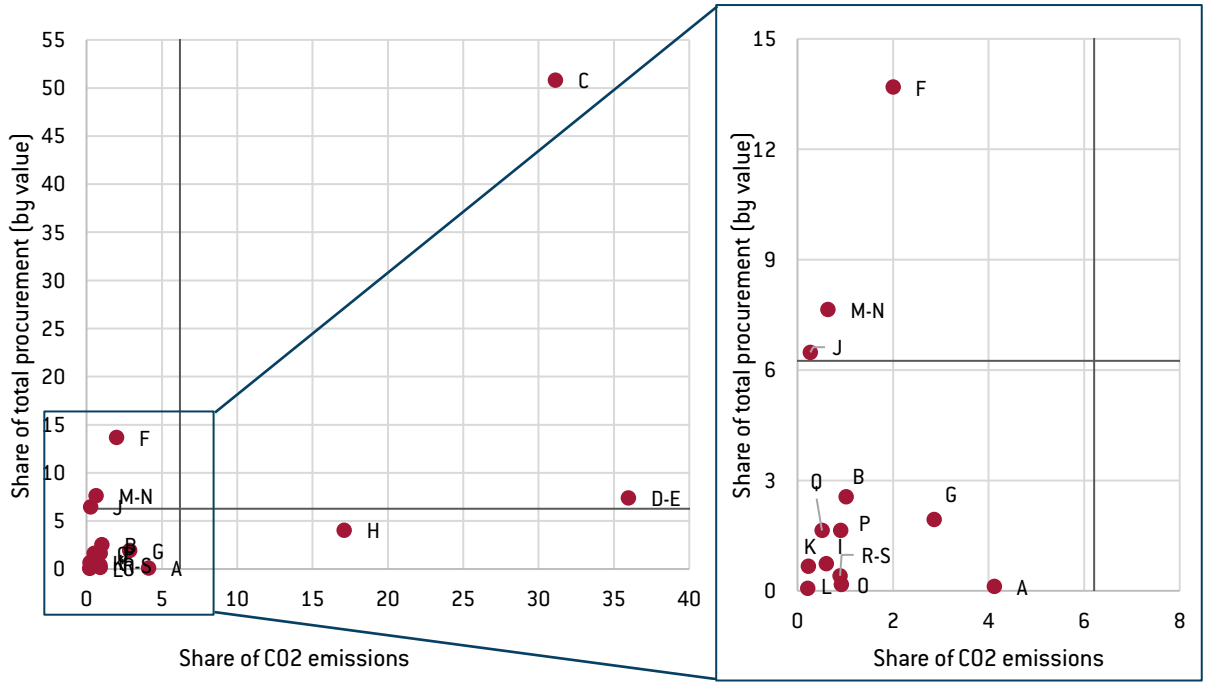
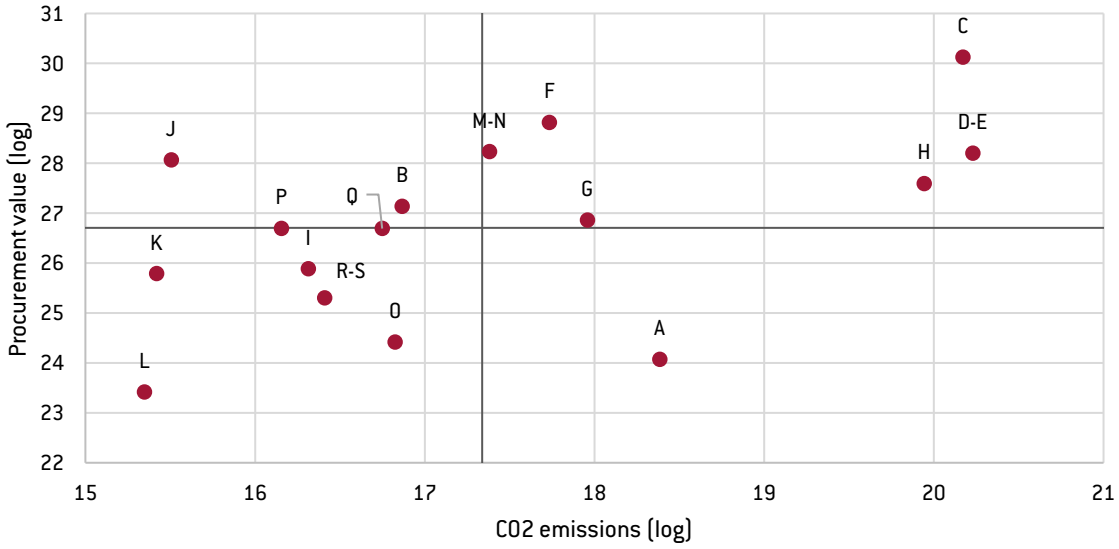


Figure 2b: Simultaneous importance of sectors in public procurement and CO2 emissions (log scales)

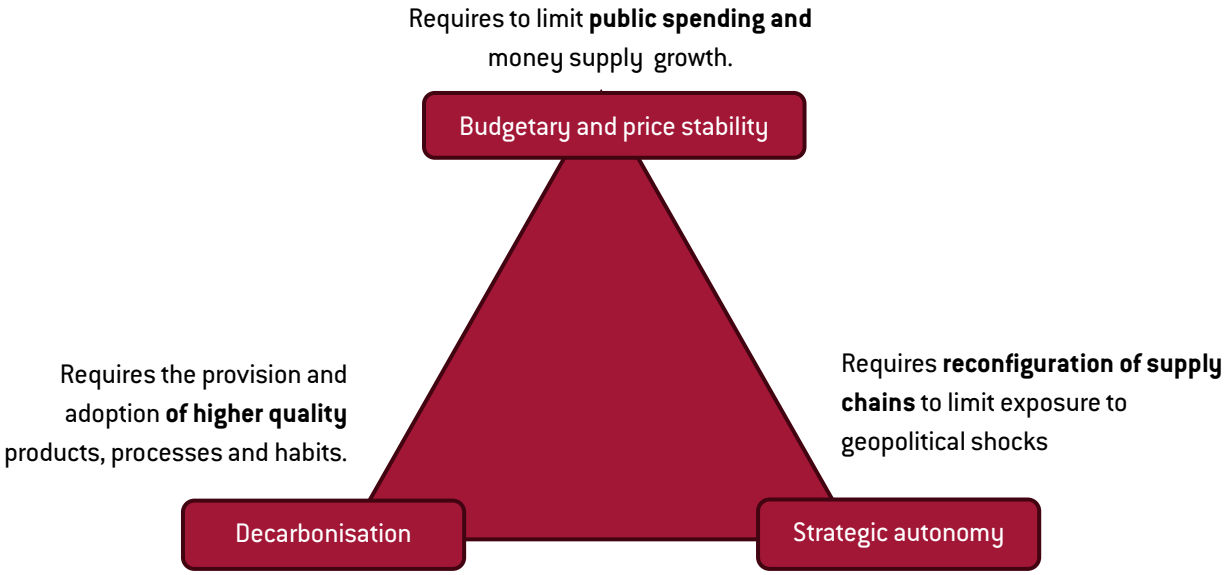


Source: Bruegel based on Tenders Electronic Daily (TED) and Eurostat. Notes: Based on data from 2013 to 2022. CPV to NACE classification based on European Commission (2021). The labels are as follows: A (Agriculture, forestry and fishing), B (Mining and quarrying), C (Manufacturing), D-E (Electricity, gas, water supply; sewerage, waste and remediation), F (Construction), G (Wholesale and retail trade; repair of motor vehicles), H (Transportation and storage), I (Accommodation and food service activities), J (Information and communication), K (Finance and insurance activities), L (Real estate activities), M-N (Professional, scientific, technical, administrative and support services), O (Public administration and defence; compulsory social security), P (Education), Q (Human health and social work activities), R-S (Arts, entertainment, recreation and other service activities).

3 The DAS trilemma

GPP is part of a broader range of policies aiming to foster the green transition, and – not dissimilarly from other actions – it brings trade-offs with other public policy objectives. By setting higher environmental standards in procurement and guaranteeing long-term demand for green goods and services, procurement can shape markets and reduce emissions, thus constituting a cornerstone of the European green transition. This represents not only a strategic objective for the EU in itself, but also a security priority (Castrén and Hakala 2022), and in a world that is, by necessity, increasingly sensitive to the environmental costs of economic growth, a vector for competitiveness. These long-term contributions of the green transition to Europe's overall wellbeing must however be assessed also in light of shorter-term trade-offs. In leveraging public procurement for the green transition, trade-offs with other EU policy priorities must be weighed up. In particular, the green transition more in general, and GPP more specifically, could be at odds in the short term with other major EU priorities, including **strategic autonomy** and **budgetary and price stability**. We refer to this configuration as the DAS (decarbonisation, autonomy, stability) trilemma, as illustrated in Figure 3.

Figure 3: The DAS trilemma



Source: Bruegel.

Budgetary/price stability and strategic autonomy without decarbonisation. This first combination outlining the trilemma assumes the absence of GPP and describes partly the current situation, in which buyers largely focus on the cheapest price. In addition, if one were to pursue strategic autonomy simultaneously, ie approaches such as 'Buy European', decarbonisation goals could be compromised. We will not discuss this specific case further, as GPP is the focus of this paper and thus decarbonisation is an essential part of the discussion.

Decarbonisation and budgetary/price stability without strategic autonomy. The second possible trilemma implies a situation in which GPP is adopted taking into account its impact on the fiscal sustainability of the public sector, and ultimately on price stability. In practice, this means that the procurement of green products is awarded to the most competitive bidder, regardless of its origin. Essential products for decarbonisation, such as solar panels, electric vehicle batteries and wind turbines, are largely imported from China as the market leader, while other technological products (eg advanced semiconductors) rely on American, Taiwanese or South Korean supply chains (Franco and Groesser, 2021). This poses strategic challenges: the EU's climate goals increasingly depend on suppliers that may not share its geopolitical interests, in particular when taking into account availability and price competitiveness. The uncertainty triggered by the second Trump administration indicates that the international stances of countries might be more changeable than previously and also that partner countries might not be in full control of their supply chains. Dependence on foreign supply chains may both decrease the lead-market creation impact of GPP (and thus keep prices high domestically), and make the EU as a whole more vulnerable to global shocks that might affect supplier countries, even when their geopolitical interests are aligned with those of the EU.

Decarbonisation and strategic autonomy without budgetary/price stability. Efforts to 'de-risk' supply chains by fostering European production – which would be consistent with both a stronger market-creation effect and more strategic independence – could drive up prices or delay deployment timelines. The simultaneous pursuit of decarbonisation and strategic autonomy may not be feasible in the short run without significant additional costs. Green goods often come with substantial price premiums (Box 1), which may result in higher public spending, which – all else being equal – may endanger fiscal sustainability. Simply put, given that public procurement accounts for about 14 percent of GDP, if the public sector were to pay a premium for green goods and services equivalent to the premium that green products command in the market (Box 1), the resulting effect might increase public deficits by several points of GDP, with ensuing macro-economic effects.

These dynamics could unfold in a macroeconomic environment shaped by tight fiscal rules and inflation concerns. Absorbing the green premium in public contracts is economically and politically difficult. Public authorities are under pressure to deliver value-for-money, reduce deficits and avoid actions that might contribute to inflation, such as paying more for goods and services, especially when it comes to large-scale infrastructure or energy projects. Strict application of non-price standards can also exert pressure on national budgets at a time when the EU's investment needs are estimated at about €800 billion annually (Draghi, 2024).

Box 1: The green premium

While data on any green price premium in procurement markets is limited, several studies have attempted to model the green price premium in consumer markets. These estimates vary greatly across products and buyers. Kearney in 2020 estimated that sustainable consumer products are 75 percent to 85 percent more expensive than their conventional counterparts, though only 25 percent to 35 percent of this premium stems from actual production costs, the rest reflecting marketing and segment positioning[7]. In construction, estimates place the green premium at between 14 percent and 31 percent (Dwaikat *et al*, 2016; Chegut *et al*, 2019; Del Giudice *et al*, 2021). Bolatova *et al* (2025), monitoring market trends, reported a green premium on steel of between 20 percent and 30 percent.

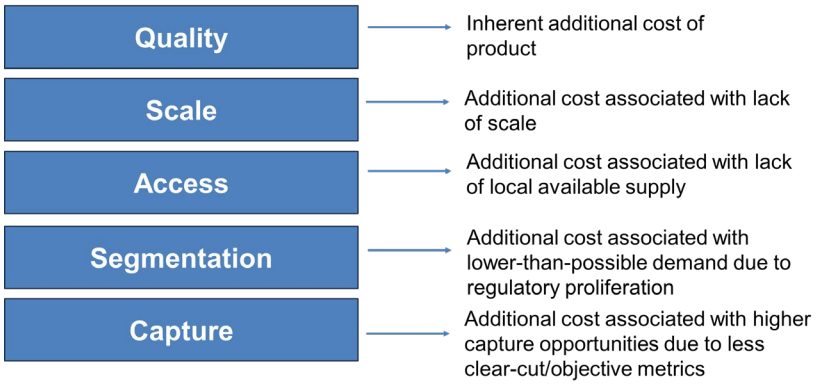
Importantly, these cost differentials may exceed the estimated willingness to pay. Consumers, for instance, may be willing to pay on average only around 10 percent extra for sustainable products (PwC, 2024). In the public sector, where procurement is subject to budgetary and political scrutiny, such premiums might be difficult to absorb, especially after a period of relatively high inflation which has impacted public procurement significantly, for example by leading to a decrease in the number of offers received per call for tenders (Klimavičiūtė *et al*, 2024). However, consumer markets and procurement often display very marked differences, and GPP, even if associated with higher prices, is received positively by the general population (see section 1), although it remains unclear whether this principled public support translates into the acceptance of an implicitly higher tax rate.

3.1 Budgetary and price stability in the presence of GPP

Figure 4 provides an overview of the theoretical avenues through which GPP in particular may lead to price increases, which in turn could have an impact on the fiscal stability of member states. Introducing binding non-price criteria into procurement processes can yield positive environmental and social spillovers but these benefits are not cost-free. A growing body of research and policy analysis has identified several channels through which green procurement may result in increased prices for goods and services, especially in the short to medium term. In principle, we identify five avenues through which GPP criteria may end up generating higher prices.

[7] Kearney, 'Why today's pricing is sabotaging sustainability', 11 September 2020, https://www.kearney.com/industry/consumer-retail/article/-/insights/why-todays-pricing-is-sabotaging-sustainability.

Figure 4: Theoretical avenues for price increases

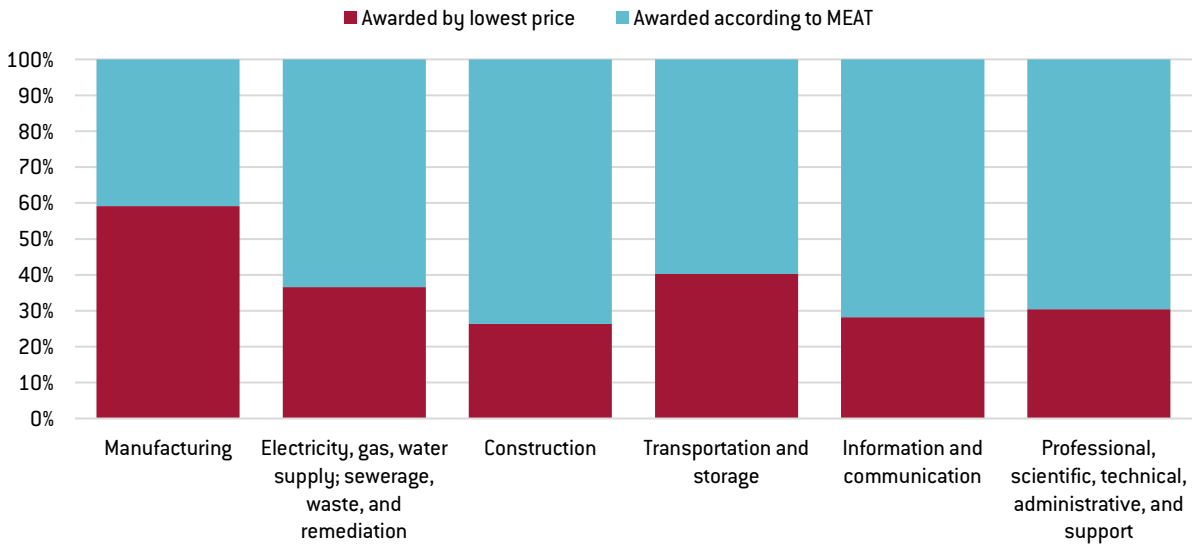


Source: Bruegel.

- **Quality effects**: Green products often cost more because of superior performance, durability or sustainable inputs. For example, building materials with verified environmental product declarations (EPDs) or energy-efficient machinery typically carry higher sticker prices (Chegut *et al*, 2019; Dwaikat and Ali, 2016).
- **Scale effects**: Many green product markets remain subscale (Zhang *et al*, 2017). Until they achieve **economies of scale**, producers face higher per-unit costs (Schmidt, 2001; Ülkü and Hsuan, 2017), which are reflected in bid prices. This is particularly evident in sectors such as green hydrogen, carbon-neutral cement and bio-based polymers. In general, it is reasonable to expect such effects to be especially prominent in manufacturing, which involves large fixed costs and therefore production is sensitive to market size.
- **Access effects**: Certain green inputs, such as cobalt, lithium and rare earths, are geographically concentrated and subject to price volatility or export restrictions. Procurement rules that require high environmental performance may unintentionally concentrate demand on a narrow band of qualifying suppliers, thereby pushing up costs. Moreover, limited availability might lead to supply fragmentation across European countries, whereby supply might be available but farther away (and therefore costlier to access), than the non-green alternatives.
- **Segmentation effects**: Suppliers must navigate different definitions of 'green', increasing compliance burdens and reducing effective competition. This may result in fewer bids and higher local prices. The proliferation of national and local rules creates costs and complexity for suppliers, which may lead them to pass through the costs to buyers or drop out from participating in calls for tenders, effectively reducing the effective locally available supply and therefore increasing costs.
- **Capture effects**: Finally, poorly designed non-price criteria can be exploited by incumbent or politically favoured firms. This can reduce transparency, weaken competition and inflate prices under the guise of green compliance. Since non-pricing criteria introduce a layer of often qualitative assessment of bidders, these may result at times in corruption potential, but also in the development of long-term, personal relationships between certain suppliers and buyers.

Capturing price effects in public procurement proves challenging, as pricing data in procurement is notoriously difficult to measure. In current procurement databases there is information on whether an award decision has been made based on the lowest price, or MEAT criteria (Figure 5). A sectoral examination shows that lowest price criteria are particularly applied in the manufacturing sector. Sectors for which the lowest price criteria are most often chosen are most likely to be subject to price increases when additional criteria are taken into account during the procurement process.

Figure 5: Contract awards per sector by criterion, 2013-2022



Source: Bruegel based on Tenders Electronic Daily (TED). Note: Based on data from 2013 to 2022 for share in public procurement. CPV to NACE classification based on European Commission (2021).

In implementing GPP, public procurement offices are likely to be faced with higher product costs. Wang *et al* (2020) studied the impact of GPP on prices in China and found that the implementation of GPP decreased price efficiency (where price efficiency is defined as savings in the procurement process). Simcoe and Toffel (2014) examined the impact of US municipal policies requiring governments to procure green buildings certified via private-sector adoption of a green label. While the authors found positive spillover effects of the policy on label adoption, they also noted that buildings carrying the label charged a 3 percent to 5 percent rent premium and had higher sale prices. The World Economic Forum has estimated that achieving net zero in the global public procurement sector will lead to a green premium of 3 percent to 6 percent (WEF, 2022).

Apart from the green premium as a direct factor leading to higher procurement prices, GPP can also have indirect effects on price. Drake *et al* (2024) studied the effects of more stringent GPP requirements on competition and bids in Swedish cleaning service procurements. The authors found that stricter GPP requirements reduced competition and were followed by increased prices with an increase in average bids (winning and generally). This indicates that even if products procured through

GPP are only marginally more expensive, competition considerations could nonetheless increase the price further.

Additional costs for the public purse from green premia may end up being substantial, with potentially macroeconomic implications. Table 3 shows the implicit extra cost (in percentage points of GDP) of 'greening' certain shares of public procurement, in various green pricing scenarios. Even in a scenario in which procuring green products and services results in an average increase in costs of 20 percent, if this affects, say, 30 percent of all procurement, it would result in an increase in public expenditure equivalent to nearly a full point of GDP (0.816 percentage points), a substantial cost for a relatively moderate greening objective (about 3.3 percent of EU emissions)[8].

Table 3: Implicit additional public expenditure (in percentage points of GDP) in various GPP scenarios

		Hypothetical green premium: cost increments from baseline									
		1%	3%	5%	10%	20%	30%	40%	50%	75%	100%
Share of procurement affected	10%	0.0136	0.0408	0.068	0.136	0.272	0.408	0.544	0.68	1.02	1.36
	20%	0.0272	0.0816	0.136	0.272	0.544	0.816	1.088	1.36	2.04	2.72
	30%	0.0408	0.1224	0.204	0.408	0.816	1.224	1.632	2.04	3.06	4.08
	40%	0.0544	0.1632	0.272	0.544	1.088	1.632	2.176	2.72	4.08	5.44
	50%	0.068	0.204	0.34	0.68	1.36	2.04	2.72	3.4	5.1	6.8
	60%	0.0816	0.2448	0.408	0.816	1.632	2.448	3.264	4.08	6.12	8.16
	70%	0.0952	0.2856	0.476	0.952	1.904	2.856	3.808	4.76	7.14	9.52
	80%	0.1088	0.3264	0.544	1.088	2.176	3.264	4.352	5.44	8.16	10.88
	90%	0.1224	0.3672	0.612	1.224	2.448	3.672	4.896	6.12	9.18	12.24
	100%	0.136	0.408	0.68	1.36	2.72	4.08	5.44	6.8	10.2	13.6

Source: Bruegel. Notes: Based on the assumption that public procurement accounts for 13.6 percent of public procurement as estimated by the European Commission. Values calculated as 13.6 * share of procurement affected * price premium.

This said, the extent of these cost increments is highly dependent on the presence of economies of scale and on whether lead-market creation strategies work. These cost increments might very well be temporary, in which case the long-term public-sector budgetary constraints would be unaffected. The presence of economies of scale is therefore central to the entire endeavour. In the steel sector in particular, scaling-up of green steel production and traded volumes is associated with considerable potential for falling prices (which however remain substantially higher than non-green equivalents[9]). In order to reduce costs already in the short term, measures such as pooling demand through eg joint procurement can help public authorities reduce the strain on their finances.

[8] Of course, these rough numbers do not account for the fact that some countries already make extensive use of GPP and therefore their costs would be lower.

[9] Julia Bolotova, Vlada Novokreshchenova and the Fastmarkets team, 'Evolution of green steel premiums in Europe: flats versus longs', *Fastmarkets*, 10 April 2025, https://www.fastmarkets.com/insights/evolution-of-green-steel-premiums-in-europe-flats-versus-longs/.

3.2 Geopolitics and GPP

Many low-carbon technologies are produced in geopolitically concentrated supply chains. While many environmentally sustainable products such as low-carbon cement, recycled aluminium and bio-based chemicals can theoretically be produced in Europe, current supply remains limited, fragmented and costlier than imports. Solar panels, batteries, semiconductors and a number of decarbonisation-enabling technologies are primarily imported from China. China dominates global production of photovoltaic modules (80 percent; IEA, 2022) and batteries (85 percent; IEA, 2024), and has positioned itself in the supply chains of key critical raw materials, including rare earth elements and graphite (Adolfsen *et al*, 2024).

Many of these imports are essential for delivering Europe's net-zero goals, but they expose the EU to supply chain risks and geopolitical leverage. As Tagliapietra *et al* (2023) and the EU's Strategic Dependencies Review (European Commission, 2022) have warned, substituting these dependencies will take time, investment and procurement coordination, not least because the scale and readiness of European supply chains vary dramatically across sectors and member states (Franco and Groesser, 2021). In this context, the public sector can play a critical role as anchor demand, providing predictable, long-term procurement volumes that justify private investment in new capacity. This logic underpins the European Commission's 'lead market' approach.

At the same time, imposing non-price criteria – such as environmental footprint, local-content requirements or labour standards – in calls for tenders risks raising prices and reducing bidder pools, as discussed in section 3.1. Non-pricing criteria therefore pose a dilemma. If they are implemented without buy-European clauses or common industrial standards, green procurement may end up favouring foreign suppliers that are better positioned to meet strict green criteria at scale, and would fail to deliver on the promise of lead-market creation. But if implemented with buy-European criteria, they risk increasing costs for public authorities even further.

Moreover, the inclusion of buy-European conditions for green products is fundamentally at odds with the direction of the EU's trade policy. Such clauses are controversial under World Trade Organisation (WTO) rules and may trigger trade retaliation or disputes. But also, the EU has invested considerable political capital in claiming that its carbon border adjustment mechanism (CBAM), intended to equalise the carbon price paid by domestic producers and importers, is not a protectionist tool but a tool to balance emissions. It would therefore be contradictory to claim that insufficiently green products can enter the EU only if high levies are paid on them, and then restrict nonetheless their access to green calls for tenders since they are not European.

This creates tension between environmental ambitions and the goal of strategic autonomy – a growing EU priority following the pandemic, the war in Ukraine and rising China-US competition. The need to de-risk supply chains places pressure on procurement policy to favour domestic, or at least diversified, sourcing. Yet many green products currently lack competitive European suppliers. Enforcing

sustainability criteria in calls for tenders while simultaneously reducing dependency on third countries may not be feasible in the short term without significant cost implications.

Nevertheless, compared to total trade openness of an economy, public procurement markets tend to be much more local and more affected by distance and gravity (Cernat, 2025). This is related to the high level of fragmentation of the market, mostly related to language barriers and differing national rules on public procurement, even within the single market. A study by the European Commission (2021) found that between 2016 and 2019 around three quarters of public procurement contracts were awarded to home-country firms.

Of contracts awarded to foreign firms directly, European Commission (2021) also showed that 40 percent were awarded to firms located within 500 kilometres of the place of procurement. In principle, reliance on foreign entities can occur through various channels such as:

1. The contractor is located in a foreign country and is under the control of a foreign company (direct cross-border procurement);
2. The contractor is based domestically but under control of a foreign company (indirect cross-border procurement);
3. The contractor is located domestically but dependent on foreign imports.

As noted above, (1) and (2) make up around one fourth of contracts awarded between 2016-2019; about 20 percent of total contracts can be allocated to (2), with the remaining 5 percent allocated to (1) (European Commission, 2021)[10].

In relation to strategic autonomy, (3) is also relevant. Strategic autonomy considerations often arise in the context of import dependencies, such as for energy products or critical raw materials. For this reason, we focus on the degree of non-EU imports by companies involved in public procurement. European Commission (2021) also conducted a survey among contractors to capture whether they relied on non-European imports while fulfilling a public procurement contract[11]. The study found that less than 30 percent were reliant on third country (non-EU/EFTA/UK) imports. However, the importance of third-country bidders when it comes to awarding public contracts correlates with the use of non-price criteria, which include GPP criteria (Figure 6). There can be a variety of reasons for this, such as domestic suppliers having lower transportation costs, meaning they are able to fulfil contracts for a lower price. It could also point to non-price criteria leading to more open contracting practices, allowing for more competition from abroad. Alternatively, it could point to non-price criteria introducing supply constraints with public procurement authorities having to rely on third-country companies. This highlights the risk of smaller bidder pools, which could be exacerbated by trying to enforce domestic procurement requirements.

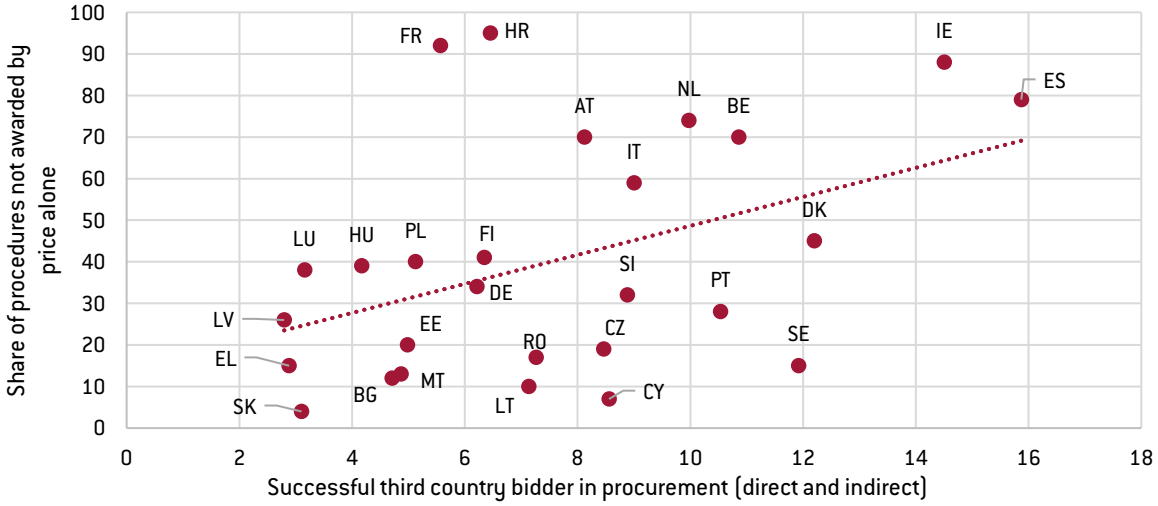
[10] Note these numbers include instances within the single market.

[11] Question: *'Did you import any goods / services from companies from third countries (i.e. countries outside the EU / UK / EFTA) during the execution of a contract within the period 2016-2019?'*

Similarly, Figure 7 shows that, while certain sectors with high GPP potential are inherently local and less exposed to reliance on imports, such as mining (b in Figure 7), real estate (l) and construction (f), others (including retail and wholesale trade (g), transport (h) and manufacturing (c)) are rely heavily on imports. Hence, overlaying green criteria for manufacturing, transport and other sectors with high import reliance with additional buy-European criteria, even if understandable from a lead-market creation perspective in the long run, risks creating supply shocks that would inevitably be reflected in substantially higher prices.

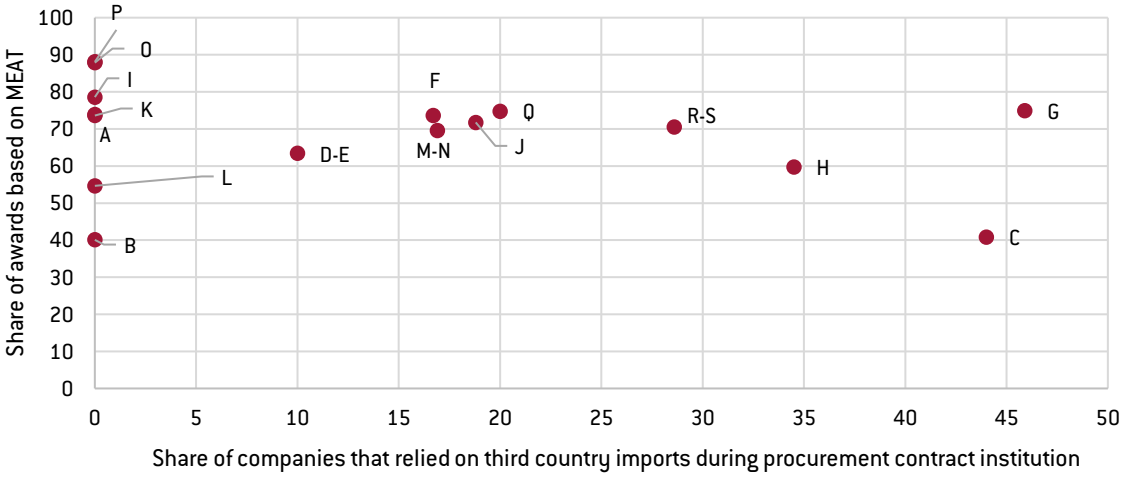
In particular for manufacturing (c), a sector with relatively low levels of MEAT awards (40 percent, the lowest of the NACE macro-sectors, together with mining) and relatively high import dependence (45 percent, the second-highest among NACE macro-sectors after retail), sudden imposition of local sourcing requirements could have adverse impacts on supply capabilities and therefore prices, which may be additional to further price hikes associated with other EU policies with *de-facto* protectionist effects, such as CBAM.

Figure 6: Third-country bidders and award criteria



Source: Bruegel based on Tenders Electronic Daily (TED) and European Commission (2021).

Figure 7: Shares of companies with third-country suppliers, by sector



Source: Bruegel based on Tenders Electronic Daily (TED) and European Commission (2021). Notes: Based on data from 2013 to 2022 for share in public procurement. CPV to NACE classification based on European Commission (2021). The labels are defined as follows: A (Agriculture, forestry and fishing), B (Mining and quarrying), C (Manufacturing), D-E (Electricity, gas, water supply; sewerage, waste and remediation), F (Construction), G (Wholesale and retail trade; repair of motor vehicles), H (Transportation and storage), I (Accommodation and food service activities), J (Information and communication), K (Finance and insurance activities), L (Real estate activities), M-N (Professional, scientific, technical, administrative and support), O (Public administration and defence; compulsory social security), P (Education), Q (Human health and social work activities), R-S (Arts, entertainment, recreation and other service activities).

4 The European Commission's reform goals

4.1 Overview of the Commission's procurement actions

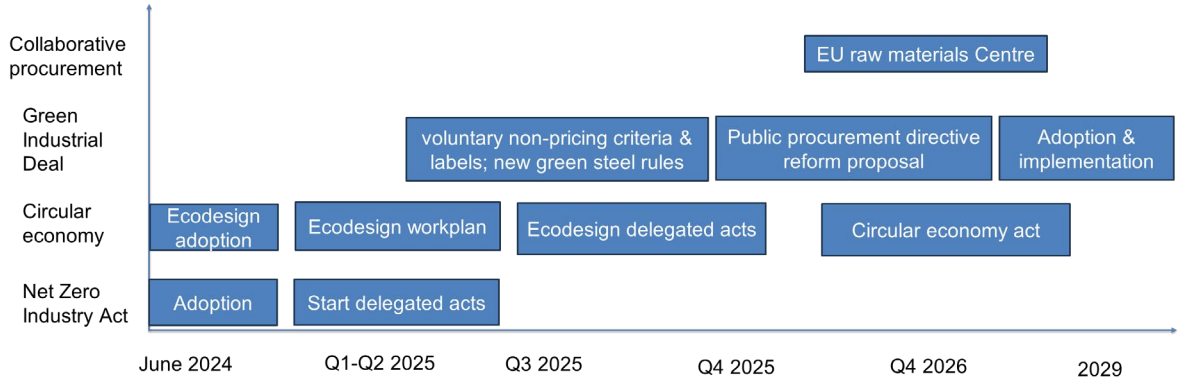
Against this backdrop, we now move to assess the Commission's GPP plans to evaluate their consistency with broader decarbonisation goals. Public procurement was heavily featured – focusing on proposals such as non-pricing criteria – in reports by Draghi (2024) and Letta (2024), which were commissioned by the EU institutions and intended to steer their policies. The Commission is working on a comprehensive reform agenda, cutting across general and sectoral rules. Nonetheless, despite the width and breath of these potential reforms, the Commission is proceeding carefully, with an outline plan expected by the end of 2025 and a legislative proposal for the revision of the main public procurement directive planned for 2026[12]. Taking into account decision-making and national implementation timelines, the reform is unlikely to take effect before the end of the decade.

Initial Commission consultations on the plan have produced inconclusive results, with opinion seemingly split across a variety of topics (European Commission, 2025c)[13]. For example, public

[12] Edelman, 'From Cost-Driven to Strategic: EU Public Procurement Reform', 15 July 2025, https://www.edelmanglobaladvisory.com/insights/cost-driven-strategic-eu-public-procurement-reform.
[13] Note that public consultations are open to everyone without any restrictions on sample selection, limiting the representativeness of results.

authorities consider that the current directives have encouraged public procurement that is environmentally friendly (56 percent agree or strongly agree), while businesses seem to oppose this view (46 percent disagree or strongly disagree).

Figure 8: EU reform timeline



Source: Bruegel. See Francesco Nicoli, 'Mapping the road ahead for EU public procurement reform', *First Glance*, 31 March 2025, Bruegel, https://www.bruegel.org/first-glance/mapping-road-ahead-eu-public-procurement-reform.

In February 2025, the Commission published a roadmap for reforming the EU's procurement framework (European Commission, 2025a), focusing on two main courses of action: the simultaneous extension and simplification of binding non-pricing criteria in public procurement (GPP but also 'buy European'), and the use of joint procurement to build up strategic stockpiles of critical raw materials. This will be done through an Industrial Decarbonisation Accelerator Act, a revision of public procurement directives and the creation of an EU Critical Raw Materials Centre.

The first arm of the proposed reform is the integration of non-price criteria into public procurement. Until now, non-pricing criteria have been largely voluntary and left to purchasing authorities. However, the Commission considers these criteria an essential component of its strategy to create lead markets. Energy-intensive sectors are likely to be targeted first. The Industrial Decarbonisation Accelerator Act, expected in autumn 2025, will introduce resilience and sustainability criteria into procurement processes in those sectors. These criteria will likely be voluntary at first, accompanied by a labelling system for low-carbon industrial products, starting with steel. A label-based CBAM-like methodology could be introduced, indicating a focus on emissions. The Commission likely sees steel and metals as 'trial products' to test the approach before scaling it up (European Commission, 2025b). It remains to be seen whether steel-related criteria will apply to defence products too.

Simplified and centralised labelling will likely play a central role in the reform, although it is unclear at the time of writing whether the Commission will choose a product-centred approach (as the initial focus on steel suggests) or a company-based approach with the allocation of sustainability passports, inspired by the existing Digital Product Passports[14] but applied at company level. Sustainability

[14] According to the Commission, the EU's Digital Products Passport will require companies to maintain digital records containing comprehensive information about each product's origin, materials, environmental impact and disposal

passports could ensure that more eligible companies enter calls for tenders and may reduce transaction costs, increase supply and help keep costs low. But they could also create barriers to establishing lead markets, since they do not necessarily result in product lines that are greener.

The second arm of the new approach to procurement will be the strengthening and institutionalisation of joint procurement mechanisms and aggregation of demand (Beetsma and Nicoli, 2024; Castiello, 2024). These mechanisms, enabling multiple EU authorities to engage in collective purchasing, are seen as a means to offset rising costs associated with strategic investments. This is especially true in sectors where supply is constrained or where first-mover disadvantage exists. Furthermore, joint procurement can offset some of the rise in costs that introducing non-pricing criteria might produce. It offers economies of scale and better negotiating power and also plays a role in upholding single market integrity and avoiding intra-EU competition and subsidy races. The Commission proposes to apply forms of joint procurement to critical raw materials under the Clean Industrial Deal[15]. This includes the establishment of an EU Critical Raw Materials Centre by the end of 2026, which will coordinate joint purchases and manage strategic stockpiles. A similar strategy will be applied in defence: under the SAFE Regulation (Regulation (EU) 2025/1106), collaborative procurement for defence will be expanded and streamlined from the end of 2025 – a more ambitious timeline, given the external pressures on scaling up defence.

4.2 Assessing consistency with the broader EU decarbonisation policies

However, the introduction of public procurement requirements favouring green products such as steel and cement risks creating tensions with EU climate policy instruments, especially the EU emissions trading system (ETS) and CBAM. Both instruments are designed to internalise the external costs of carbon emissions, making emissions-intensive production more expensive and thereby incentivising decarbonisation. The design of GPP criteria will need to be considered carefully in relation to the interplay with other policies.

To an extent, mandatory GPP as an approach to decarbonisation assumes that market-based internalisation instruments (such as the ETS) structurally fail to deliver lower emissions. Under ETS logic, non-green production becomes progressively more expensive and therefore would eventually lose out to green production. However, the ETS is also an implicit promise to market actors that once they purchase the required carbon permits, their production should no longer be discriminated against, and is to be considered equal to the equivalent sustainable products. From the perspective of market-based policy design, this internalisation should suffice to level the playing field between high- and low-emission products.

recommendations. This will cover nearly all products sold in the EU, as required by the 2024 Ecodesign for Sustainable Products Regulation (Regulation (EU) 2024/1781).

[15] See European Commission, 'Clean Industrial Deal', undated, https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en.

If public procurement rules introduce mandatory additional eligibility or award criteria based on green credentials – effectively penalising producers who have already paid for their emissions by purchasing carbon permits – this creates regulatory duplication. It also challenges the implicit 'social contract' of the ETS: the idea that once emissions are paid for, the product is treated as legitimate within the market. Moreover, if mandatory GPP systematically excludes non-green but ETS-compliant producers, the demand for ETS allowances could fall, potentially depressing carbon prices and undermining the mechanism intended to drive long-term decarbonisation.

These risks are magnified by the parallel phase-out of free allowances in carbon-intensive sectors such as steel, starting in 2026. Simultaneously tightening procurement rules and reducing free permits could place legacy producers under intense cost pressure, increasing the risk of industrial disruption or offshoring. It is however important to note that the encouragement of GPP criteria (rather than their mandatory application), can leverage market-based mechanisms such as the ETS in order to allow green and non-green producers to effectively compete on a more level playing field. Additionally, while the ETS balances the playing field when carbon permits are purchased, it does not take into account potential lifecycle considerations: products that are more carbon-intensive to produce, but consume less during their lifecycle (eg LED lighting). Allowing public procurers to take into account criteria with a longer time horizon would promote sustainable practices without curbing market competition.

Finally, coupling 'buy green' criteria with 'buy European' preferences risks undercutting the EU's narrative that CBAM – the EU's flagship trade decarbonisation policy – is a climate tool rather than a protectionist one. The EU is investing substantial political and negotiating capital in convincing trading partners that CBAM is not a protectionist measure, but rather a climate-related measure. This argument, much like the ETS itself, rests on the claim that once a product has paid the carbon-adjusted price at the border, it can compete on equal terms with EU products. Introducing additional product-origin or sustainability requirements may give rise to accusations that CBAM is merely a disguised tariff – weakening the EU's credibility in global climate and trade negotiations.

5 Streamlining the European approach

Given these considerations, the Commission should carefully consider how to proceed with GPP. GPP can play an important role in advancing Europe's decarbonisation but can also pose important administrative challenges to companies, and has the potential to substantially contribute to price increases. Furthermore, if coupled with buy-European conditions, it risks undermining the fundamental nature of the EU as an anchor of free and rule-based global trade, all while exacerbating the price pressures created by GPP.

Our analysis indicates a series of principles to be taken into account when reforming public procurement. First, consistency with the broader policy framework: GPP conditions would need to complement existing decarbonisation policies by offering an alternative avenue for companies to decarbonise, rather than constituting additional obligations on the private sector, not least to maintain

the credibility of the ETS system. This includes abstaining from buy-European criteria, which risk trade retaliation by going against rules-based trade, and which, when combined with green criteria, might reduce the credibility of other policies such as CBAM (which explicitly is not supposed to be a protectionist tool). In addition, such criteria can potentially stand in the way of the greening of procurement due to less-developed domestic markets.

Second, substantial price risks are associated with the shrinking of locally available supply. For this reason, at least in a first phase, GPP criteria at the award stage rather than eligibility stage would ensure that green producers must maintain the green premium they request within reasonable terms. Similarly, it might be worthwhile considering company-level criteria (eg via EU-wide 'green passports'), which would also take into account the company's decarbonisation efforts and its compliance with the ETS. Such a system could be inspired by existing pre-certifications, such as the Italian *Società Organismo di Attestazione* (SOA), but targeted at the company's sustainability profile. While risks of greenwashing might arise, and such certification might have a much lower lead-market creation capacity, it would also be much simpler and would off a unified metric and portability across borders and sectors. Companies with multiple operations would retain some wiggle room for specific products, as long as they decarbonise at corporate level. When considering this, it is important to consider that while this approach would probably simplify the operations of larger companies acting in multiple markets, specialised companies would not necessarily benefit from such wiggle room.

A similar but more specific pathway would be to create EU-wide green passports for specific products, which ultimately would work as forms of advanced labelling with cross-border recognition. In comparison to company-level eligibility criteria such as environmental pre-certifications, green product passports would offer a much stronger lead-market creation capacity, at the cost, however, of making the system substantially more complex.

Third, whenever possible, the EU should legislate through regulations rather than directives, to minimise the risk of cross-national regulatory variation, introduce single-market-wide standardisation whenever possible and ensure that any greening strategy enacted by a company resident in one jurisdiction to meet the set criteria can also be applied when competing in equivalent tenders in other parts of the single market. This can help alleviate potential supply-chain risks by opening up calls for tenders to a more diversified bidder pool. More competition can furthermore lead to a lower price premium.

This should also apply, whenever feasible, to procedures and evaluation systems, even though the administrative and political implications of this should however not be underestimated. Given that very large amounts of procurement take place at local and regional levels, and that substantial regulatory and operational differences exist even within member states, any amount of standardisation of procedures, while having significant effects, would inevitably impact on the everyday work of local public administrations across the continent. For this reason, any standardisation effort should be

clearly communicated well ahead of time and be characterised by a high degree of legislative stability once in operation.

Similarly, the EU budget should include room to expand standardised training of local public administrations and other procuring authorities, and to provide common platforms. In fact, whenever the EU introduces standardisation and streamlining, it should be accompanied by common digital platforms, to further reduce the administrative burden on both public authorities and the private sector. This would also help improve data availability to track the impacts of GPP on prices, numbers of bidders and supply-chain exposure.

Finally, the EU should offset, whenever possible, the cost increases associated with GPP by making use of joint and collaborative procurement and demand aggregation tools, which have the potential to substantially contain cost increments (Nicoli and Beetsma, 2024; Castiello, 2024). Short-run cost increases highlighted in section 3.1 could thus be offset in the short-term. In addition, aggregated demand can fast-track the creation of lead markets, leading to accelerated price reductions due to scale.

Given the naturally decentralised nature of public procurement, this is not easy to do, but a number of instruments are anyway available. First, the gas demand aggregation platform AggregateEU offers a blueprint[16]. A similar approach, on a voluntary basis, may work for aggregating demand for final products (such as vehicles). For raw materials such as steel or cement, however, this would be less efficient, since these are typically procured as a part of projects, with public authorities purchasing a project and the contractor responsible for procuring the inputs. For larger public purchases of final products, especially if executed by central government, the EU could ask countries to report their purchasing plans in a dedicated section of the documentation provided as a part of the European Semester, and then cross-reference the information from member states to assess whether opportunities for joint procurement exist, eventually reaching out to them to propose demand aggregation well in advance. For certain classes of products (for instance, defence products) this could represent a substantial factor in demand aggregation, contributing to offsetting prices increases associated with GPP.

In summary, we assessed the role of GPP as a strategic tool to support the EU's decarbonisation, industrial and geopolitical objectives, in the context of the DAS trilemma. While public and expert support for greener procurement remains high, a fundamental shift towards GPP poses regulatory, fiscal and geopolitical challenges. In particular, the fiscal implications of GPP could be significant. Greening even a modest share of procurement may involve substantial costs. To address these challenges, EU policymakers must strategically focus GPP efforts on high-emission, procurement-

[16] See European Commission, 'AggregateEU', undated, https://energy.ec.europa.eu/topics/energy-security/eu-energy-platform/aggregateeu_en.

intensive sectors, and deploy joint procurement and regulatory simplification to reduce fragmentation, scale up demand and contain costs.

Ultimately, GPP can contribute meaningfully to EU climate and industrial policy, provided it is integrated into a coherent policy mix that recognises its limits, navigates its trade-offs and maximises its leverage through collective action and targeted deployment.

References

Adolfsen, J., D. Kedan and M.-S. Lappe (2024) 'The geopolitics of green minerals', *The ECB Blog*, 10 July, available at https://www.ecb.europa.eu/press/blog/date/2024/html/ecb.blog240710~bb2bab6345.en.html

Appolloni, A., M.A. Coppola and G. Piga (2019) 'Implementation of green considerations in public procurement: a means to promote sustainable development', in R.K. Shakya (ed) *Green public procurement strategies for environmental sustainability*, IGI Global

Aulanier, H.-M., A. Crépel, J. Damond, A. Grandjean, R. Gounet and T. Méneret (2024) *Buy European and Sustainable Act: Accelerating the low-carbon transition in the European Union*, Carbone4, available at https://www.carbone4.com/en/publication-buy-european-and-sustainable-act

Beetsma, R. and F. Nicoli (2024) 'Joint public procurement as a tool for European Union industrial policy', *Policy Brief* 18/2024, Bruegel, available at https://www.bruegel.org/sites/default/files/2024-07/PB%2018%202024.pdf

Benachio, G.L.F., M.C.D. Freitas and S.F. Tavares (2019) 'Green supply chain management in the construction industry: A literature review', *IOP Conference Series: Earth and Environmental Science* 225, 012011, available at https://doi.org/10.1088/1755-1315/225/1/012011

Bovis, C.H. (2024) 'The ten-year anniversary of public procurement reforms: a critical assessment of the European Union public procurement Directives', *ERA Forum* 25(2): 203-219, available at https://link.springer.com/article/10.1007/s12027-024-00798-5

Castiello, G. (2024) 'The European Union's purchasing power: An analysis of the role of the European Commission in the health, energy and defence sectors', *Bruges Political Research Papers* 93/2024, College of Europe, available at https://www.coleurope.eu/sites/default/files/research-paper/wp93_Castiello.pdf

Castrén, J. and E. Hakala (2022) 'European Perception of Climate Change as a Security Issue', *Peace Review* 34(1): 73-81, available at https://doi.org/10.1080/10402659.2022.2023431

Chegut, A., P. Eichholtz and N. Kok (2019) 'The price of innovation: An analysis of the marginal cost of green buildings', *Journal of Environmental Economics and Management* 98, 102248, available at https://doi.org/10.1016/j.jeem.2019.07.003

Darvas, Z., L. Welslau and J. Zettelmeyer (2024) 'The implications of the European Union's new fiscal rules', *Policy Brief 10/2024*, Bruegel, available at https://www.bruegel.org/policy-brief/implications-european-unions-new-fiscal-rules

D'Aprile, P., H. Engel, G. van Gendt, S. Helmcke, S. Hieronimus, T. Nauclér, D. Pinner, D. Walter and M. Witteveen (2020) *Net-Zero Europe: Decarbonization pathways and socioeconomic implications*, McKinsey & Company, available at https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/how%20the%20european%20union%20could%20achieve%20net%20zero%20emissions%20at%20net%20zero%20cost/net-zero-europe-vf.pdf

Del Giudice, V., D.E. Massimo, F. Salvo, P. De Paola, M. De Ruggiero and M. Musolino (2021) 'Market Price Premium for Green Buildings: A Review of Empirical Evidence. Case Study', in C. Bevilacqua, F. Calabrò and L. Della Spina (eds) *New Metropolitan Perspectives (NMP 2020)*, Springer, available at https://doi.org/10.1007/978-3-030-48279-4_115

Draghi, M. (2024) *The future of European Competitiveness*, European Commission, available at https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en

Drake, S., J. Lundberg and S. Lundberg (2024) 'Market response to environmental policy via public procurement: An empirical analysis of bids and prices', *Journal of Environmental Management* 365, 121547, available at https://www.sciencedirect.com/science/article/pii/S0301479724015330

Dwaikat, L.N. and K.N. Ali (2016) 'Green buildings cost premium: A review of empirical evidence', *Energy and Buildings* 110: 396–403, available at https://doi.org/10.1016/j.enbuild.2015.11.021

Cernat, L. (2025) 'The Participation of Foreign Bidders in EU Public Procurement: Too Much or Too Little?' *ECIPE Policy Brief* 05/2025, European Centre for International Political Economy, available at https://ecipe.org/wp-content/uploads/2025/02/ECI_25_PolicyBrief_05-2025_LY02.pdf

ECA (2023) 'Public procurement in the EU', *Special Report* 2023/28, European Court of Auditors, available at https://www.eca.europa.eu/ECAPublications/SR-2023-28/SR-2023-28_EN.pdf

European Commission (2021) *Study on the measurement of cross-border penetration in the EU public procurement market*, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, BIP Business Integration Partners, Economics for Policy a knowledge Center of Nova School of Business and Economics Lisboa and Prometeia, available at https://single-market-economy.ec.europa.eu/publications/study-measurement-cross-border-penetration-eu-public-procurement-market_en

European Commission (2022) 'EU strategic dependencies and capacities: second stage of in-depth reviews', SWD(2022) 41 final, available at https://ec.europa.eu/docsroom/documents/48878

European Commission (2023) 'A Green Deal Industrial Plan for the Net-Zero Age', COM(2023) 62 final, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023DC0062

European Commission (2025a) 'The Clean Industrial Deal: A joint roadmap for competitiveness and decarbonisation', COM(2025) 85 final, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52025DC0085

European Commission (2025b) 'A European Steel and Metals Action Plan', COM(2025) 125 final, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52025DC0125

European Commission (2025c) 'Factual Summary report on the public consultation on Evaluation of the Public Procurement Directives', Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14427-Public-procurement-directives-evaluation/public-consultation_en

Franco, A. and S.N. Groesser (2021) 'Assessment of constraints in the EU photovoltaics circular supply chain for enhanced circularity', *Journal of Cleaner Production* 278, 123938, available at https://doi.org/10.1016/j.jclepro.2020.123938

IEA (2022) *Solar PV Global Supply Chains*, International Energy Agency, available at https://www.iea.org/reports/solar-pv-global-supply-chains

IEA (2024) *Batteries and Secure Energy Transitions*, International Energy Agency, available at https://www.iea.org/reports/batteries-and-secure-energy-transitions

Klimavičiūtė, L., M. Schito and E. Barcevičius (2024) 'Do firms submit fewer tender bids with high inflation? An analysis of firms' participation in public procurement in the EU', *Journal of Public Procurement* 24(4): 478-506, available at https://doi.org/10.1108/JOPP-12-2023-0093

Lappe, M.-S. and F. Nicoli (2024) 'European industrial policy at a crossroads? Evidence from an expert survey', *Analysis*, 27 November, Bruegel, available at https://www.bruegel.org/analysis/european-industrial-policy-crossroads-evidence-expert-survey

Lappe, M.-S. and F. Nicoli (2025) 'European green industrial policy at a crossroads? A pilot set of conjoint experiments among policy experts', *Contemporary European Politics,* forthcoming

Letta, E. (2024), *Much more than a market*, available at https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf

OECD (2015) *Going Green: Best Practices for Sustainable Procurement*, OECD Public Governance Reviews, Organisation for Economic Co-operation and Development, available at https://www.oecd.org/en/publications/going-green-best-practices-for-sustainable-procurement_3291acbf-en.html

Open Spending EU (2023) *How Open is Public Procurement Data in the EU?*, Open Contracting Partnership and Datlab, available at https://www.open-contracting.org/wp-content/uploads/2023/06/OCP2023-EU-OpenData.pdf

PwC (2024) *2024 Voice of the Consumer Survey*, PwC, available at https://www.pwc.com/gx/en/news-room/press-releases/2024/pwc-2024-voice-of-consumer-survey.html

Rosell, J. (2021) 'Getting the green light on green public procurement: Macro and meso determinants', *Journal of Cleaner Production* 279, 123710, available at https://doi.org/10.1016/j.jclepro.2020.123710

Schimdt, W.P. (2001) 'Strategies for environmentally sustainable products and services', *Corporate Environmental Strategy* 8(2): 118-125, available at https://doi.org/10.1016/S1066-7938(01)00093-8

Simcoe, T. and M.W. Toffel (2014) 'Government green procurement spillovers: Evidence from municipal building policies in California', *Journal of Environmental Economics and Management* 68(3): 411-434, available at https://www.sciencedirect.com/science/article/abs/pii/S0095069614000709.

Tagliapietra, S., R. Veugelers and J. Zettelmeyer (2023) 'Rebooting the European Union's Net Zero Industry Act', *Policy Brief* 15/2023, Bruegel, available at https://www.bruegel.org/policy-brief/rebooting-european-unions-net-zero-industry-act

Testa, F., E. Annunziata, F. Iraldo and M. Frey (2016) 'Drawbacks and opportunities of green public procurement: an effective tool for sustainable production', *Journal of Cleaner production* 112: 1893-1900, available at https://doi.org/10.1016/j.jclepro.2014.09.092

Ülkü, M.A. and J. Hsuan (2017) 'Towards sustainable consumption and production: Competitive pricing of modular products for green consumers', *Journal of Cleaner Production* 142: 4230-4242, available at https://doi.org/10.1016/j.jclepro.2016.11.050

Wang, Q., R. Zhang and J. Liu (2020) 'Price/time/intellectual efficiency of procurement: Uncovering the related factors in Chinese public authorities', *Journal of Purchasing and Supply Management* 26(3), 100622, available at https://www.sciencedirect.com/science/article/pii/S1478409220300753?via%3Dihub

WEF (2022) 'Green Public Procurement: Catalysing the Net-Zero Economy', *White Paper*, World Economic Forum, available at https://www3.weforum.org/docs/WEF_Green_Public_Procurement_2022.pdf

Zhang, D., F. Zou and S. Li (2017) 'Green Supply Chain Network Design with Economies of Scale and Environmental Concerns', *Journal of Advanced Transportation* 2017(1), 6350562, available at https://doi.org/10.1155/2017/6350562

© Bruegel 2025. Bruegel publications can be freely republished and quoted according to the Creative Commons licence CC BY-ND 4.0. Please provide a full reference, clearly stating the relevant author(s) and including a prominent hyperlink to the original publication on Bruegel's website. You may do so in any reasonable manner, but not in any way that suggests the author(s) or Bruegel endorse you or your use. Any reproduction must be unaltered and in the original language. For any alteration (for example, translation), please contact us at press@bruegel.org. Publication of altered content (for example, translated content) is allowed only with Bruegel's explicit written approval. Bruegel takes no institutional standpoint. All views expressed are the researchers' own.

Bruegel, Rue de la Charité 33, B-1210 Brussels
(+32) 2 227 4210
info@bruegel.org
www.bruegel.org