4 Mainstreaming emerging approaches to monitor and evaluate the impacts of GPP

This chapter presents the findings from the 2022 OECD Survey on GPP concerning the use of reporting and monitoring systems across OECD and non-OECD countries. Most notably, it provides an overview of the types of GPP-related data that are collected by governments, including on the environmental and economic impacts of green procurement strategies.

4.1. The use of monitoring systems to track GPP implementation.

As mentioned in Chapter 2, Green Public Procurement has been high on governments' agenda for more than a decade, and an increasing number of countries have adopted policies and strategies to promote GPP. Nevertheless, reporting and monitoring still represent an area of weakness. Countries' efforts have focused on formalising GPP strategies and policies in public procurement systems rather than on tracking results, however, the adoption of a GPP strategy does not guarantee that its implementation will be monitored and assessed. In some cases, monitoring and evaluation are not included in GPP policies and action plans, and even when they are, countries encounter practical challenges, such as the limited availability of tools to gather and generate monitoring reports and the lack of financial and human resources.

The 2015 OECD Recommendation on Public Procurement highlights the importance of setting up monitoring and evaluation systems to measure the performance of public procurement systems and hold public procurement practitioners accountable for the delivery of policy goals through public procurement, including environmental and climate goals (OECD, 2015[1]). Moreover, results from monitoring can help identifying existing challenges and bottlenecks and inform a positive feedback loop to improve the design of GPP-related policies, action plans, and operational tools.

Most importantly, under the Paris Agreement, countries have committed to cut global greenhouse gas (GHG) emissions by at least 43% by 2030[1] and reach climate-neutrality by 2050. GPP constitutes an important part of their toolbox: according to recent data, the purchasing of products and services by public entities accounts for 15% of GHG emissions (World Economic Forum & Boston Consulting Group, January 2022[2]). Monitoring and evaluating the performance of GPP measures and its environmental results are thus key to support targeted interventions and ensure public procurement effectively contributes to countries' climate goals.

According to the results from the OECD Survey, around 76% of the participating countries have put in place monitoring systems to keep track of the use of GPP in public tenders. However, not all of them make it mandatory for contracting authorities to report on the use of GPP in procurement procedures. The requirement often applies exclusively to central government authorities, while public organisations from other government levels might still report on green purchases on a voluntary basis. For example, in Ireland, only Government Departments are required to report on GPP in their annual reports. To help them comply with the reporting requirements, as set out in the Circular 20/2019, the Irish Environmental Protection Agency (EPA) has developed a GPP-reporting template. For 2020, the template covered the total number and value of contracts issued over EUR 25 000 by "priority" sectors (8) and the total number and value of contracts issued over EUR 25 000 by "priority" sectors incorporating GPP. For 2023, the template includes 10 priority sectors and the national advertising thresholds were increased from EUR 25 000 to EUR 50 000 (Environmental Protection Agency, 2024[3]). Similarly, in Japan, the national government entities report on procurement of goods and services covered in the Green Procurement Act to the Ministry of the Environment, on an annual basis. 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. The results are then disclosed on the Ministry of the Environment's website.

Monitoring the implementation of GPP against national targets is key to ensure public procurement contributes to the country's sustainability goals and climate commitments. Moreover, monitoring and reporting can help identifying barriers and bottlenecks that hinder GPP potentials and limit its uptake by contracting authorities. Building upon monitoring results and in-depth analysis with procurement players, governments can improve the design of GPP policies and action plans, develop targeted solutions, provide operational support and guidance as needed. In 2021, given the absence of progress to achieve the national target of 50% of GPP by 2019, Lithuania decided to reform the public procurement system and revise the GPP legislation, also considering the main barriers identified (For more information, see Box 4.1).

Box 4.1. Lithuania: using results from monitoring to improve GPP policy design and supportive tools

According to the Government's National Green Procurement Implementation Program, Lithuania had a target of 50% of GPP by 2019. Nevertheless, by 2020 the target was not yet achieved. According to data from monitoring, the share of GPP (in value) from public procurement for which environmental criteria have been established were the following:

- 9.3% in 2018;
- 7.2% in 2019;
- 9.6% in 2020.

The absence of progress was a clear evidence of insufficient policy implementation actions for GPP. Further analysis led to the identification of three main barriers to GPP success:

1. Complex GPP criteria and strict requirements regarding their application;
2. Discrepancies between GPP criteria and rapidly evolving market supply;
3. Insufficient competence and lack of motivation of public buyers.

Building upon these inputs, in 2021, Lithuania launched an ambitious public procurement reform to reduce its carbon footprint and ensure every public procurement decision took into account its environmental impact. The Ministry of Environment created a roadmap for the reform via a ministerial decree that sets out clear criteria to define what “green procurement” is as well as regular new GPP milestones (10% (in value) of GPP by 2021, 50% by 2022, and 100% by 2023).

Most notably, a procurement is identified as “green” if:

- Uses award criteria established by the Ministry of the Environment via the ministerial decree, which build upon the EU GPP criteria;
- Includes supplier certificates, such as ecolabels or environmental management systems;
- It is part of the pre-selected product groups that have been defined as “green”.

Moreover, the Lithuanian Public Procurement Office (LPPO) created a new sustainability unit to lead GPP implementation, also known “Sustainable Procurement Competence Centre”. This new unit promotes the use of green criteria with training, a helpdesk service to assist buyers, and specific guidance for high-impact sectors. The LPPO is also using open procurement data to track the status of “green targets” through a user-friendly public dashboard, nudging authorities if they lag behind. Green fairs, catalogues, and other vendor outreach events encourage government buyers to change their purchasing habits.

Thanks to the reform and the support by LPPO, the levels of green procurement uptake across Lithuanian public institutions have increased to 59.7% by value and 32.6% by total procedures in 2022. The LPPO is now keen to move beyond measuring outputs like the use of green criteria to focus on the outcomes from better procurement, such as reducing Lithuania’s carbon footprint.

Source: (Granickas, 2022[4]; Government of Lithuania, 2021[5]).

To ensure effective GPP monitoring, it is important that the authorities responsible for GPP develop an institutionalised reporting framework and define the indicators contracting authorities have to report on, the source of data to use and provide, the frequency of reporting, and the reporting formats. Moreover, a GPP monitoring system requires substantial investments, both in terms of digital infrastructures for automated data collection and human resources. Data collection and analysis require technical capacity and expertise. Technical information needs also to be complemented with reports summarising key results and

messages in order to effectively communicate with the main actors of the public procurement system as well as with the public (OECD, 2023[6]). Performance (i.e. the ability of completing a determined goal or objective) evaluation is usually conducted by defining key performance indicators (KPIs) that are monitored over time (OECD, 2023[6]). The OECD developed a comprehensive, ready-to-use performance measurement framework for consistently assessing procurement processes and supporting data-based policy and decision making in the public procurement field. It consists of a total 259 indicators divided into the three categories/dimensions of indicators: compliance, efficiency and strategic objectives. The framework describes and categorises each indicator in detail, according to a number of parameters, such as the procurement stage, the sub-category of indicator, the metric description. Within the strategic indicators, the OECD has created one category dedicated to GPP (see Table 4.1). It includes 11 indicators, related to different public procurement stages, for example the share of procurement volume with GPP criteria and the share of number of contracts with GPP criteria (OECD, 2023[6]).

Table 4.1. Example of strategic indicators developed by the OECD on GPP

Sub-category	Type of user	Indicator (name)	Procurement stage	Core VS Aspirational	Metric description	Level of data:	Calculation/date requirements
GPP	NA/CA	Share of procurement procedures with GPP criteria	Pre-tendering / tendering	Core	Assessment of the share of procurement procedures with GPP criteria (in number of procedures).	Tender	= Number of procurement procedures with GPP criteria/ Total number of procurement procedures
	NA/CA	Share of procurement volume with GPP criteria	Pre-tendering / tendering	Core	Assessment of the share of procurement volume with GPP criteria	Tender	= Procurement volume with GPP criteria / Total procurement volume
	NA/CA	Number of procurement procedures using LCC	Pre-tendering / tendering	Core	Assessment of the number of procurement procedures using LCC	Tender	= ∑ of procurement procedures using LCC
	NA/CA	Share of procedures with GPP performance clauses	Pre-tendering / tendering	Aspirational	Assessment of the share of tenders procedures GPP-related performance clauses	Tender	= Number of procurement procedures with GPP performance clauses / Total number of procurement procedures
	NA/CA	Share of procurement volume (contracts) with GPP criteria	Contract management	Core	Assessment of the share of procurement volume (contracts) with GPP criteria	Tender	= Procurement volume with GPP criteria (from contracts) / Total procurement volume (from contracts)
	NA/CA	Share of contracts with GPP criteria applicable to subcontractors and supply chains	Contract management	Aspirational	Assessment of the share of contracts with GPP criteria applicable to Subcontractors and supply chains	Tender	= Number of contracts with GPP criteria applicable to Subcontractors and supply chains / Total number of contracts with GPP criteria

Source: (OECD, 2023[6]).

The surveyed countries rely on different forms of monitoring systems to track GPP implementation, including digital platforms that can be either linked or separate from the main e-Procurement system/s, excel files, e-mails, or other forms of paper-based documentation (see Figure 4.1). Of the 35 countries that indicated having a GPP framework of policy in place, 37% rely on digital platforms that are linked to the e-Procurement, while 23% use stand-alone online platforms or other monitoring arrangements. For instance, Korea monitors GPP across 30 000 procuring entities through a digital system that is interconnected with the different e-Procurement platforms that are used by public organisations[2]. Similarly, Estonia monitors the use of environmental criteria in public tenders directly through the e-Procurement system, which is operated by the Ministry of Finance (EMiF). On the other hand, the Netherlands collects data on GPP through a dedicated self-evaluation tool (for more information on the examples from Korea, Estonia, and the Netherland, see Box 4.2).

E-Procurement systems can improve the quality of GPP monitoring as they enable routine data collection on tender specifications, tendering process, and contract performance. If public procurement practitioners were also asked to report on green criteria when using the e-Procurement platform, this would streamline monitoring and reduce the reporting workload for public officials and contracting authorities. The use of e-Procurement to automate data collection on GPP will also improve data consistency and quality. Moreover, public managers will have access to data tracking, data analysis and data visualisation in real time to make informed decisions on procurement plans and identify opportunities to improve the green performance of the organisation (World Bank, 2021[7]).

Integrating sustainability in e-procurement platforms could also further promote GPP implementation, as it would radically reduce the costs of seeking sustainable goods and services for public procurement practitioners. Moreover, public organisations could use the e-Procurement system to raise the profile of sustainable products and services and includes them as the default option during purchasing.

Box 4.2. GPP monitoring system across in Korea and the Netherland

The e-Procurement systems in Korea

The Republic of Korea is a front-runner in the use of electronic procurement systems and digital platforms for monitoring GPP. The early implementation of the Korean Online E-Procurement System (KONEPS), KONEPS e-shopping malls, KEITI's Green Procurement Information System (GPIS-I), and the most recent developments of the Public Procurement Data System enable automatic collection of GPP data, across all levels of government. Today, Korea's GPP monitoring system is considered as a world-leading example.

The national government monitors GPP across 40 000 procuring entities through the GPIS-I online monitoring system. GPSI-I also provides graphic representations of the organisations' GPP plans, records and environmental benefits. The system monitors two key GPP indicators:

i. The number of agencies submitting GPP implementation plans and performance reports;
ii. Purchases of green products (e.g. units and expenditure on ecolabel products, percentage of green purchases compared to total expenditure in priority product groups).

GPIS-I gathers data from three different data sources:

1. Central government procurement through the Republic of Korea's e-procurement system (KONEPS), compiled monthly in an excel file and integrated into GPIS-I;
2. Low-volume purchases through the country's e-shopping mall "Green Market," automatically tracked and transferred to GPIS-I;

3. Direct procurement by entities using their own systems, tracked by each entity and manually input into GPIS-I.

Moreover, the central government, local governments, and public education authorities now produce annual procurement records through their online accounting systems that can be directly integrated into GPIS-I.

Self-assessment tool in the Netherlands

In the Netherlands, contracting authorities are required to report on their activities, on an annual basis, to the organisation' own management (for example, as part of the "non-financial activities" within the annual report) as well as to the Central Government. The Central Government provides a summary of the reports in a Letter to the Parliament, which offers an overview of the progress and results of SPP at the national level.

The Dutch reporting system requires a clear agreement with contracting authorities on the Key Performance Indicators (KPIs), which must be linked to the expected outcomes. For instance, KPIs can measure the number of green products purchased and/or the environmental benefits achieved. Contracting organisations can include the agreed-upon KPIs as accountability and standard requirements in procurement procedures and public contracts. Moreover, at the award stage, tenderers are required to provide the tools to measure sustainability outcomes. To ensure harmonisation, the Central Government gives guidance and instructions.

For GPP activities, contracting entities report on GPP through the **SPP Self-evaluation Tool**, which assesses the organisation's efforts to promote sustainability in the procurement procedures and contract management. The Tool, however, does not measure impacts such as CO_2 emissions savings or increased job opportunities, as this would require a more complex instrument.

Under the Government Procurement Strategy "Procuring with Impact", all government organisations are required to implement the Tool to ensure accountability towards the Parliament. Nevertheless, its use is not strictly controlled. The Tool was rolled out in 2018 and it is not yet widely adopted across organisations, partly because clients and public administrations do not always ask to communicate the results from the self-evaluation exercise. Today, the Government is planning include the requirement to use the Tool in the new administrative agreements with contracting authorities, provided that they are willing to commit.

Results from the SPP Self-evaluation Tool provide information on the effects achieved through SPP by government agencies on the environment, climate, circularity and social areas - insofar as data is available. The Tool covers 16 product groups since 2015/2016, so results are also used to show progress and identify unfolding trends.

Data collected with the Tool represents key inputs for policy decisions at the national level, especially to identify the sectors with the largest environmental impact. Moreover, it can help building a knowledge basis on SPP' impacts at the local level, as well as clarifying the kind of information suppliers need to provide to show the effects of SPP.

The EMiF-operated procurement register in Estonia

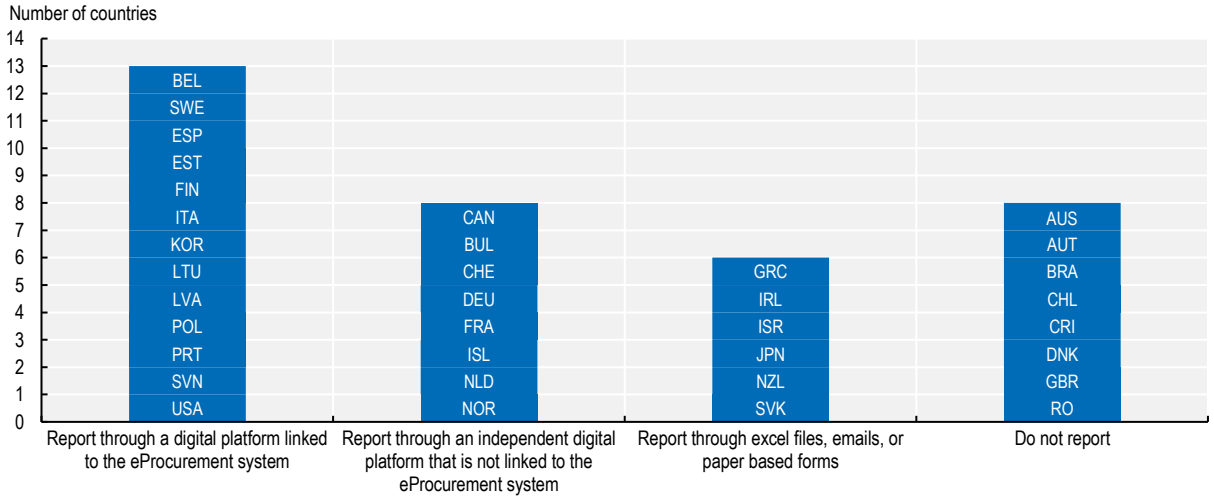
In Estonia, the Ministry of Finance (EMiF) is responsible for developing a public procurement oversight report, which also includes the share of procurement procedures that integrate environmental criteria. GPP data is collected via the EMiF-operated procurement register, where public tenders are published and executed. Moreover, the Ministry of the Environment provides support to EMiF to make changes in the register to support GPP implementation.

In the procurement register, a procurer can select built-in environmental criteria or formulate its own green criteria. In this latter case, the contracting authority needs to decide whether to mark the procurement as GPP. The procurement procedures that are marked as having environmental criteria are automatically recorded as "green", and they are covered by the GPP monitoring. The system only monitors the built-in or self-added environmental award and selection criteria, while green requirements as technical specifications or contractual clauses are not automatically included in the monitoring.

One potential risk of the monitoring system in Estonia is to underestimate the actual use of GPP in public tenders. If procurement officers are not provided with sufficient background knowledge of GPP, and they might omit labelling the procurement procedure as GPP, even when green technical specification and contractual clauses are included.

Source: (World Bank, 2021[7]); (UNEP, 2019[8]) ; (Dutch Ministry of Infrastructure and Water Management, 2021[9]) (Stockholm Environment Institute (SEI), 2023[10]).

Figure 4.1. GPP Monitoring systems across OECD countries



Note: The figure shows respondents answers to the question "How are public institutions required to report on GPP spend or number of tenders including GPP criteria? Please provide any relevant information." Austria established a system to monitor GPP, after the closure of the data cycle for this questionnaire (end of 2022), and data on GPP is currently being collected. In addition, some federal states also monitor their own sustainability programmes. In Australia, public institutions do need to report on ecologically sustainable development and environmental performance through institutions' Annual Reports. As of April 2023, Korea monitors GPP implementation across 40 000 procuring entities using a platform interconnected with all e-procurement systems. Hungary, Mexico and Peru are not included since they did not have a GPP framework in place at the time of the survey (end of 2022).
Source: OECD Survey on Green Public Procurement (2022).

Routine monitoring and reporting activities can be complemented with periodic surveys and evaluations. In Canada, for federal institutions subject to the Policy on Green Procurement, the Greening Government Strategy and the Federal Sustainable Development Strategy, reporting on GPP to Parliament occurs annually via the Departmental Results Reports as part of the Estimates process (Box 4.3).Conducting periodic and in-depth surveys of public agencies that score low on GPP or companies that do not participate in green tenders - especially, SMEs - can give access to information that is not normally available from administrative sources, including on GPP practices, perceptions, motivations, as well as on the barriers to GPP success. Moreover, it can help governments to drill down on specific agencies or product categories to assess GPP impacts and test the cost-effectiveness solutions for GPP.

Box 4.3. Departmental Results Reports to monitor GPP implementation in Canada

In Canada, for federal institutions subject to the Policy on Green Procurement, the Greening Government Strategy and the Federal Sustainable Development Strategy, there is the requirement to report on GPP to Parliament on an annual basis via the Departmental Results Reports (DRRs), as part of the Estimates process.

DRRs are part of the Estimates group of documents. Estimates documents support appropriation acts, which specify the amounts and the general scope for which public funds can be spent by the government. Moreover, DRRs help informing parliamentarians and Canadian citizens of the results achieved by government organisations.

The Estimates document group is made by 3 parts:

1. Part I – the Government Expenditure Plan that provides an overview of federal spending;
2. Part II – the Main Estimates that list the financial resources required by individual departments, agencies and Crown corporations for the upcoming fiscal year;
3. Part III – the Departmental Expenditure Plans that consist of 2 documents: the Departmental Plans (DPs) and the Departmental Results Reports (DRRs). DPs are expenditure plans for each appropriated department and agency (excluding Crown corporations). They describe departmental priorities, strategic outcomes, programmes, expected results and associated resource requirements, covering a 3-year period (starting from the year indicated in the title of the report). The DRRs are individual department and agency accounts of performance covering the most recent fiscal year against the plans, priorities and expected results set out in their respective DPs.

Moreover, Supplementary Estimates documents present information on spending requirements that were either not sufficiently developed in time for inclusion in the Main Estimates or that were subsequently refined to account for developments, in particular programmes and services.

Source: (Government of Canada, 2023[11]).

4.2. Can GPP help countries achieve their emission reduction targets?

Despite the strong narrative on the potential of GPP to contribute to sustainable development goals and emissions reduction targets, only a few countries measure the environmental impacts of green procurement strategies, including in terms of CO_2 emissions saved. Data constraints represent a key challenge. Often, procurement data is not granular enough to distinguish between different types of products purchased, such as an electric car vs. a diesel car. Most public procurement information available in e-Procurement systems are based on public spending in broad product categories for which the environmental footprint can only be averaged. Therefore, any potential environmental benefits from changes to individual product procurement choices would not be reflected in these estimates.

Moreover, the granularity of the procurement data needs to be improved (i.e. product-level impact estimates are required, not product category level estimates). Assessing the entire lifecycle emissions of products – from extraction, manufacturing, and production to delivery, transport, usage, and disposal – is inherently difficult due to data scarcity/availability, and a lack of consensus on vital elements of the assessment such as system boundaries and the allocation of impacts to particular processes.

Comparing GPP outcomes also poses significant challenges due to the diverse criteria and standards used across different regions and sectors. Variations in environmental regulations, certification schemes, and evaluation methodologies can lead to inconsistencies in how the environmental performance of products and services is measured and compared.

In addition to that, data is often limited as it depends on supply chains that are spread across different countries. Private suppliers face barriers to share sustainability information of products as they often rely on reporting systems and standards that are not always interoperable or comparable. Furthermore, they might show reluctancy in providing access to such information in order to safeguard competitive advantages and/or confidential business information.

Finding solutions to these challenges is not straightforward, however, some of the surveyed countries (12) have yet developed and tested different methodological approaches to measure the aggregated impacts of GPP, such as CO_2 emission savings, with the advantage of gaining a better understanding of how procurement decisions are contributing to their climate goals (see Table 4.2).

Table 4.2. Measures taken to evaluate the implementation of GPP

	Available data in reporting systems	Data publicly available on a website	Aggregated evaluation of impact
Australia			
Austria			
Belgium	✧	●	●
Brazil			
Bulgaria	■	●	
Canada	✧	●	
Chile			
Costa Rica			
Denmark			●
Estonia	■	●	●
France	■		●
Finland	✧		
Germany	✧	●	
Greece	■	●	
Hungary	■	●	
Iceland	■	●	●
Ireland	■	●	
Israel	✧		
Italy	■	●	
Japan	✧	●	●
Korea	■	●	
Latvia	■	●	
Lithuania	■	●	
Mexico			
Netherlands	✧	●	●
New Zealand	✧	●	●
Norway		●	●
Peru	✧		
Poland	■	●	

	Available data in reporting systems	Data publicly available on a website	Aggregated evaluation of impact
Portugal	■	●	
Romania			
Slovak Republic	■	●	
Slovenia	■	●	●
Spain	■	●	
Sweden		●	●
Switzerland	✧	●	
United Kingdom			
United States	■	●	●
OECD Total			
● Yes		25	12
■ Data on the value of GPP	17		
✧ Data on the number of tenders including GPP criteria	10		

Note: The table shows answers received by the respondents to these questions: "How are public institutions required to report on GPP spend or number of tenders including GPP criteria? Please provide any relevant information Is there an aggregated evaluation of impact of GPP (e.g. annual report on CO_2 savings or waste reduction)? Please provide any additional information; When GPP data is collected/analysed, is it made publicly available on a website? Please provide any relevant details". Australia established a system to monitor GPP, after the closure of the data cycle for this questionnaire (end of 2022). Mexico and Hungary are not included in the aggregated evaluation of impacts of GPP policies as they indicated they did not have an active GPP framework at the time of the survey (end of 2022). Hungary adopted a GPP strategy (2022-2027) in December 2022, after the closure of the data cycle for this questionnaire.
Source: OECD Survey on Green Public Procurement (2022).

For instance, the Government of Canada has estimated the embodied carbon footprint of the goods and services it procures to identify the procurement categories to prioritise for action. To develop its National Strategy for GPP ("Green Procurement for a Green Future"), in 2020, Denmark undertook a comprehensive assessment of the climate footprint of public procurement. Moreover, it committed to improve and refine its approach for calculating and projecting carbon emissions related to public procurement to inform the definition of realistic GPP-targets and individual procurement decisions. Slovenia has developed a framework to measure the environmental effects, including GHG emissions, of green procurement for certain product categories, such as road vehicles and information and communication technology (ICT) appliances. Although Croatia did not take part in the Survey, it has developed an interesting methodology to measure the carbon dioxide savings for certain procurement groups (for more information on some of these examples, as well as on other countries' initiatives to assess the carbon footprint of procurement strategies, see Box 4.4).

Box 4.4. Ongoing countries' initiatives to measure the emissions impact of procurement strategies

The Government of Canada's Greenhouse Gas Emissions Inventory

As part of the Greening Governing Strategy, Canada aims at achieving net-zero emissions in public procurement of goods and services by 2050. To identify the most emission-intensive procurement categories and develop targeted interventions, the Government of Canada has estimated the embodied carbon footprint of the goods and services procured by its central procurement organisations (the Public Service and Procurement Canada and Shared Services Canada) over the period 2016 – 2020, with the support of CIRAIG (International Reference Centre for the Life Cycle of Products, Processes and Services). The average annual emissions were 4 124 kt CO_2 eq. for the extraction, processing, manufacturing and distribution lifecycle stages.

Embodied emissions have been calculated using open IO-Canada, a model for environmentally extended input-output analysis (EEIO), which uses spending to estimate the embodied carbon in goods and services procured. In the analysis, emissions related to the "use" and "end of life" phase are not counted, as they are measured as part of other government's activities and operations (e.g. operation of facilities and fleets).

To date, the model estimates the average emissions based on the amount spent in each procurement category. In other words, the model cannot measure the effect of "green" public procurement choices vs. conventional choices.

Slovenia's measurement framework to assess the environmental effects of GPP

As part of the larger initiative CARE4CLIMATE, co-founded by the European LIFE Programme and aimed at supporting Slovenia in achieving its emissions reduction targets, the Ministry of Environment and Spatial Planning has been working to develop a measurement framework to monitor the environmental, social, and economic effects of Green Public Procurement. Notably, the methodology covers impacts that can be measured either directly or indirectly, and it applies to three procurement categories: electrical and electronic appliances, road vehicles, design/construction of buildings. Various indicators and their corresponding methods (direct or indirect) were established. Regarding indoor the design and/or construction of buildings, the following indicators were used: CO2 emissions (indirect), energy consumption (indirect), water consumption (indirect), use of wood in construction (indirect), air quality (indirect), quality of the living environment (indirect). In the case of environmental impacts, in addition to directly measuring the reduction (or increase) in GHG emissions, the methodology indirectly measures pollution, waste generation and recycling, threats to biodiversity, and smog generation. Moreover, the methodology is comprehensive and considers all stages of a products lifecycle.

To assess the impacts of green procurement decisions, a baseline is always identified for comparison. The baseline can be defined in different ways, also according to the procurement category considered. For example, it can be defined through an energy label that provides information on the energy consumption of products and appliances, and it is useful for electronic devices and indirectly for road vehicles and building construction. In the absence of this, the baseline can be determined as an average of the items of a comparable class of product/service.

Beside creating a yardstick for the monitoring of the effects of green procurement strategies over time, results from measurement are also used to further improve GPP policy design and related instruments.

Croatia's Methodology to measure the carbon dioxide savings for certain procurement groups[1]

On behalf of the Ministry of Economy and Sustainable Development, the Energy Research and Environmental Protection Institute (Ekonerg), which is a private consulting firm, has developed a methodology to calculate the carbon dioxide savings for the most procured green procurement categories, for which GPP benchmarks have yet been defined:

- Procurement of electricity
- Purchase, leasing or car rental
- Procurement of light commercial vehicles
- Energy renovation of the outer envelope of business buildings
- Computers, screens and energy-efficient chargers for mobile devices
- Reconstruction/ modernisation of public lighting
- Office supplies
- Consumables

The project lasted five months, and it was ended 2020. It resulted in the creation of a quantitative indicator of the positive effects of the procurement of goods, works and services with the application of the GPP criteria compared to procurement without the application of the GPP criteria.

On the official website of the Ministry, for each purchase category, a tutorial in the form of a power point presentation and the corresponding model in the form of an excel table are available. Each of the developed models consists of three main parts: a) Input data, b) intermediate data and c) output results. All Intermediate data are taken from publicly available data.

New Zealand's Government Fleet Emissions Dashboard

In New Zealand, as a part the target of having an emissions-free government fleet by 2025/2026, public agencies must choose an electric vehicle or a plug-in hybrid electric vehicle, unless there are circumstances that prevent them from doing so. To monitor the progress, the New Zealand Government Procurement had set up a dashboard that uses vehicle registration data from the New Zealand Transport Agency to track vehicle purchased and disposed by government agencies. In addition to monitor purchases, the dashboard also provides data about types of vehicles bought, making it possible to calculate the average operations emission profile. With this method it is then possible to monitor the emissions saved from the procurement of e-vehicles vs. non-electric vehicles. However, the analysis does not consider the actual usage of the vehicles, making the results only indicative.

1. Croatia did not participate to the 2022 Survey on Green Public Procurement conducted by the OECD.
Source: (Government of Canada, 2022[12]; Ministry of Economy and Sustainable Development of Croatia, n.d.[13]; Lakić, Gregor Golja and Ferdo Gubina, 2022[14]; New Zealand Government Procurement, 2024[15]).

To facilitate and improve the quality of the impact assessment of procurement choices, the public sector can engage with the market and ask contractors to provide the necessary data for measurement. For instance, in Canada, as part of the suppliers' profile in the e-Procurement system, information is collected on whether economic operators measure organisational GHG emissions, produce product-level carbon footprints or Environmental Product Declarations. In the bid solicitation phase, or in the pre-qualification for a supply arrangement or standing offer, suppliers are asked to provide information on the green aspects of the product/service provided, according to templates that reflect the level of complexity. Then, in the contract evaluation stage, these are verified.

Moreover, as part of contract management, contracting authorities can monitor suppliers' performance against green targets and Key Performance Indicators (KPIs) that have been previously defined and that

adapt to the different products or services provided, with the suppliers providing all information needed. They can also verify compliance with GPP criteria, green standards, and ecolabels by requiring suppliers to provide detailed documentation on the environmental performance of products and services. In most of the countries surveyed, as part of the contractual clauses, contracting authorities are given the power and instruments to check on compliance with green criteria during the execution of the contract. The data and information collected from suppliers can then be used to run a more accurate assessment of the environmental effects of specific procurement choices. In Latvia, to verify the fulfilment of GPP requirements set out in the tender, the public administration can ask contractors to provide the necessary documentation or certificates during the execution phase. Similarly, in Poland, GPP considerations are included in the contractual clauses, and the public administration is provided with control power and mechanisms to verify compliance and assess the green performance of suppliers. In Ireland, the 2021 Guidance on GPP by the Environmental Protection Agency provides contracting authorities with clear examples of "green" contractual performance clauses, which are tailored to different product/service groups (for more information, see Box 4.5).

Box 4.5. Contractual clauses to monitor suppliers' performance on GPP in Ireland

Green Public Procurement – Guidance for the Public Sector

The 2021 Guidance on Green Public Procurement provides several examples of contract performance clauses that contracting authorities can use and that are tailored to the different procurement categories.

These contractual performance clauses represent a good example of how contracting authorities can engage with suppliers to gather data on the environmental performance of the products or services purchased.

Energy-related products: air conditioners

CPC1. Environmental performance

The contractor is responsible for ensuring that the levels of environmental performance (e.g. energy efficiency) set out in the tender are met both at the point of installation/commissioning and during the entire operating lifetime of the appliance/warranty period. Where this is dependent upon specific usage instructions and maintenance activities, these must have been clearly highlighted in the tender. Regular inspections and testing of the equipment to ensure compliance will be carried out. It is also important to specify the schedule for regular inspections and testing, as well as whether the contractor is responsible for the costs.

This clause should be adapted to the specific nature of the contract and the scope of any maintenance/repair/warranty commitments. It is important that it includes a specific requirement to test environmental performance at regular intervals and assigns responsibility for this activity.

CPC2. Reporting on the end-destination of equipment

The contractor must provide a report on the status of the equipment once all items have been processed for re-use, recycling or disposal. The report must identify the proportion of items re-used or recycled, and whether they remained in the EU or were exported. For equipment and components recycled in the EU, the following means of proof for the handling facilities will be accepted:

- A permit issued by the national competent authority in accordance with Article 23 of Directive 2008/98/EC, or
- A third-party certificate of compliance with the technical requirements of EN 50625-1 or an equivalent compliance scheme.

Food and catering services: food and beverages

CPC1. Evidence of compliance with environmental requirements

Throughout the contract period, the contractor must keep electronic copies of orders, invoices and other documents that prove compliance with the environmental requirements and commitments under the technical specifications and award criteria. These documents must be made available to the contracting authority for verification purposes. The contracting authority may set rules and penalties for non-compliance.

ICT products and services: ICT products

CPC1. Service level agreement reporting

The tenderer must provide periodic [monthly / annual] reports on its compliance with all the metrics, Key Performance Indicators and other indicators defined in the Service Level Agreement.

CPC2. Environmental performance

The contractor is responsible for ensuring that the levels of environmental performance, including energy efficiency, indicated in its tender are met both at the point of installation / commissioning and during the [entire operating lifetime of the appliance] / [warranty period]. Where this is dependent upon specific usage instructions and maintenance activities, these must have been clearly highlighted in the tender. Regular inspections and testing of the equipment to ensure compliance will be carried out. It is important to specify the schedule for regular inspections and testing, as well as whether the contractor is responsible for the costs.

This clause should be adapted to the specific nature of the contract and the scope of any maintenance/ repair/Warranty commitments. It is important to include a specific requirement to test environmental performance at regular intervals and assigns responsibility for this activity.

CPC3. Reporting on end-destination of equipment

The contractor must provide a report on the status of the equipment once all items have been processed for re-use, recycling, or disposal. The report must identify the proportion of items re-used or recycled, and whether they remained in the EU, or were exported. For equipment and components recycled in the EU, the following means of proof for the handling facilities will be accepted:

- A permit issued by the national competent authority in accordance with Article 23 of Directive 2008/98/EC, or
- A third-party certificate of compliance with the technical requirements of EN 50625-1 or an equivalent compliance scheme.

Where equipment and components are exported for re-use or recycling, contractors must provide the following shipment and treatment information:

- Shipping information for equipment intended for re-use, in accordance with Annex VI of WEEE Directive 2012/19/EU.

Source: (Environmental Protection Agency, Ireland, 2021[16]).

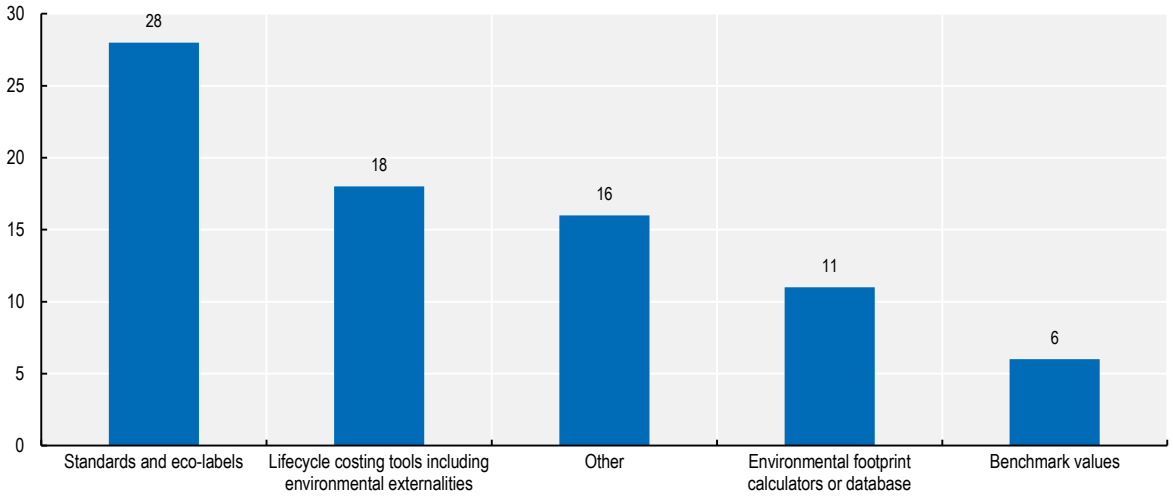
4.3. The economic benefits of green public procurement

The inclusion of environmental considerations at any stage of the procurement process might increase costs as well as benefits. For this reason, it is important to evaluate the costs and benefits associated with green procurement strategies and choices to ensure that value for money is not adversely affected. Nevertheless, the responses to the 2022 OECD Survey reveal that roughly half of the countries (17 out of 38) that replied to the Survey use cost-benefit analysis to assess such frameworks. As already noted, monitoring and measurement are key to assess the performance of countries' procurement policies, as well as to identify existing bottlenecks and intervene as needed, making sure GPP serves as a cost-effective means to achieve environmental and climate goals (Halonen, 2021[17]).

Green products and services are often perceived to require significant up-front investments, which may result from the use of innovative materials, innovative production methods and management processes for the delivery, distribution, and dismissal, as well as for testing and certification. Higher acquisition prices may be linked to a higher degree of innovation contained in green solutions. On the other hand, green solutions can bring economic savings, especially when the whole lifecycle is considered. Most notably, they ensure lower consumption of resources (e.g. energy and water), reduced waste generation, and saved emissions, which translate into cost savings for public entities (European Commission, n.d.[18]). For example, energy-efficient computers might come at a higher selling price, but they also lead to lower energy consumption, therefore lower costs in terms of monthly energy bills and reduced GHG emissions. Similarly, light-emitting diode (LED) traffic signals have lower lifecycle costs, as they consume less energy and have lower maintenance costs, compared to a standard (incandescent) red-amber-green head. In addition to that, up-front prices of LED traffic signals have been declining over the last years (European Commission, 2018[19]).

According to the results from the Survey, countries are aware of the potential of lifecycle costing (LCC) to promote GPP and build up the business case for green alternatives in public tenders. Indeed, LCC is the second most common tool countries provide to contracting authorities for the preparation of green public tenders (see Figure 4.2). LCC is a methodology that evaluates the total costs associated with a specific purchase throughout its entire lifecycle, beyond the initial purchase price. It covers all the expenses typically incurred by public organisations, such as acquisition-related costs (e.g. installation), operational costs (e.g. energy and water consumption), maintenance costs (e.g. periodic replacement of components), and end-of-life costs (e.g. asset disposal and recycling) (OECD, 2022[20]). Given that most of the expenses encountered over a product's or service's lifecycle are not reflected in the purchasing price, LCC promotes the selection of win-win solutions that are eco-friendly as well as cost-effective, compared to traditional products: environmentally sustainable options are often characterised by efficiency gains and lower follow-up fees in terms of energy, water, fuel consumption, maintenance and replacement, and disposal (OECD, 2022[20]).

Figure 4.2. National tools available to support the development of GPP tenders



Note: The figure shows the answers received to the question: "Which national tools are available to support the development of GPP tenders? Please provide any relevant information".
Source: OECD Survey on Green Public Procurement (2022).

LCC can also add value to the procurement process when used to compare alternative procurement options in the early stages of planning. This can be particularly important for public works or public buildings, where a significant share of LCC may be determined with the selection of the plot of land and the first designs. In Norway, as per a 2017 law, public building owners and developers are required to assess LCC when doing a procurement of buildings. The example from the City of Oslo shows that applying LCC calculations in the planning stage can have a significant impact to choose an economically and environmentally sustainable option (see Box 4.6).

Box 4.6. Comparing alternative LCC in public buildings in the planning stage, Norway

During a procurement process for a school for 840 students in the city of Oslo, the municipality had to decide whether to buy the main plot or also the extra plot next to it. Since the municipality is in charge of carrying out the design process, it developed two different options for the project and calculated the corresponding LCC costs. The alternative using only the main plot entailed building a school with six floors and play area on the roof, thus significantly increasing both the investment and operation costs of the building. The option using two main land plots presented significantly lower life cycle costs amounting to NOK 564 million (EUR 48 million). Choosing the option of buying the extra land plot also significantly decreased the carbon footprint of the building since the city of Oslo could build a more efficient building. Thanks to the LCC calculation, the political decision about buying an extra land plot was easy to make.

Source: (Thue, 2023[21]).

Comprehensive LCC approaches and tools can also consider the costs related to external factors affecting human health, ecosystems and natural resources, and climate change. These include the costs of GHG emissions, water and air pollution, as well as the costs of implementing measures to mitigate environmental and climate impacts, provided that they can be monetised and monitored. In Austria, for instance, the federal railway company ÖBB has developed an LCC tool, also known as the "ÖBB TCO CO_2 calculator", to assess offer-specific CO_2 emissions during production, construction, and operation. The embedded CO_2 generated across the different phases are monetised and integrated into the Total Costs of Ownership (TCO), and results are considered in the tendering process (OECD, 2022[20]; Landgraf and Schirme, 2021[22]).

Some countries opt for sophisticated lifecycle approaches, which focus on life cycle assessment (LCA) as opposed to LCC. LCA approaches are distinguished from LCC in that they consist in environmental evaluation methods, as opposed to monetisation of various types of costs. Namely, LCA consists of the systematic analysis of the potential environmental, health and resource impacts of goods or services during their entire life cycle. As such, LCA does not normally monetise any environmental impacts assessed (OECD, 2022[20]).

Countries make use of LCA approaches in procurement through software-based solutions that are combined with underlying databases containing environmental impact data. This is the case of Netherlands, which has developed the so-called DuboCalc calculation tool to assess the environmental impacts of works in the civil engineering sector. Specifically, it produces an Environmental Cost Indicator (ECI) value based on project data, allowing contracting authorities to select the tender with the lowest environmental impact. The software builds on environmental impact data that is regularly included in the National Environmental Database (*Nationale Milieudatabase*[3]) - for more information, see Box 4.7. Similarly, in Belgium, a Life Cycle Impact Assessment (LCIA) - enabled with the so-called Totem-building tool[4] – assesses the environmental impacts of a building design during its entire life cycle, using indicators related to climate change, eco-toxicity, and depletion of abiotic resources. It also provides an aggregated score expressed in "environmental milli points per square meter Gross Floor area" (OECD, 2022[20]).

Box 4.7. Netherland's DuboCalc calculation tool

In the Netherlands, sustainable public procurement has been a longstanding policy goal, with the decision of the Dutch House of Commons, in 2010, to reach 100% sustainable public procurement by 2015. In response, the Department of Public Works of the Ministry of Infrastructure and the Environment (Rijkswaterstaat) introduced several approaches to make its procurements more sustainable, such as the calculation tool DuboCalc and the CO_2 Performance Ladder.

To operationalise sustainable procurement, the software DuboCalc calculates the environmental impact of material use of infrastructure projects. The calculation is based on LCA of construction materials. It takes into account the embodied environmental impacts of materials during their lifecycle (e.g. material extraction, production, demolition and recycling). The operational energy consumed by the infrastructure is calculated, too.

DuboCalc calculates environmental impacts based on a system of shadow prices, which includes 17 different types of environmental impacts (e.g. CO_2 emissions, land use, water use). The result of the calculation is the Environmental Cost Indicator (ECI value). The tool is applied in works tenders that are typically based on the scheme 'Design-Build-Finance and Maintain'. Furthermore, tenders are based on functional requirements, thus giving suppliers the possibility to innovate and determine the most sustainable design. Namely, suppliers use the tool during the tender preparation and can test multiple designs to identify the most sustainable version, i.e. with the lowest ECI value.

DuboCalc tool is used in all major projects at Rijkswaterstaat and has been progressively applied by large public entities in the Netherlands, too. Given the complexity of the tool, it is more difficult to apply by smaller entities such as municipalities. However, recently the so-called DuboCalc Light has been in use by smaller municipalities. It consists mainly of a list of materials that have high negative environmental impacts and are therefore excluded from the project. This simplified version of DuboCalc can be used for projects of EUR 10 000 or upwards.

An important foundation for the calculations is the underlying database, i.e. the National Environmental Database. This database includes the reference data for the environmental impacts of construction materials. It has a dedicated governance structure (National Environmental Database Foundation - NMD) that is tasked with maintaining and regularly updating the database.

Source: (OECD, 2022[20]).

Despite its benefits, the LCC approach presents a series of obstacles to its uptake, including the limited expertise and practical knowledge among procurement practitioners, the lack of access to comprehensive and standardised methodologies and other supporting tools, as well as the scarcity of data for LCC calculations, especially for environmental factors and externalities. Despite these challenges, some countries have tried to foster the use of LCC in procurement procedures. For instance, in 2022, Hungary relied on the support of the OECD and European Commission to assess the use of LCC in its national context, map LCC practices and tools available across OECD and EU countries and identify some key strategic areas to move towards a more structured and co-ordinated approach in the use of LCC[5]. The OECD also provided guidance on the practical implementation of LCC based on practitioners' feedback (OECD, 2022[20]). In Canada, LCC is promoted as a core principle of public procurement at the federal level; central government departments are required to consider the entire lifecycle of products and services and choose the most environmentally sustainable options, where value for money is demonstrated. The Directive on the Management of Procurement and the Supply Manual (PROC method) sets out the requirement to assess operational and disposal costs throughout the entire lifecycle of products/services to determine value for money (Government of Canada, 2021[23]). Similarly, in Italy, the central purchasing body Consip developed its own approach to introducing LCC in certain tenders, including for ICT and vehicles (for more information, see Box 4.8).

Box 4.8. Consip's integration of LCC in framework agreements

Italy's central-level CPB Consip developed a simplified methodology to consider LCC in some of its framework agreements, such as ICT, vehicles, printing, and public lighting. The methodology consists of taking into account energy consumption of the product category, along with green criteria. The methodology is adjusted on a case-by-case basis depending on the product group.

For instance, when procuring public lighting, Consip applies criteria that allow for the reduction of cost during the duration of service. First, the Italian GPP criteria (*criteria ambientali minimi* or CAM) define the threshold consumption for lamps[1]. The efficiency of the lamps is also incentivised by the better lumen to watt (LM/W) result. Second qualitative criteria were applied. Namely, the design of the lighting systems has been awarded, which provides extra points for the decomposition of each component to facilitate repair or single component replacement instead of replacing the whole system. This approach favours the lengthening of the life cycle and a significant reduction in maintenance costs by applying strategic choice of eco-design. In this approach, the quality of the tender is determined by technology that is easy to repair. In the health sector, the cost of service, maintenance and disposal was included for the purchase of radiation appliance and medical ultrasound machines.

Furthermore, a simplified, yet effective, LCC approach was chosen for the procurement of desktop computers and monitors. The award was based solely on the lowest cost, taking into account minimum environmental and social requirements, as well as energy consumption during the duration of the contract (3 years). Suppliers were requested to provide data on the energy performance based on specific ETEC (Calculated Typical Energy Consumption) parameters defined by IEC Standard (IEC 62301:2011). An independent entity certified the ETEC energy performance. The energy performance is multiplied by the reference price of electricity, as defined by the Authority for Energy Regulation and Environment. The full cost calculation formula is included in the tender documents to ensure transparency and clarity on the rules applied during the procedure.

1. CAM, decree issued by the Ministry of Ecological Transition and mandatory for Italian public Authorities referring to art 34 of the Code of Contracts.
Source: (OECD, 2022[20]).

4.4. Conclusions

As revealed by the responses to the 2022 OECD Survey on GPP, there is still room for improvement in terms of reporting, monitoring, and impact measurement of GPP policies and practices.

Monitoring systems to track the use of GPP in procurement procedures are not common across countries, and they often have an overly narrow scope, as they only cover a limited group of public entities, which are not representative of the public procurement system of a country. An effective monitoring framework requires:

- the identification of a standardised, limited, and informative set of indicators that generates timely, reliable, and accurate data to inform management and policy decisions;
- The reduction of reporting burdens for public entities;
- The definition of baseline values;
- The transmission of results that can be compared and consolidated across agencies and over time.

Consultations with stakeholders (i.e. those that are expected to use the information and that will be responsible for data collection) is thus key to select the best indicators and ensure that data collection is feasible (World Bank, 2021[7]).

To support the successful implementation of GPP monitoring systems, countries can also opt for a gradual approach. During the early stages of GPP reform, monitoring requirements can apply only to certain public organisations, and indicators can be limited to track the number and share of procurements that meet green criteria in specific product/services categories. As GPP systems mature and public procurement practitioners develop the necessary skills and competences for data collection, additional information can be gathered from tenders and administrative systems, expanding the scope of monitoring and reporting systems. Moreover, the widespread adoption of e-Procurement systems provides an additional opportunity to facilitate systematic data entry, collation, and reporting on GPP operations.

Periodic surveys and in-depth interviews with procuring agencies, suppliers and bidders, companies that do not participate in green tenders, and civil-society organisations can also be useful to collect additional information on GPP practices, impacts, perceptions, and motivations. Information collected may help explain resistance to GPP reforms within agencies and companies, identify problems in tender design, and assess the quality of support.

Another important issue in GPP monitoring is the limited measurement of the impacts and results achieved by green procurement strategies. When monitoring systems are in place, these usually focus on the processes and actions undertaken by an organisation to integrate GPP, on the direct results of procurement activities, such as the number or value of tenders or contracts that include GPP criteria. In other words, they consider the initiatives undertaken by public organisations to mainstream GPP in their daily activities, as well as use GPP in public tenders. For example, monitoring systems can measure the number of public tenders with green criteria, the quantity of green products purchased compared to conventional solutions, and the total public expenditure for green services. This limited focus is most likely due to the relative ease of quantifying GPP outputs compared to the outcomes, such as resource-efficiency, reduced waste generation, cost savings, reduced carbon emissions and lower air pollution (UNEP, 2022[24]).

Impact indicators provide the information needed to assess whether GPP reforms are achieving the desired objectives, including national climate and environmental goals. However, most of the information used for impact indicators requires more detailed data collection (such as data on the consumption of green product categories, but also recycled and repurposed materials). Namely, impact indicators that rely on the measurement of energy and material consumption, waste generation, GHG emissions, and pollution across the public sector may require parallel data collection systems and collaboration with other agencies.

Some tools that facilitate calculation of environmental impacts are available. For instance, the Environmentally Extended Input-Output (EEIO) models, which look beyond the initial impact of new spending to capture increased economic activities, including direct, indirect, and induced spending, can support contracting authorities by providing such information. The United States, for example, developed the US Environmentally-Extended Input-Output (USEEIO), which is a family of models designed to bridge the gap between traditional economic calculations, sustainability and environmental decision-making. It provides a robust resource for estimating the potential impacts — environmental and economic — associated with the production or consumption of goods and services (EPA, updated in 2023[25]).

Similarly, expansive LCC methodologies that monetise externalities such as CO_2 emissions rely on credible and representative data about environmental impacts, which is rarely available. Countries would need to invest in developing and certifying such data at a national or supranational level, thus providing procurement practitioners with the tools to implement LCC to the fullest extent. Alternatively, countries could require for credible third-party certifications of the potential environmental impacts of the products they procure.

Nevertheless, public buyers can generate some of this information as part of the tender process. One possible solution could be to leverage the support of bidders and suppliers in procurement procedures, for example, by integrating quantifiable monitoring indicators, such as KPIs, in the implementation of contract clauses, as well as enforcement of GPP criteria and KPIs after a contract has been signed. Finally, suppliers can serve as a source of information on the environmental impacts of products and services, and they can also provide information on life-cycle costs.

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Notes

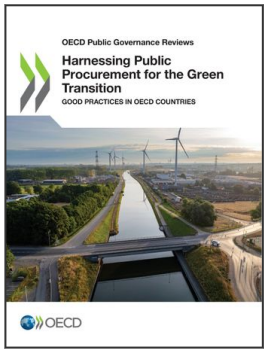
[1] This is the reduction in emissions countries need to meet to hold the increase in the global average temperature to well below 2°C (above pre-industrial levels).

[2] As of April 2023, Korea monitors GPP implementation across 40 000 procuring entities using a platform interconnected with all e-Procurement systems.

[3] https://milieudatabase.nl/an-introduction-to-the-nmd/

[4] Tool to Optimise the Total Environmental impact of Materials

[5] This was part of the Project "Promoting green public procurement in Hungary with a focus on life-cycle costing", designed between Hungary, the OECD and the European Commission (EC), and funded through EU's DG REFORM services.



From:

Harnessing Public Procurement for the Green Transition

Good Practices in OECD Countries

Access the complete publication at:
https://doi.org/10.1787/e551f448-en

Please cite this chapter as:

OECD (2024), "Mainstreaming emerging approaches to monitor and evaluate the impacts of GPP", in *Harnessing Public Procurement for the Green Transition: Good Practices in OECD Countries*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/c97523f5-en

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