



Target Setting for Green Public Procurement Programmes

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Executive summary

Clear quantitative targets are needed for a successful green public procurement (GPP) programme. GPP targets can be applied to an overall programme and to specific goals such as reducing embodied carbon. In this brief, we examine the targets related to embodied carbon set by existing GPP policies, the methodologies used to quantify the targets and the target setting process. We focus on best practices in the European Union (EU) (particularly the Netherlands), Japan, Korea and the US state of California. This set of countries and regions exemplifies a range of approaches to GPP for embodied carbon and specific criteria for cement and steel products. Table 1 summarizes aspects of GPP criteria in these selected countries and regions.

Table 1. Summary of aspects of GPP target setting in these selected countries and regions.

	Scope	Method	Target Setting Process	Measurement & Verification
The EU	Split into two types: core criteria and more ambitious comprehensive criteria. Both sets include criteria in project-level LCA, percentage use of recycled content, reduction of CO2 emissions from transport and recycling of demolition waste.	Life cycle assessment (LCA)	Collaborative process with stakeholder consultation.	Contract performance clauses defined on a per-project basis.
The Netherlands	Project-level environmental impact.	LCA using DuboCalc tool, CO2 Performance Ladder	Based on EU processes.	Contractors must demonstrate proposed reduction is achieved. Monetary sanctions are imposed for not meeting the reductions targets proposed in bid.
Japan	Percentage use of recycled content by product category.	Percentage by weight	The Ministry of the Environment develops the basic policy with the help of review committees. Agencies set their own targets with reference to the basic policy. These targets are reviewed annually.	Reduced emissions are estimated based on reduced emissions from a chosen average green product. Ratio compared with baseline from 2000.
South Korea	Percentage use of recycled content by product category.	Korea eco-label which is maintained by the Korea Environmental Technology & Industry Institute (KEITI)	Agencies set their own GPP targets and report performance to KEITI annually.	Reduced emissions estimated based on comparison with conventional products using LCA data.
The US state of California	Maximum acceptable global warming potential (GWP) by product category.	Environmental Product Declarations (EPDs)	Industry average with tolerance for uncertainty. Reviewed every three years to lower limits.	Unknown. The first report on the impact of GPP will be published in January 2022.

1. Scope of greenhouse gas (GHG) emissions reduction targets for GPP

GPP targets in surveyed countries vary in their scope, intended effect, performance indicators and level of precision. We classify them into four categories with increasing specificity: 1) adoption targets, 2) industry-level targets, 3) project-level targets, and 4) product-level targets.

1.1 Adoption of green public procurement

The broadest target type is adoption of a GPP programme. These adoption targets are typically not product- or industry-specific. Rather, they provide a phase-in period to enable both procuring agencies and industry to transition to GPP smoothly. This allows government agencies to refine criteria and implementation methods. It also allows manufacturers to build capacity in regards to reporting and compliance, and obtain any required certifications.

The targets set during this phase-in period aim to establish two of the main components of GPP: reporting and criteria. Before the environmental impact of a product can be evaluated, it must first be quantified and reported. Thus, the first target many countries or regions set is to require bidders to submit environmental impact assessment data. The data submission could take the form of an EPD or a voluntary eco-label on a share of public projects. This first target does not imply that the data will be used in the bid evaluation. Environmental criteria must also be established before they can be used for rigorous evaluation. A target to address this is to require a share of public tenders to state environmental criteria.

As environmental criteria become more refined, the adoption targets may become binding. A target may require a share of all projects to meet green criteria. Examples include the Netherlands' target of 100% compliance with Dutch GPP policies (European Commission, 2021). Another possible indicator is the total value of all GPP compliant projects which weighs high-cost projects, such as roads and public infrastructure, more highly as they tend to have greater environmental impacts.

Target	Indicator
Increased reporting of environmental impact	Percentage of projects requiring EPD or other certification
Increased statement of environmental criteria in projects	Percentage of tenders with environmental criteria
Increased consideration of environmental impact	Percentage of projects that are compliant with criteria and the financial amount spent on these projects

1.2 Industry-level targets

Industry-level targets are designed to increase the adoption of certifications that have been voluntarily developed by industry. GPP policy may require public contracts to procure products and services that have these certifications.

There are two types of industry certifications: those developed through a consensus-based standard development process with industry and other stakeholders and those set by individual sectors or companies. These certifications provide valuable insights into industry-specific target design; elements of green certification criteria can be incorporated into future GPP programmes.

ENERGY STAR programme in the US

ENERGY STAR is a programme developed by the United States Environmental Protection Agency to identify products, buildings and plants with superior energy efficiency. The programme has developed industry-specific energy performance measurement tools for a range of industrial plants, including cement and integrated steel plants. It is an internal standard as it compares performance to similar plants in the US. Plants in the lowest 25th percentile of energy use per ton of production, or the top 25% in terms of energy efficiency, are eligible for an ENERGY STAR certification (Energy Star, 2021).

To compute the Energy Performance Indicator (EPI), plants must supply total energy consumption by fuel type and total production for a reference year. For cement plants, the maximum daily kiln throughput and number of kilns is also considered in the calculation. For steel, the levels of oxygen used in the blast furnace, if applicable, are also considered in the calculation (Energy Star, 2021).

While this programme focuses on energy use rather than embodied emissions, the correlation between energy production and GHG emissions makes it a good proxy in the absence of a more complete product-specific life cycle analysis.

Target	Indicator
Increased energy efficiency in industrial plants	ENERGY STAR EPI

The Concrete Sustainability Council (CSC)

The CSC certifies concrete, cement and aggregate companies. It examines the social and environmental impact of a given plant and grants one of four levels: Bronze, Silver, Gold or Platinum. The CSC eco-label is considered best practice for concrete products in the Belgian GPP programme (Belgium FIDO, 2021).

The CSC criteria requires the implementation of an LCA, release of one or more EPDs, contributing to the creation of an industry-wide EPD (i.e. an industry standard), public reporting of GHG emissions, and a public emissions reduction target. Other criteria include emissions levels of NO_x, SO_x and dust; use of next generation trucks for transportation; and responsible processing of returned concrete. Some of these factors are not currently considered in GPP criteria and could be incorporated into future policy.

Target	Indicator
Cement and concrete sustainability	CSC certification level (composite indicator)

1.3 Project-level targets

Project-level targets evaluate the environmental impact of the entire project instead of individual components. Project-level analyses can be more impactful than product-level requirements as they allow for greater flexibility in the use of low-carbon alternative materials and substitutes. Furthermore, they encourage emissions reductions in other aspects of the project such as waste management. This can be difficult to implement as it requires conducting an environmental impact assessment for each new project bid, whereas a product-level analysis can be performed once per product and reused for all bids involving that specific product.

Project-level targets are typically used for award criteria rather than requirements. Award criteria do not set a minimum standard. Instead, green products are given an advantage through most economically advantageous tender (MEAT) evaluations. One implementation of this is to allot weights to environmental dimensions such as material use and GWP and compute a score for each bid. The score is then considered as one of multiple attributes in the evaluation stage. Another implementation of project-level analysis is to monetize environmental attributes and discount project prices for environmentally friendly products (Chiappinelli and Zipperer, 2017). Real-world examples of these implementation options are found in the EU for the former and the Netherlands for the latter.

The EU

The EU's GPP criteria recommends the use of project-level analysis through a point system. Points are awarded based on the improvement of LCA performance compared to business as usual or competing designs. In the absence of a whole-project life cycle analysis, points can be calculated from proxy data such as the reduction of CO₂ equivalent emissions from the transportation of materials (European Commission, 2021).

The Netherlands

The Netherlands incorporates project-level environmental assessment into bid evaluation through adjusted bidding prices. The Dutch Public Infrastructure Authority (Rijkswaterstaat) has developed two instruments to assess sustainability attributes: the CO2 Performance Ladder and DuboCalc. These tools address CO2 emissions reduction and environmental impact, respectively.

The CO2 Performance Ladder is a five-level certification system which a tenderer can use to show the measures to be taken to limit CO2 emissions within the company, in projects, and in the supply chain. A tenderer can submit a CO2 Performance Ladder certificate with their bid, which obliges the tenderer to comply with a specified CO2 reduction target. The more ambitious the CO2 reduction, the higher the certification level. The submitted project price is adjusted based on the CO2 Performance Ladder level with a deduction of 1% off the submitted price per level. The highest level is rung 5, so the maximum deduction is 5% (OECD, 2015).

DuboCalc is a life cycle analysis-based software tool which calculates the environmental impact of a specific design based on the materials used. It calculates 11 environmental impact parameters and combines them into a single value: the environmental cost indicator (ECI). The ECI is then translated into a monetary value which is applied as a discount to the submitted price. The procuring agency then selects the tenderer with the lowest price (OECD, 2015).

Target	Indicator
Project-level life cycle assessment	LCA indicators: GWP formation potential of tropospheric ozone photochemical oxidants (POCP); depletion potential of the stratospheric ozone layer (ODP); acidification potential of soil and water (AP); eutrophication potential (EP); abiotic resource depletion potential for elements (ADP_elements) and abiotic resource depletion potential of fossil fuels (ADP_fossil_fuels)
Decreased CO2 emissions	The CO2 Performance Ladder (the Netherlands)
Project-level environmental impact assessment	DuboCalc environmental cost indicator (the Netherlands)

1.4 Product-level targets

Product-level targets are the most specific type of targets currently in use in GPP programmes around the world. They are still relatively rare as target setting requires investigations of industry standards and technical consultation. The narrow scope of the target allows them to be precise and they are often expressed as quantitative values. Current product-level targets focus on circular economy and emissions reduction.

Emissions reduction

A product-specific target that focuses on GHG emissions reduction requires an LCA to be performed on the product. The result is presented in an EPD that contains the GWP of the product. GWP is a measure that incorporates heat absorbing gases collectively referred to as greenhouse gases (US EPA, 2021).

Target	Indicator
Greenhouse gas emissions reduction	GWP

Recycled content

When no EPD is available for a product, the percentage composition of recycled or waste content can be a proxy for reduction of embodied emissions in concrete products. This reduces emissions in two ways. First, replacing traditional clinker with industrial waste such as blast furnace slag diverts the waste from landfills which extends the lifespan of materials. Second, recycled content can replace part or all of natural sand, gravel or stone, thereby reducing emissions from resource extraction. EPDs are preferred to recycled content targets, where available, as they provide a less prescriptive way to evaluate embodied emissions in cement and concrete products. Further, EPDs take the use of waste materials into account when computing embodied emissions, meaning that GWP is already a function of recycled content.

These types of targets are in use in the EU, South Korea, the Netherlands and Japan. The EU GPP Core Criteria awards points to tenderers that incorporate 15% by weight of recycled content or by-products in concrete slabs, structural frames, walls, etc. (European Commission, 2021). Japan's recycled content specifications defines eco-cement as cement that contains ashes from incineration of city waste at a rate of no

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