



Task Force 4
Refuelling Growth: Clean Energy
and Green Transitions



INDIA 2023



भारत 2023 INDIA

UNLOCKING THE G20's GREEN PUBLIC PROCUREMENT POTENTIAL

May 2023

Eileen Torres Morales, Research Associate, Stockholm Environment Institute (SEI, LeadIT)

Fiona Skinner, Coordinator, Industrial Deep Decarbonisation Initiative – United Nations Industrial Development Organization (IDDI, UNIDO)

Peter Hemingway, Policy Advisor, Industrial Deep Decarbonisation Initiative – United Nations Industrial Development Organization (IDDI, UNIDO)

Katarina Axelsson, Research Fellow, Stockholm Environment Institute (SEI)

Evelin Piirsalu, Senior Expert, Environmental Management Programme, Stockholm Environment Institute (SEI)

वसुधैव कुटुम्बकम्

ONE EARTH • ONE FAMILY • ONE FUTURE



Abstract






Green Public Procurement (GPP) practices in the construction sector have the potential to support countries' decarbonisation initiatives. Harnessing this potential will require concerted efforts within and among G20 countries, including establishing effective governance, building implementation and monitoring structures, and setting out ambitious goals and policies. This Policy Brief reports on the uptake of GPP policies in selected member states of the European Union (EU),^a including France and Germany, the European Union (EU) as an entity, and a few other G20 countries

including Brazil, Canada, China, India, Indonesia, Japan and the United States (US). Building on previous studies conducted by Stockholm Environment Institute (SEI) and the Clean Energy Ministerial (CEM) Industrial Deep Decarbonisation Initiative (IDDI), it outlines the scale of opportunity in developing markets for low-embodied carbon construction materials. The brief also highlights the importance of implementing coordinated and ambitious procurement policies that align with the net-zero goals and target both direct and embodied carbon emissions.


a EU member states selected: Estonia, France, Germany, Italy, the Netherlands, Poland, Spain and Sweden.



The Challenge



1



The implementation of Green Public Procurement (GPP) policies^b across G20 countries is slow, and weak monitoring systems make it difficult to track progress. The historical focus of climate reporting on direct emissions, instead of embodied emissions,^c means the true scale of procurement-related emissions remains unknown.¹ Strategically employed by G20 members, GPP can send out a powerful signal to global markets in support of green transition, stimulate markets for low-carbon construction materials, and aid climate commitments of G20 members. The EU recognises GPP as a policy instrument capable of influencing the market.² However, the EU's indicative target of meeting EU GPP criteria in 50 percent of all public tendering procedures by 2010 has yet to be met.³ Moreover, the EU has set a target to reduce greenhouse gas (GHG) emissions by 55 percent by 2030, compared with the 1990 baseline. Analysis suggests that focusing GPP

policies on emission-intensive sectors with sizeable public procurement volumes, such as construction, can help accomplish the targeted reduction in emissions.⁴ Available estimates for GHG emissions, generated by public procurement, focus on direct emissions, whereas embodied carbon in products and services is rarely reported. Globally, public procurement of construction products accounts for 12 percent of procurement-related GHG emissions.⁵ However, this estimate does not include embodied emissions, such as those stemming from the manufacture of steel or cement, implying that a significant environmental impact is unaccounted for; in most cases, government monitoring and disclosure systems do not report these emissions. Lack of reliable information about embodied carbon emissions is primarily explained by insufficient standards for measurement and reporting and hides the role that emission-intensive sectors can play in establishing environmentally responsible business standards.

b The European Commission defines Green Public Procurement as “a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured.” See: European Commission, ‘What Is GPP’, 2022, https://ec.europa.eu/environment/gpp/what_en.htm.

c Embodied carbon or embodied emission is defined as the GHG emission associated with a material throughout its entire life cycle, stretching from raw material extraction to the end of life. See: World Green Building Council, ‘Bringing Embodied Carbon Upfront’, 2019, <https://worldgbc.org/advancing-net-zero/embodied-carbon/>.



The G20's Role



2

Government agencies are top buyers of emission-intensive products, such as steel, cement and concrete. In the G20, this procurement power represents an opportunity to support and grow thriving markets for low-carbon products, create regulatory confidence for investors, and ultimately mitigate procurement-related emissions. Specifically, public procurement spending represents about 13 percent of the combined GDP of G20 countries⁶ and 15 percent of the EU's GDP.⁷

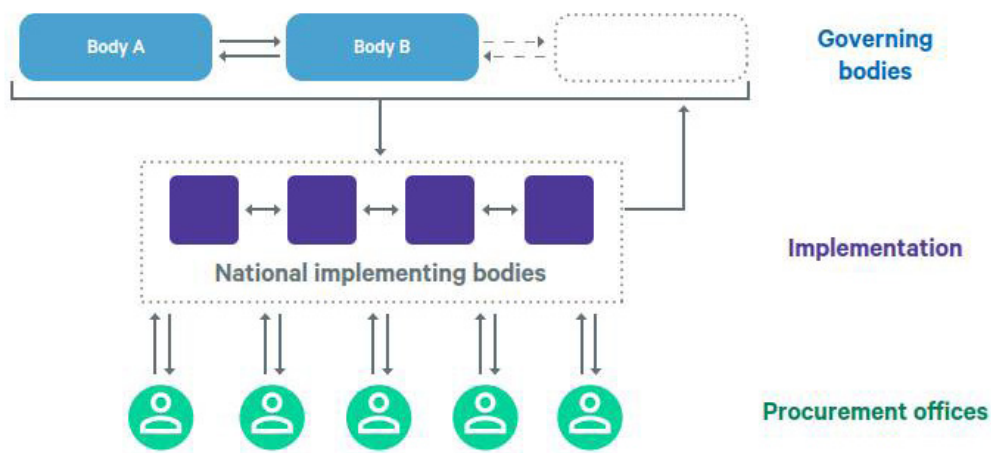
Governance Systems

Procurement is frequently overseen at the national level by government bodies responsible for trade, economics or

planning. Communication of GPP policy from governing bodies to implementing bodies, and thereafter to procurement offices, is key to its successful implementation;⁸ there are trade-offs in having several governing bodies or only one managing these stages.

Governance structures for GPP vary among the countries studied, but two broad structures or models are common. In Model 1, governance is shared between two or more entities. For example, one entity is responsible for the overarching procurement legislation and the second one provides environmental oversight and expertise (see Figure 1).

Figure 1: Governance Model 1: Independent Governing Bodies for Procurement and GPP Legislation



Source: Authors' own

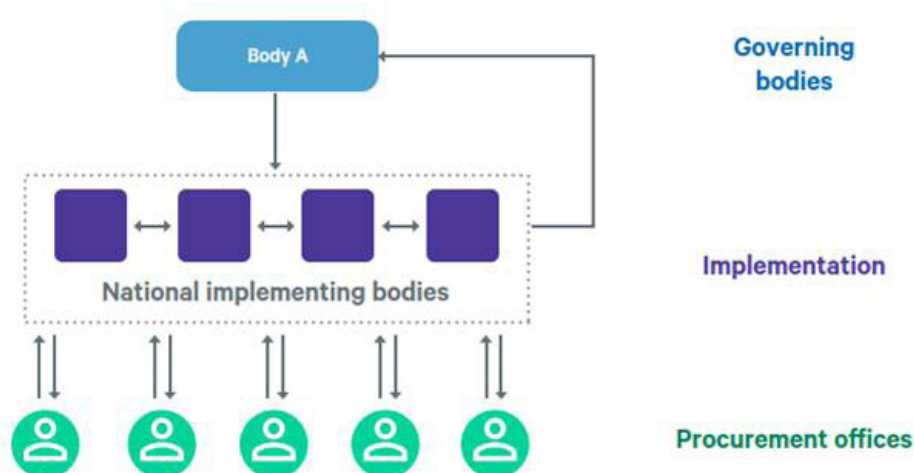
In Model 2, a single entity oversees the procurement legislation and establishes environmental guidelines for GPP (see Figure 2). In both models, the governing bodies provide GPP policy to one or more implementing bodies, which are responsible for executing and monitoring GPP through procurement offices.

Having several governing bodies (Model 1) requires effective communication and agreement between different ministerial offices or departments to design and enact a policy. Canada, France and Japan have succeeded in ensuring effective


cooperation between governing bodies through an institutional champion that leads interdepartmental collaboration. Meanwhile, having a single governing body (Model 2), such as in the EU and China, centralises responsibility, curtailing the requirement for strong interdepartmental communication but reducing the probability of bringing in sectoral expertise.

Some G20 countries, such as India, Indonesia and the US, follow neither models; instead, these operate interdepartmental task forces with varying governance structures. This task force-based governance can be represented as Model 3.

Figure 2: Governance Model 2: A Single Governing Entity for Procurement and GPP Legislation



Source: Authors' own



India's and Indonesia's efforts in this regard are in the initial stages. India has set up a Task Force on Sustainable Public Procurement, comprising representatives from at least nine government bodies, including environment, industry, economy and procurement entities.⁹ Similarly, Indonesia's GPP technical team includes representatives from eight government bodies.¹⁰ In the US, the Buy Clean Task Force includes representatives from 14 government departments, agencies and offices, accounting for 90 percent of all federally financed and purchased construction materials.¹¹

Goals, Policies and Legislation

Measurable, actionable and time-bound objectives are key to delivering near-term action on GPP and building the foundation for its long-term success.

In the EU, GPP is voluntary and can be applied to the public procurement processes of all EU member states.¹² In parallel with the umbrella GPP policy, sector-specific policies define mandatory environmental requirements for certain goods and services. These are not directly related to procurement but can be applied to products that may be procured. For example, construction products are covered by a range of energy efficiency policies, such as the Energy Performance of Buildings Directive and the Energy Efficiency Directive.¹³

EU member states set goals for GPP in their national action plans (NAPs).^d The structure of NAP includes the proposed policy framework and goals, mandatory GPP criteria, and means of implementation.¹⁴ Some include concrete actions for applying GPP (see Case Study 1).

d NAPs in the EU publicly accessible at https://ec.europa.eu/environment/gpp/action_plan_en.htm

Case Study 1 – Goals and Policies

In France, the NAP includes measurable, actionable and time-bound objectives for GPP. This also sets out a non-binding target: by 2025, all public procurement will include at least one environmental criterion. This will be achieved using the 22 actions on sustainable procurement, outlined in the NAP.¹⁵

In Germany, the Federal Climate Change Act aims to make the federal administration climate-neutral by 2030.¹⁶ The Act states that procurement preference should be accorded to goods “with which the aim of reducing greenhouse gas emissions over the whole lifetime of a good can be achieved at the lowest cost.”¹⁷ In Germany, GPP policy considers the energy efficiency of products and services through the life-cycle costing¹⁸ and extends to construction procurement.¹⁹ At the regional level, German states have the freedom to set independent procurement objectives.²⁰ In Berlin, procurement is considered an important lever for reaching climate neutrality by 2045. The city’s Procurement Law requires disclosure of environmental information for construction project tenders valued over 50,000 euro. A result of this law is a 47-percent reduction in GHG emissions, achieved through environmental considerations for 15 product groups, including office equipment, consumables, construction, transport and waste disposal.²¹

GPP policy at the national level is mandatory in Canada, Japan and the US. Legislation in Indonesia intends to make GPP mandatory, but lack of enforcement means that in practice, it is not.²² In the EU as a whole, France and Brazil, GPP is voluntary.²³

In China, the Ministry of Finance has issued national regulations for implementing government procurement of Energy Conservation Products (ECPs). This is complemented by the Environmental Labelling Products

(ELPs) list, issued by the Ministry of Environmental Protection.²⁴ China’s public procurement prioritises products from the ELP and ECP lists.²⁵ Procuring agencies are required to use the ECP list for certain product categories, while use of ELP is voluntary.

India intends to enact a GPP framework by establishing the Task Force on Sustainable Public Procurement, but continues to lack concrete policy instruments.²⁶



Case Study 2 – Goals and Policies

In Canada, the Policy on Green Procurement (2006) requires that life-cycle environmental impact of products and services be considered in procurement, in addition to the principle of ‘best value for money’.²⁷ Early implementation of this policy allowed Canada to develop further guidance, such as the Standard on Embodied Carbon in Construction²⁸ (effective since 31 December 2022) and the Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets²⁹ (effective since 1 April 2023). Under the latter, procurement worth more than US\$18 million (25 million Canadian dollars) must disclose GHG emissions and adopt a science-based target in line with the Paris Agreement.³⁰ Canada is a front-runner in legislation to facilitate disclosure of embodied carbon emissions in construction.³¹


In Japan, the Green Procurement Act (2000) requires that all government agencies and public institutions prepare green procurement policies, set yearly targets for purchasing eco-products, and report annually on the targets to the Ministry of the Environment. GPP is voluntary, but strongly encouraged for procurement at the sub-national level and in the private sector.³²

In the US, Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability (2021), sets out measurable, time-bound federal environmental targets and requires the heads of government agencies to propose targets to support the achievement of the government goals. Section 303 directs the Buy Clean Task Force to develop policies and procedures to improve reporting and transparency of embodied emissions and pollutants, related to the manufacture of construction products.³³

Monitoring Systems

Monitoring implementation of GPP policies against national targets allows governments to track GPP activities and evaluate and manage procurement processes. However, even where GPP policy exists, procurement reporting does not always include information

about how the procured products align with the recommended GPP criteria at the national level. Canada, France, Germany and Japan have well-developed systems for monitoring and publicly disclosing procurement information against GPP criteria (see Table 1).



Periodic procurement surveys are a common strategy for gathering data. In Canada, annual surveys for sustainable procurement have informed the quadrennial Sustainable Procurement Barometer.³⁴ It allows public and private organisations to self-assess and compare themselves with others.³⁵

In Japan, public institutions report procurement of goods and services, included in the Green Procurement Act, to the Ministry of the Environment annually. Reported data includes estimated procured quantities of eco-friendly goods and services and a ratio of the quantity of eco-friendly goods to the total quantity of goods and services procured.³⁶ The results are disclosed on the Ministry of the Environment's website. Similarly, in the US, heads of government agencies are required to propose targets and report on annual Sustainability Plans, which are based on the annual guidance, provided centrally by the Council on Environmental Quality.³⁷

At the procurement office level, there are limited standardised methodologies to help procurement officers evaluate the environmental impact of construction products. This

curtails the potential of procurement offices to identify low-carbon products and inhibits implementation bodies from monitoring and reporting on GPP. Environmental Product Declarations (EPD) have been adopted in some regions; however, where adopted, the methodologies vary.

Tools, Labelling and Support

While efforts are underway to build environmental criteria into public procurement, embodied emissions in materials have yet to be widely considered. Measuring the progress made on GPP implementation and comparing the G20 members studied is a challenge, as monitoring systems vary across countries, even across EU member states.

G20 members use a range of procurement tools, including databases of approved materials, educational guides, ecolabelling systems and data visualisation software, to identify 'greener' industrial products and monitor procurement volumes. Canada's Office of Greening Government Operations manages the development of tools and training materials^e to support procurement officers.³⁸ Canada has also integrated GPP monitoring into internal business



and resource management software to track the use of sustainability criteria in procurement.³⁹

Japan uses the Eco Mark programme^f to identify products compliant with the standards of the International Organization for Standardization (ISO), namely ISO 14020 and ISO 14024. Additionally, non-profit groups, such as Japan's Green Purchasing Network,^g support implementation, promotion and recognition of GPP in the country. In India, the Eco Mark labelling scheme has not been widely adopted by manufacturers or requested by buyers.⁴⁰ However, the labelling is required for certain products (e.g. steel and cement).⁴¹

The EU has developed tools and support materials to bolster GPP in its member states. The GPP website^h acts as a repository for EU GPP materials,

including guidelines,ⁱ a training toolkit,^j NAPs,^k updated EU GPP criteria,^l and a GPP helpdesk.^m The EU Ecolabel is found on a wide range of products and commonly used to evaluate the environmental impact of products. Member organisations, such as the EU Big Buyers for Climate and Environment initiative,ⁿ incentivise collaboration between sectoral buyers.⁴²

In Brazil, the government's product catalogue, CATMAT, helps procurers identify the green goods and services that are available.⁴³ Brazil also uses ecolabels to identify products, based on life-cycle environmental performance, and these are mainly used for construction-related procurement. For example, timber procurers can look for the PEFC and CERTFOR labels while energy efficiency products can display the Eletrobras and PROCEL labels.⁴⁴

e See: <https://www.tpsgc-pwgsc.gc.ca/app-acq/ae-gp/index-eng.html>
f See: https://ecomark.jp/nintei/index_en.html
g See: <https://www.gpn.jp/english/>
h See: https://ec.europa.eu/environment/gpp/index_en.htm
i See: https://ec.europa.eu/environment/gpp/buying_handbook_en.htm
j See: https://ec.europa.eu/environment/gpp/toolkit_en.htm
k See: https://ec.europa.eu/environment/gpp/action_plan_en.htm
l See: https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm
m See: <https://ec.europa.eu/environment/gpp/helpdesk.htm>
n See: <https://public-buyers-community.ec.europa.eu/about/big-buyers-working-together>

The US Inflation Reduction Act (2022) includes funding for the Environmental Protection Agency to develop Environmental Product Declarations and

low-carbon material labelling to help manufacturers differentiate between low-carbon products in the market and assist buyers in identifying these.⁴⁵

Table 1: Characteristics of GPP in the G20 countries studied

G20 member	Has GPP-specific legislation	Applicability	Defined goals	Monitoring	Public disclosure	Has construction-Specific GPP policy	Governance structure	Average procurement spend as share of GDP
Brazil	Yes	Voluntary	No	Information not available	No – general procurement info via ComprasNet ^o	Yes	1 Model	15% ^p
Canada	Yes	Mandatory	Yes	Yes	Yes	Yes	1 Model	17% ^q
China	Partially	Partially mandatory	No	Monitoring framework under development	Information not available	Partially	2 Model	35% ^r
EU	Yes	Voluntary	Yes	No	No – general procurement info via TED ^s	Yes	2 Model	15% ^q
France	Yes	Voluntary	Yes	Yes	Yes	Yes	1 Model	16% ^q
Germany	Yes	Partially mandatory	Yes, at the federal level	Yes	Yes	Yes	2 Model	18% ^q
India	No	Voluntary	No	Information not available	Information not available	No	3 Model	30% ^t
Indonesia	Yes	Planned to be mandatory	No	No	No	Yes	3 Model	7% ^q
Japan	Yes	Mandatory	Yes	Yes	Yes	Yes	1 Model	14% ^q
The USA	Yes	Mandatory	Yes	Yes	Yes – in development	Yes	3 Model	10% ^q

^o See: <http://paineldecompras.economia.gov.br/>

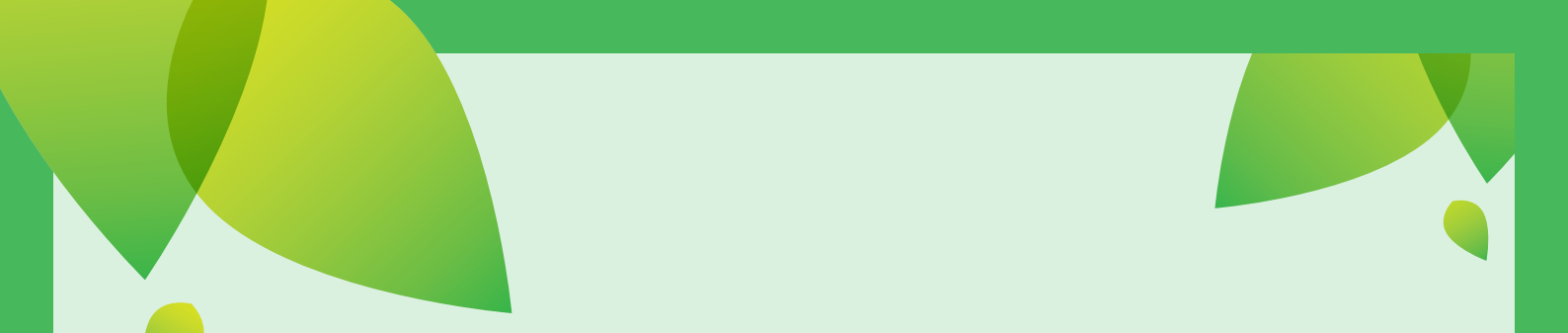
^p See: <https://www.oecd-ilibrary.org/sites/18dc0c2d-en/index.html?itemId=/content/component/18dc0c2d-en> - Figure 8.1

^q [https://www.international.gc.ca/trade-agreements-accords-commerciaux/topics-domaines/gp-mp/index.aspx?lang=eng#:~:text=Some%20estimates%20suggest%20that%20government,gross%20domestic%20product%20\(GDP\)](https://www.international.gc.ca/trade-agreements-accords-commerciaux/topics-domaines/gp-mp/index.aspx?lang=eng#:~:text=Some%20estimates%20suggest%20that%20government,gross%20domestic%20product%20(GDP))

^r See: <https://www.open-contracting.org/wp-content/uploads/2020/08/OCP2020-Global-Public-Procurement-Spend.pdf> - Page 23

^s See: <https://ted.europa.eu/TED/browse/browseByMap.do>


^t See: <https://www.climateworks.org/wp-content/uploads/2019/09/Green-Public-Procurement-Final-28Aug2019.pdf>



Recommendations to the G20



3



To accelerate the uptake of effective GPP policy, this Policy Brief recommends fostering collaboration to align the policy across all levels of the national government, establishing standardised environmental reporting and monitoring methods, setting sector-specific and time-bound targets, empowering and upskilling procurers and strengthening public-private collaboration to develop shared visions and strategies.

GPP commitments can act as part of a policy mix alongside climate policies such as carbon pricing, ecolabelling, and green product standards. Such commitments could also support the business case for deploying certain technologies that will be required to produce low-carbon construction products.

This brief outlines five policy recommendations that G20 countries can adopt to support the effective implementation of GPP.

1. Foster collaboration to align GPP policies at all governance levels.


Collaboration across the government can ensure coherent implementation.

Green procurement criteria should be introduced to tender processes at all governance levels, including accepted levels of embodied carbon in procured materials as a central GPP criterion.

This can be achieved by establishing clear responsibilities for GPP policy development, communication and implementation and creating working groups for green procurement that include representatives from procurement offices. Countries that have delineated responsibilities for GPP include Japan and Canada, where it is managed by several governing bodies (Model 1), with institutional champions leading green procurement.

2. Establish mandatory GPP, including standardised environmental reporting, monitoring and disclosure standards for embodied carbon emissions in procured products.

In most of the countries studied, GPP is voluntary (see Table 1). Introducing mandatory policies alongside voluntary mechanisms to recognise best-performing tender bids will ensure a minimum level of implementation. Penalties for non-compliance can support this process.



Data can potentially strengthen GPP policies. Accurate, verified and transparent data on the carbon footprint of construction products can inform procurers' strategy and decision-making.⁴⁶ This data can reveal the environmental impact of existing procurement, identify sources of emissions in supply chains, and support policy evaluation.

3. Establish sector-specific, time-bound targets and roadmaps.

Procurement can meaningfully contribute to national decarbonisation targets only if action plans are designed to address the country's needs. Beyond the good intentions of including green criteria for procurement, a roadmap for implementing GPP, such as NAP, mentioned earlier, will need to state a timeline and measurable targets for each sector.


4. Provide procurers with a clear mandate, goals and adequate financial and knowledge resources so that they can play a strategic role in implementing GPP.

The design of NAP or a similar strategic procurement plan should study the

potential effects of implementation at local and sectoral levels, prior to its launch. This should include considering the capacities of implementing bodies as well as the skills and resources needed for local procurement officers to manage and use green procurement criteria.

5. Strengthen public-private collaboration to develop shared visions and strategies.

Establishing concrete targets for procuring goods and services with a reduced environmental impact can send strong market signals from the public sector to the private one. G20 governments should work with industrial sector associations to establish product-specific baseline values for embodied carbon as well as emission reduction targets for high-emitting products, such as steel, cement and concrete. For the construction sector, this collaboration includes but is not limited to manufacturers across the value chain, sectoral associations and construction firms.



This interaction can also be facilitated by initiatives dedicated to sharing best practices for industrial decarbonisation with a global perspective. The Industrial Deep Decarbonisation Initiative (IDDI)^u provides guidance on setting measurable and time-bound targets for industry decarbonisation, focusing on steel, cement and concrete. Additionally, the Leadership Group for Industry Transition (LeadIT)^v provides

tools for developing industry transition roadmaps and tracks investments in low-carbon steel and cement.

Partnerships and collaboration between public and private sectors can help identify good practices and strengthen the purpose of GPP criteria for construction projects.

Attribution: Eileen Torres Morales et al., “Unlocking the G20’s Green Public Procurement Potential,” *T20 Policy Brief*, May 2023.

u <https://www.unido.org/IDDI>

v <https://www.industrytransition.org/>

Bibliography

APRSCP and SWITCH-Asia. 'Indonesia Current Status of Green Public Procurement (GPP)', 2022. https://www.switch-asia.eu/site/assets/files/3400/indonesia_country_report.pdf.

Bureau of Indian Standards. 'Products under Compulsory Certification'. Bureau of Indian Standards, 2023. <https://www.bis.gov.in/product-certification/products-under-compulsory-certification/>.

Casier, Liesbeth, and Laurin Wuennenberg. 'Leveraging the Power of the Public Purse: Using Public Procurement of Low-Carbon Innovation for Sustainable Infrastructure'. Policy brief. i24c, 14 December 2017. https://i2-4c.eu/wp-content/uploads/2017/12/I24C_Policy_1.5_web.pdf.

Economic and Social Research Council. 'EXECUTIVE SUMMARY OF THE REPORT: SUSTAINABLE PUBLIC PROCUREMENT IN BRAZIL', 2012. https://assets.publishing.service.gov.uk/media/57a08a7ae5274a31e0000608/60956_Exec_summary_SPP_in_Brazil.pdf.

ECPAR. 'Sustainable Procurement Barometer', 2018. <https://www.ecpar.org/en/sustainable-procurement-barometer>.

Environment and Economy Division, The Ministry of the Environment Government of Japan, and Environmental Policy Bureau. 'Introduction to Green Purchasing Legislation in Japan'. Japan, 2016. https://www.env.go.jp/policy/hozen/green/kokusai_platform/2015report/handbook_eng.pdf.

European Commission. 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Public Procurement for a Better Environment'. European Commission, 2008. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52008DC0400>.

'GPP National Action Plans'. Green Public Procurement, 2022. https://ec.europa.eu/environment/gpp/action_plan_en.htm.

'Green Public Procurement'. European Commission: Environment, 2021. https://ec.europa.eu/environment/gpp/index_en.htm.


'Studies', 2021. https://ec.europa.eu/environment/gpp/studies_en.htm.

'What Is GPP', 2022. https://ec.europa.eu/environment/gpp/what_en.htm.

Federal Ministry of Justice. Federal Climate Change Act of 12 December 2019 (2019). http://www.gesetze-im-internet.de/englisch_ksg/englisch_ksg.pdf.

Hasanbeigi, Ali, Renilde Becqué, and Cecilia Springer. 'Curbing Carbon from Consumption: The Role of Green Public Procurement'. Global Efficiency Intelligence, 2019. <https://www.climateworks.org/wp-content/uploads/2019/09/Green-Public-Procurement-Final-28Aug2019.pdf>.

Japanese Law Translation, Ministry of Justice, Japan. 'Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities', 2000. https://www.japaneselawtranslation.go.jp/en/laws/view/2719#je_at7.



Liebert, Tilmann, Jason Dion, Lei Huo, and Benjamin Denjean. 'Green Public Procurement in China: Quantifying the Benefits'. International Institute for Sustainable Development, 2015. <https://www.iisd.org/system/files/publications/green-public-procurement-china-quantifying-benefits-en.pdf>.

Nilsson Lewis, Astrid, Kaidi Kaaret, Eileen Torres Morales, Evelin Piirsalu, and Katarina Axelsson. 'Green Public Procurement: A Key to Decarbonizing Construction and Road Transport in the EU', 9 February 2023. <https://doi.org/10.51414/sei2023.007>.

OECD. 'Government at a Glance 2021', 2021. <https://www.oecd-ilibrary.org/content/publication/1c258f55-en>.

Open Data Institute. 'Tackling the Climate Crisis with Data: What the Built-Environment Sector Can Do', 2021. <https://www.theodi.org/article/tackling-the-climate-crisis-with-data-what-the-built-environment-sector-can-do/>.

Public Works and Government Services Canada. 'Green Procurement'. Government of Canada, Public Works and Government Services Canada, 7 October 2011. <https://www.tpsgc-pwgsc.gc.ca/app-acq/ae-gp/index-eng.html>.

The White House. 'Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability'. The White House, 8 December 2021. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/12/08/executive-order-on-catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability/>.


'FACT SHEET: Biden-Harris Administration Announces New Buy Clean Actions to Ensure American Manufacturing Leads in the 21st Century'. The White House, 15 September 2022. <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/15/fact-sheet-biden-harris-administration-announces-new-buy-clean-actions-to-ensure-american-manufacturing-leads-in-the-21st-century/>.

Treasury Board of Canada Secretariat. 'Standard on Embodied Carbon in Construction', 4 November 2022. <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32742>.

'Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets', 9 November 2022. <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32743>.

UNEP. 'Comparative Analysis of Green Public Procurement and Ecolabelling Programmes in China, Japan, Thailand and the Republic of Korea: Lessons Learned and Common Success Factors'. United Nations Environment Programme, 2017. https://www.greengrowthknowledge.org/sites/default/files/downloads/resource/UNEP_green_public_procurement ecolabelling_China_Japan_Korea_Thailand_report.pdf.

UNODC. 'G20 PRINCIPLES FOR PROMOTING INTEGRITY IN PUBLIC PROCUREMENT - Turkey G20', 2015. https://www.unodc.org/documents/corruption/G20-Anti-Corruption-Resources/Thematic-Areas/Public-Sector-Integrity-and-Transparency/G20-Principles_for_Promoting_Integrity_in_Public_Procurement_2015.pdf.



US EPA. 'Inflation Reduction Act Programs to Fight Climate Change by Reducing Embodied Greenhouse Gas Emissions of Construction Materials and Products'. Overviews and Factsheets, 12 January 2023. <https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-programs-fight-climate-change-reducing-embodied>.

World Bank. 'Green Public Procurement: An Overview of Green Reforms in Country Procurement Systems', 4 November 2021. <http://hdl.handle.net/10986/36508>.


World Economic Forum. 'Green Public Procurement: Catalysing the Net-Zero Economy', January 2022. https://www3.weforum.org/docs/WEF_Green_Public_Procurement_2022.pdf.


World Green Building Council. 'Bringing Embodied Carbon Upfront', 2019. <https://worldgbc.org/advancing-net-zero/embodied-carbon/>.



Endnotes

1. OECD, 'Government at a Glance 2021', 2021, <https://www.oecd-ilibrary.org/content/publication/1c258f55-en>; UNODC, 'G20 PRINCIPLES FOR PROMOTING INTEGRITY IN PUBLIC PROCUREMENT - Turkey G20', 2015, https://www.unodc.org/documents/corruption/G20-Anti-Corruption-Resources/Thematic-Areas/Public-Sector-Integrity-and-Transparency/G20-Principles_for_Promoting_Integrity_in_Public_Procurement_2015.pdf.
2. European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Public Procurement for a Better Environment' (European Commission, 2008), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52008DC0400>.
3. European Commission, 'Studies', 2021, https://ec.europa.eu/environment/gpp/studies_en.htm.
4. World Economic Forum, 'Green Public Procurement: Catalysing the Net-Zero Economy', January 2022, https://www3.weforum.org/docs/WEF_Green_Public_Procurement_2022.pdf.
5. World Economic Forum, 'Green Public Procurement: Catalysing the Net-Zero Economy', 7.
6. UNODC, 'G20 PRINCIPLES FOR PROMOTING INTEGRITY IN PUBLIC PROCUREMENT - Turkey G20'.
7. OECD, 'Government at a Glance 2021'.
8. Liesbeth Casier and Laurin Wuennenberg, 'Leveraging the Power of the Public Purse: Using Public Procurement of Low-Carbon Innovation for Sustainable Infrastructure', Policy brief (i24c, 14 December 2017), 27, https://i2-4c.eu/wp-content/uploads/2017/12/i24C_Policy_1.5_web.pdf.
9. Ali Hasanbeigi, Renilde Becqué, and Cecilia Springer, 'Curbing Carbon from Consumption: The Role of Green Public Procurement' (Global Efficiency Intelligence, 2019), <https://www.climateworks.org/wp-content/uploads/2019/09/Green-Public-Procurement-Final-28Aug2019.pdf>.
10. APRSCP and SWITCH-Asia, 'Indonesia Current Status of Green Public Procurement (GPP)', 2022, https://www.switch-asia.eu/site/assets/files/3400/indonesia_country_report.pdf.
11. The White House, 'FACT SHEET: Biden-Harris Administration Announces New Buy Clean Actions to Ensure American Manufacturing Leads in the 21st Century', The White House, 15 September 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/15/fact-sheet-biden-harris-administration-announces-new-buy-clean-actions-to-ensure-american-manufacturing-leads-in-the-21st-century/>.
12. European Commission, 'Green Public Procurement', European Commission: Environment, 2021, https://ec.europa.eu/environment/gpp/index_en.htm.

- 
13. Astrid Nilsson Lewis et al., 'Green Public Procurement: A Key to Decarbonizing Construction and Road Transport in the EU', 9 February 2023, <https://doi.org/10.51414/sei2023.007>.
 14. European Commission, 'GPP National Action Plans', Green Public Procurement, 2022, https://ec.europa.eu/environment/gpp/action_plan_en.htm.
 15. Nilsson Lewis et al., 'Green Public Procurement'.
 16. Federal Ministry of Justice, 'Federal Climate Change Act of 12 December 2019' (2019), http://www.gesetze-im-internet.de/englisch_ksg/englisch_ksg.pdf.
 17. Federal Ministry of Justice.
 18. European Commission, 'GPP National Action Plans'.
 19. Nilsson Lewis et al., 'Green Public Procurement'.
 20. Nilsson Lewis et al.
 21. Nilsson Lewis et al.
 22. APRSCP and SWITCH-Asia, 'Indonesia Current Status of Green Public Procurement (GPP)'.
 23. Economic and Social Research Council, 'EXECUTIVE SUMMARY OF THE REPORT: SUSTAINABLE PUBLIC PROCUREMENT IN BRAZIL', 2012, https://assets.publishing.service.gov.uk/media/57a08a7ae5274a31e0000608/60956_Exec_summary_SPP_in_Brazil.pdf; European Commission, 'What Is GPP', 2022, https://ec.europa.eu/environment/gpp/what_en.htm; Nilsson Lewis et al., 'Green Public Procurement'.
 24. Tilmann Liebert et al., 'Green Public Procurement in China: Quantifying the Benefits' (International Institute for Sustainable Development, 2015), <https://www.iisd.org/system/files/publications/green-public-procurement-china-quantifying-benefits-en.pdf>.
 25. UNEP, 'Comparative Analysis of Green Public Procurement and Ecolabelling Programmes in China, Japan, Thailand and the Republic of Korea: Lessons Learned and Common Success Factors' (United Nations Environment Programme, 2017), https://www.greengrowthknowledge.org/sites/default/files/downloads/resource/UNEP_green_public_procurement ecolabelling_China_Japan_Korea_Thailand_report.pdf.
 26. Hasanbeigi, Becqué, and Springer, 'Curbing Carbon from Consumption: The Role of Green Public Procurement'.
 27. Hasanbeigi, Becqué, and Springer.
 28. Treasury Board of Canada Secretariat, 'Standard on Embodied Carbon in Construction', 4 November 2022, <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32742>.
 29. Treasury Board of Canada Secretariat, 'Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets', 9 November 2022, <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32743>.
 30. Treasury Board of Canada Secretariat.
 31. Treasury Board of Canada Secretariat, 'Standard on Embodied Carbon in Construction'.

- 
32. Environment and Economy Division, The Ministry of the Environment Government of Japan, and Environmental Policy Bureau, 'Introduction to Green Purchasing Legislation in Japan' (Japan, 2016), https://www.env.go.jp/policy/hozen/green/kokusai_platform/2015report/handbook_eng.pdf.
 33. The White House, 'Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability', The White House, 8 December 2021, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/12/08/executive-order-on-catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability/>.
 34. ECPAR, 'Sustainable Procurement Barometer', 2018, <https://www.ecpar.org/en/sustainable-procurement-barometer>.
 35. World Bank, 'Green Public Procurement: An Overview of Green Reforms in Country Procurement Systems', 4 November 2021, <http://hdl.handle.net/10986/36508>.
 36. Japanese Law Translation, Ministry of Justice, Japan, 'Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities', 2000, art. 8 (1), https://www.japaneselawtranslation.go.jp/en/laws/view/2719#je_at7.
 37. The White House, 'Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability'.
 38. Ali Hasanbeigi, Renilde Becqué, and Cecilia Springer, 'Curbing Carbon from Consumption: The Role of Green Public Procurement' (Global Efficiency Intelligence, 2019), <https://www.climateworks.org/wp-content/uploads/2019/09/Green-Public-Procurement-Final-28Aug2019.pdf>.
 39. Hasanbeigi, Becqué, and Springer.
 40. Hasanbeigi, Becqué, and Springer.
 41. Bureau of Indian Standards, 'Products under Compulsory Certification', Bureau of Indian Standards, 2023, <https://www.bis.gov.in/product-certification/products-under-compulsory-certification/>.
 42. Astrid Nilsson Lewis et al., 'Green Public Procurement: A Key to Decarbonizing Construction and Road Transport in the EU', 9 February 2023, <https://doi.org/10.51414/sei2023.007>.
 43. Hasanbeigi, Becqué, and Springer, 'Curbing Carbon from Consumption: The Role of Green Public Procurement'.
 44. Hasanbeigi, Becqué, and Springer.
 45. US EPA, 'Inflation Reduction Act Programs to Fight Climate Change by Reducing Embodied Greenhouse Gas Emissions of Construction Materials and Products', Overviews and Factsheets, 12 January 2023, <https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-programs-fight-climate-change-reducing-embodied>.
 46. Open Data Institute, 'Tackling the Climate Crisis with Data: What the Built-Environment Sector Can Do', 2021, <https://www.theodi.org/article/tackling-the-climate-crisis-with-data-what-the-built-environment-sector-can-do/>.



वसुधैव कुटुम्बकम्

ONE EARTH • ONE FAMILY • ONE FUTURE