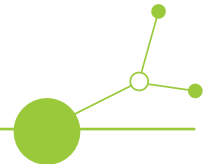


D 3.1.1 Report on review of national Green Public Procurement (GPP) focused on construction and suggestions for new additions



POR with other ReBuilt partners

Version 1.0

September 2025





Table of Content

1. Introduction.....	3
1.1. Objectives and scope	3
1.2. Methodology and constraints	4
2. The Role of Green Public Procurement in Circular Construction	5
2.1. Definition of GPP	5
2.2. Importance of GPP as a demand-side tool for circular economy transition	6
3. Legal aspects of GPP	8
4. GPP Criteria.....	10
4.1. General.....	10
4.2. EU GPP Guidelines for Office Building Design, Construction, and Management ...	12
4.3. EU GPP Guidelines for Road Design, Construction, and Maintenance	15
5. National GPP Frameworks in the Programme Area	18
6. Recommendations for Enhancing GPP in Circular Construction	19
6.1. Barriers to the Effective Implementation of GPP in Circular Construction	19
6.1.1. Introduction.....	19
6.1.2. Synthesis of Reported Barriers	19
6.2. General Recommendations for Improving the Implementation of GPP in Circular Construction	21
6.2.1. Introduction.....	21
6.2.2. Synthesis of Reported Recommendations	22
6.3. Specific suggestions for possible additions to national guidelines: GPP Criterion Voting - Methodology and Results	24
6.3.1. Results	24
6.3.1.1. Focus Area: Office Building Design, Construction and Management	24
6.3.1.2. Focus Area: Road Design, Construction and Maintenance	26
7. Annexes.....	27





1. Introduction

It has long been acknowledged that increasing consumption and reliance on a linear economy model—based on the pattern of buying, using, and discarding—have severe environmental consequences. This approach leads to overexploitation of natural resources and a growing volume of waste, ultimately harming both human health and economic stability. As response, in 2015, the global community, through the United Nations, adopted 17 Sustainable Development Goals (SDGs), among which **Goal 12 relates to responsible consumption and production**. It emphasizes the importance of **sustainable and green public procurement (GPP)**, the promotion of eco-labels for products and services, and the advancement of circular economy practices, etc.

Recognizing that demand-side measures like Green Public Procurement (GPP) - including environmental criteria in public procurement procedures - play a critical role in driving the transition toward a circular economy, this report evaluates the extent to which national procurement frameworks incorporate environmental and circularity criteria in construction-related tenders and is **proposing additions or updates to national GPPs regulations/policies**, together with **recommendations for better implementation (e.g., capacity building, monitoring)**.

1.1. Objectives and scope

The purpose of this report is to review the **current state of national GPP policies and practices in general, and additionally focusing on construction**, across the Interreg CE ReBuilt project programme area (**Slovenia, Croatia, Germany, Poland, Czech Republic, Italy, Hungary, Austria and Slovakia**). In particular, the report aims to identify how effectively GPP is being applied in public construction works—such as buildings, infrastructure, and public spaces—and to highlight both, good practices and common implementation gaps, barriers.

It was **originally planned** that the analysis is to be grounded in reference to three key EU GPP guidelines:

- Office Building Design, Construction and Management
- **Public Space Maintenance**
- Road Design, Construction and Maintenance

Following a thorough review of the EU GPP Criteria for Public Space Maintenance, it was concluded that the categories outlined in these criteria are largely irrelevant to the scope of the ReBuilt project. The criteria primarily address areas such as: Outdoor cleaning products (e.g. cleaners, snow removal, spreading salt, brushes), Outdoor cleaning services (e.g. sweeping services, bin-cleaning services, graffiti removal, slow cleaning services), Gardening products (soil improvers, ornamental plants, irrigation system), Gardening services (e.g. tree pruning), Gardening products (lawn-mowers, hedge trimmers), Machinery services (e.g. gardening services), Vehicles (e.g. street cleaning vehicles), Fleet and vehicle services.

Additionally, project partners reported no direct link between these categories and the objectives of the ReBuilt project, and most national reports lacked relevant content related to this focus area. As a result, the consortium decided to **exclude the EU GPP Criteria for Public Space Maintenance from the national reports**.

Nonetheless, this deliverable will still offer a set of **general recommendations** also inspired by the EU GPP guidelines for Public Space Maintenance, where applicable.

By analysing the current GPP practices in nine CE countries, and **benchmarking national practices against EU-level GPP guidelines**, the report provides targeted recommendations for enhancing the integration of



circular principles into public procurement. These suggestions are intended to support public authorities, policymakers, and procurement practitioners in strengthening GPP implementation, thereby promoting more resource-efficient, low-carbon, and sustainable construction across the programme area. Moreover, the report is also **proposing additions or updates to national GPPs.**

1.2. Methodology and constraints

This report was primarily developed through **desk research.** The activity leader (POR) conducted an in-depth study of the topic and prepared a structured template for project partners to complete. The **template was designed** to facilitate a comprehensive review of the current implementation of GPP across the ReBuilt project partners' countries in general, with a particular focus on the two key areas:

- Office Building Design, Construction, and Management
- Road Design, Construction, and Maintenance

The **purpose of the task** was for each country to identify current implementation practices, existing guidelines and recommendations, references to LCA/LCC and BIM tools, as well as notable projects already implemented, all for the above specific focus areas. The template also guided partners to highlight achievements and barriers in implementing GPP and to provide recommendations for improvement. Where multiple partners were involved from the same country, they were asked to prepare a single joint report.

To support a broad perspective, partners were encouraged to **engage with key national stakeholders**, including industry representatives, government bodies and other public authorities, academic institutions, architects, and investors.

Once the templates were completed, the activity leader reviewed the submissions and held follow-up meetings with partners to clarify any uncertainties or inconsistencies. Revised drafts were then mostly submitted and reviewed again. Afterwards project partners submitted their **final versions of the templates**, which have been compiled and included as **Annexes to this report.**

Despite the strong effort put into preparing the national reports, some partners encountered **challenges in completing the templates** and in interpreting national GPP requirements. This reflects the fact that in many countries, GPP requirements are not easily accessible, systematically organized, or straightforward to understand.

Nevertheless, the completed templates provided **valuable insights into national contexts** and served as the basis for the recommendations presented in this report.

Based on the feedback from the national reviews, the activity leader decided to conclude the activity with an **additional task** to obtain more specific input: the **GPP Criterion Voting Task.** Project partners were asked to complete tables suggesting GPP criteria that could be incorporated into national guidelines (whether existing or not), drawing on EU GPP guidelines essential for circular construction:

- EU GPP Criteria for Office Building Design, Construction and Management
- EU GPP Criteria for Road Design, Construction and Maintenance

Partners were asked to review the prepared tables and the EU guidelines, and then select six preferred GPP criteria in each table by assigning:

- 1 strong vote (marked with **) for their top choice, and



- 5 basic votes (marked with *) for five different criteria.

The criteria receiving the highest overall scores are now proposed as potential additions to the national guidelines.

2. The Role of Green Public Procurement in Circular Construction

2.1. Definition of GPP

Green Public Procurement (GPP) is defined in the Commission's Communication COM (2008) 400 - "Public procurement for a better environment" 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".¹

It is defined as a procedure where elements that do not harm the environment and that respect environmental criteria are taken into account during the public procurement process.²

The aim³ is to reduce negative environmental impacts and encourage innovation in the field of sustainability. These criteria include, for example:

- Energy efficiency - preferring products with low energy consumption.
- Reducing greenhouse gas emissions - through the choice of vehicles, machinery or technologies that emit less CO₂.
- Use of renewable resources - encouraging the procurement of products made from recycled materials or procurement that includes product life cycle management.
- Waste reduction - promoting products that are long-lasting and easily recyclable.

It is important to highlight that there might be a confusion by public procurers related to distinction between public procurement of NBS, green public procurement (GPP) and Sustainable Public Procurement (SPP).

Public procurement of NBS refers to the subject of procurement (procurement of nature-inspired and supported, cost-effective solutions providing environmental, social, and economic benefits e.g. green walls, green roofs), whereas GPP relates more generally to a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle. Sustainable Public Procurement (SPP) refers to a similar process, but also takes into account the social impacts of the public purchases in addition to environmental considerations. In short, NBS are products or services that can be procured, whilst GPP and SPP denote set of practices that aim to introduce environmental and/or social considerations into specific public purchases (please see Figure 1).⁴

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52008DC0400>

² <https://zelenanabava.hr/provedba-zelene-javne-nabave/>

³ <https://zelenanabava.hr/kako-zelena-javna-nabava-oblikuje-odrzivu-buducnost/>

⁴ European Commission: Directorate-General for Research and Innovation, Mačiulytė, E. and Durieux, E., Public procurement of nature-based solutions - Addressing barriers to the procurement of urban NBS - Case studies and recommendations, Publications Office of the European Union, 2020, <https://data.europa.eu/doi/10.2777/561021>

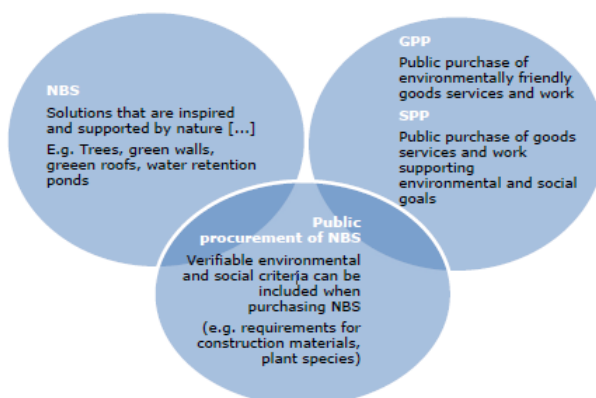


Figure 1: NBS, GPP and SPP

Moreover, also procuring 'green' items (e.g. solar panels) is not the same as green public procurement. As already explained, it's not the procurement itself but the applied criteria and methods that make a procurement 'green' in this sense.

2.2. Importance of GPP as a demand-side tool for circular economy transition

The **construction industry is one of the world's largest consumers of energy and raw materials**. In the EU, it is responsible for almost **40% of emissions**. Under this figure fall both embodied carbon (all the carbon emitted during the life cycle of a given building/construction project, including production, transport, and disposal of construction materials), and operational carbon (emissions related to the building's day-to-day use).⁵ Built environment is also one of the most resource intensive sectors of the economy, and accounts for about **50% of all extracted material**, **33% of water consumption**, and for over **35% of the EU's total waste generation**.⁶

When buildings are demolished, **only around 40% of construction waste is recycled or reused**. In most cases, recycled construction material is used in second-grade construction, rather than new buildings. Adopting a circular approach in the building sector has great potential to deliver environmental, social and economic benefits. Circular construction requires **rethinking how buildings are designed**: reducing embedded carbon, using recycled or bio-based materials, designing for material and component reuse, and extending life of buildings through maintenance.⁷

The **EU Circular Economy Action Plan**⁸ identifies the construction sector as one of the eight sectors with the greatest potential for circularity and sets out a series of targeted actions. Likewise, the **Waste Framework Directive**⁹ highlights construction and demolition waste as a priority stream.¹⁰

⁵ Sustainable and circular construction, A Policy Brief from the Policy Learning Platform, for a greener Europe, MARCH 2024, available at: <https://www.interregeurope.eu/find-policy-solutions/policy-briefs/sustainable-circular-construction>

⁶ Sustainable and circular construction, A Policy Brief from the Policy Learning Platform, for a greener Europe, MARCH 2024, available at: <https://www.interregeurope.eu/find-policy-solutions/policy-briefs/sustainable-circular-construction>

⁷ Sustainable and circular construction, A Policy Brief from the Policy Learning Platform, for a greener Europe, MARCH 2024, available at: <https://www.interregeurope.eu/find-policy-solutions/policy-briefs/sustainable-circular-construction>

⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN#footnoteref33>

⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20240218>

¹⁰ Sustainable and circular construction, A Policy Brief from the Policy Learning Platform, for a greener Europe, MARCH 2024, available at: <https://www.interregeurope.eu/find-policy-solutions/policy-briefs/sustainable-circular-construction>



Public authorities are in a strong position to accelerate this transition. Managing extensive portfolios of public buildings and wielding significant purchasing power, they can shape market conditions by **adopting green public procurement practices**, initiating pilot projects, raising awareness, supporting data sharing, and fostering collaboration among stakeholders.¹¹

Public authorities' expenditures in the purchase of goods, services, works (excluding utilities and defence) constitute approximately **14% of the overall Gross Domestic Product (GDP) in Europe**, accounting for roughly EUR 2 trillion annually.¹² Across OECD-EU countries, public procurement increased from 13.7% of GDP in 2019 to 14.8% in 2021.¹³

Thus, **public procurement spending has a significant role in accelerating the transition to a more circular economy** - they can also act as an example for the private sector. By implementing GPP, the public sector raises awareness of the importance of sustainability among citizens and businesses, creating a culture of responsible spending and consumption.¹⁴

Even more importantly, **implementing GPP can influence the market** (manufacturers adapt to the demands of the public sector, which leads to innovation and the development of green technologies. Public sector represents the most significant "buyer" in society and, for this reason, has a great **influence across the entire supply chain**.

Green public procurement can also help purchasers to **save costs**, in particular by taking into account life-cycle costs rather than purchase price. Although the initial costs of sustainable products may be higher, they bring financial savings in the long run due to lower maintenance costs, energy consumption and reduced waste. Comparing the life-cycle costs of products and services is fully in line with the 'most economically advantageous tender' (MEAT) criterion encouraged under the EU Public Procurement Directive¹⁵. However, in around 55% of public procurement in the EU, still the lowest price remains the sole evaluation criterion.¹⁶

Due to their extended timelines, **construction projects—whether for buildings or infrastructure—are inherently complex**. However, this longevity also fosters a more developed approach to life cycle thinking. Strategic procurement can drive waste reduction and influence early-stage design decisions, such as planning for disassembly or specifying minimum recycled content, both of which support closing material and product loops.

Making the most efficient use of space is a core concept of the circular economy. Procurement can serve as a bridge between the construction and occupancy phases. For example, **using Building Information Management (BIM)** can enhance circular outcomes by enabling better long-term planning and resource tracking.

Extending the useful life of buildings and infrastructure through **renovation or refurbishment** is another key circular strategy, which can be embedded into procurement processes and helps to reduce waste and use resources more efficiently. Additionally, procurement can **integrate demolition and new construction activities**, allowing materials salvaged from demolition to be reused in new building projects, reinforcing the circular flow of resources.

¹¹ Sustainable and circular construction, A Policy Brief from the Policy Learning Platform, for a greener Europe MARCH 2024

¹² https://single-market-economy.ec.europa.eu/single-market/public-procurement_en

¹³ OECD (2023), Government at a Glance 2023, OECD Publishing, Paris, <https://doi.org/10.1787/3d5c5d31-en>.

¹⁴ <https://zelenanabava.hr/kako-zelena-javna-nabava-oblikuje-odrzivu-buducnost/>

¹⁵ <https://eur-lex.europa.eu/eli/dir/2014/24/oj/eng>

¹⁶ Grants Europe Consulting LLC. Commissioned by: Ministry of Foreign Affairs and Trade of Hungary: Green Public Procurement Guidance Booklet for Project Partners, 2023



3. Legal aspects of GPP

A major shift occurred with the EU Public Procurement Directives of 2014 (2014/24/EU¹⁷, 2014/25/EU¹⁸, and 2014/23/EU), which explicitly required contracting authorities to consider life-cycle costs and environmental externalities in their procurement decisions. This change aligned with the EU Circular Economy Action Plan (2015), which strengthened Green Public Procurement (GPP) as a tool for resource efficiency and waste reduction.

The directive makes it clear that environmental considerations can be taken into account throughout the tendering process and provide a number of **specific techniques** for this:

- **Technical specifications:** They establish quantifiable prerequisites by which tenders can be assessed, comprising essential benchmarks for compliance. Offers not complying with the technical specifications generally have to be rejected. The technical specifications need to highlight the specific attributes of the work, supply, or service, instead of focusing on the general capacities or qualities of the operator. It is also very important that they are clear, understood by all operators in the same way and possible to be verified. Additionally, production processes and methods, or processes for other life-cycle stages (operational phase and at the end-of-life), can be specified in the procurement documents.
- **Exclusion grounds:** Compliance with EU and national environmental and social laws, as well as international conventions which have been ratified by all member states, can be enforced in procurement procedures. Bidders and subcontractors who do not comply with applicable environmental laws can be rejected.
- **Selection criteria:** Selection criteria focus on an economic operator's ability to perform the contract they are tendering for. When assessing ability to perform a contract, contracting authorities may take into account specific experience and competence related to environmental aspects, which are relevant to the subject matter of the contract. Environmental management systems can be requested for supply, service and works contracts; supply chain management measures can also be requested.
- **Award criteria:** Award Criteria can be used to stimulate additional environmental performance without being mandatory and therefore without foreclosing the market for products not reaching the proposed level of performance. They must be indicated in the notice or tender documents along with their weightings and any sub-criteria.
- **Contract performance clauses** are used to specify how a contract must be carried out. Environmental considerations can be included in contract performance clauses, provided they are published in advance in the notice or tender documents and are linked to the subject-matter of the contract.

There are a number of ways to enforce GPP contract conditions¹⁹:

- Regular monitoring and reporting by the contractor
- Spot checks by the contracting authority
- Third-party audits or certification
- Regular contract review meetings

¹⁷ <https://eur-lex.europa.eu/eli/dir/2014/24/oj/eng>

¹⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014L0025-20240101>

¹⁹ GPP Training toolkit, Module 3: Legal Aspects of GPP, available at http://ec.europa.eu/environment/gpp/index_en.htm



- Use of contractual incentives and/or penalties linked to any of the above
- **Labels:** Many environmental labels exist (e.g. Blue Angel, EU Ecolabel) which aim to help purchasers identify sustainable products or services. The most valuable labels from a GPP perspective are those which are based on objective and transparent criteria, and which are awarded by an independent third party. Labels can be requested in technical specifications, award criteria or contract clauses to verify compliance with environmental criteria (for example by asking for the product to bear that particular label, or equivalent) and reduce the amount of work involved in defining and verifying environmental aspects of tenders.

The **European Court of Justice** also plays an important role in green public procurement through its numerous rulings in cases tied to the topic. The “link to the subject-matter” was identified by the Court as a requirement for award criteria in Case C-513/99 *Concordia Bus*²⁰, a case which concerned environmental award criteria. It is intended to limit the application of criteria which target concerns irrelevant to the specific contract being awarded.

It should be noted that for the time being almost all of the GPP provisions in the procurement directives are **voluntary, rather than mandatory** from the point of view of the contracting authority. This means its success **depends on whether Member States and their contracting authorities are willing to adopt and implement it**. In this context, the EU GPP criteria developed by the European Commission for more than 20 priority product groups are non-binding and have not been formally adopted as legal acts. In other words, the EU’s green public procurement criteria serve as a **supportive framework** that provides concrete guidelines on how to “green” public procurement for targeted products, and they set a non-binding level of ambition regarding what constitutes a sufficient “effort” in greening procurement.²¹ The **exceptions** are the general obligation to ensure compliance with applicable environmental laws in the performance of public contracts (Art. 18.2 of Directive 2014/24/EU) and the obligation to reject abnormally low tenders if these do not comply with applicable environmental obligations (Art. 69.3 of Directive 2014/24/EU)

In addition, the EU has implemented **sector specific legislations** that impose requirements on the procurement of certain goods and services by creating specific obligations for procurement. For ReBuilt project the following are relevant:

- Timber - It must be possible to trace timber products to a legal source under the EU Timber Regulation.²²
- New buildings must meet minimum energy performance requirements and before the construction of new buildings starts, the technical, environmental and economic feasibility of high- efficiency alternative systems, if available, must be taken into account under the Energy Performance of Buildings Directive.²³

The EU supports GPP not only through legislation but also through various non-legislative means such as **publications and initiatives**, including the 2017 communication “Making public procurement work in and for Europe.”²⁴ The European Green Deal²⁵, launched in December 2019, set out a roadmap for promoting

²⁰ <https://curia.europa.eu/juris/liste.jsf?language=en&num=C-513/99>

²¹ HOJČ, Tilen, 2021, Zelena javna naročila v EU skozi analizo izbranih področij : primerjava Slovenije in Hrvaške [na spletu]. Magistrsko delo. Ljubljana : T. Hojč. [Dostopano 30. julij 2025]. Pridobljeno s: <https://repozitorij.uni-lj.si/IzpisGradiva.php?lang=slv&id=133186>

²² Regulation (EU) No 995/2010 laying down the obligations of operators who place timber and timber products on the market

²³ Directive 2010/31/EU on the energy performance of buildings as amended by Directive (EU) 2018/844.

²⁴ <https://ec.europa.eu/docsroom/documents/25612>

²⁵ https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF



resource efficiency, sustainability, and circular economy practices. Building on this, the Circular Economy Action Plan²⁶ of March 2020 introduced measures covering the entire product lifecycle—from design to reuse. Internationally, the EU aligns with the WTO's Government Procurement Agreement (GPA) and bilateral trade deals, generally offering third-country suppliers the same rights as EU businesses.

At the national level, the majority of EU Member States have released National Action Plans (NAPs) for Green (or Sustainable Public Procurement) (GPP or SPP). These plans outline a range of measures and support initiatives. However, action plans in some countries have been prepared more than a decade ago and have since not been updated. Many countries have established targets for GPP, either concerning overall procurement or specific product and service groups. Several countries and regions have formulated their own national sets of criteria for GPP.

4. GPP Criteria

4.1. General

GPP criteria are **not standardized and vary greatly**. They can be adopted from various sources such as EU, national action plans or legislation, guidelines, or numerous national or international organizations.

Since 2008, **EU has developed GPP criteria** for a number of product and service groups, which are regularly reviewed and updated. Criteria were developed to facilitate the integration of green requirements into public procurement documentation, aiming for a balanced approach between environmental performance, cost considerations, market availability, and ease of verification. Contracting authorities can choose to include more or only certain relevant requirements, according to their needs and ambitions.

The GPP criteria development for most products is led by the **Commission's Joint Research Centre**. These criteria are developed using a range of sources. For each product/service group a **technical background report** is prepared identifying the considerations taken into account. The evidence base uses available scientific information and data, adopts a life-cycle approach and engages a variety of stakeholders. GPP criteria documents give explanations on the goal of these criteria, the calculation methodologies, sources and suggestions. **The criteria are formulated in such a way that they can, if deemed appropriate by the individual contracting authority, be (partially or fully) integrated into the authority's tender documents with minimal editing.** Furthermore, due to the extensive explanations, it also gives authorities the ability to personalize or further develop these criteria for their own specific cases.

The EU GPP criteria are split into: **selection criteria, technical specifications, award criteria and contract performance clauses** (as also explained in previous chapter). For each set of criteria there is a choice between two ambition levels:

- The **Core criteria** are designed to allow for easy application of GPP, focussing on the key area(s) of environmental performance of a product and aimed at keeping administrative costs for companies to a minimum.
- The **Comprehensive criteria** take into account more aspects or higher levels of environmental performance, for use by authorities that want to go further in supporting environmental and innovation goals. This benchmark is intended for authorities who seek to acquire the best environmentally friendly and most advanced products currently available on the market. The implementation of comprehensive benchmarks requires slightly higher costs and a wider scope of administration.

²⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN#footnoteref33>



GPP criteria can address a wide range of environmental and social aspects, including²⁷:

- **Resource efficiency** - promoting the sustainable use of natural resources such as raw materials, energy, and water across the product life cycle. This may involve prioritizing durable, energy-efficient, or recycled products.
- **Emissions and pollution reduction** - encouraging the procurement of products and services with low or no harmful emissions during production, use, and disposal, including those made through environmentally friendly processes.
- **Social responsibility** - integrating considerations such as fair labour practices, workers' rights, and social equity alongside environmental sustainability.
- **Waste management and circularity** - favouring products that are recyclable, repairable, reusable, or biodegradable, thereby supporting a circular economy.
- **Biodiversity protection** - selecting goods and services with minimal negative impacts on ecosystems and habitats, for example by using sustainably sourced materials or solutions that actively contribute to biodiversity conservation.

GPP can make use of several procurement tools²⁸ that not only support higher environmental standards but also contribute to financial efficiency, strengthening the business case for sustainable choices.

Life-cycle costing (LCC) - Procurement decisions are often still based primarily on the purchase price. Yet, for many products and works, costs incurred during use and disposal—such as energy consumption, maintenance, or handling of hazardous materials—are equally significant. LCC involves evaluating all costs expected throughout the entire life cycle of a product, work, or service, including:

- the purchase price and associated expenses (delivery, installation, insurance, etc.)
- operating costs (energy, fuel, water, spare parts, and maintenance)
- end-of-life costs (decommissioning and disposal)

Considering life-cycle costs in procurement is economically sensible. However, since purchase, energy, and maintenance expenses may be managed by different departments within one authority, applying LCC effectively usually requires internal cooperation.

Life-cycle assessment (LCA) - While sometimes confused with LCC, LCA is a distinct approach. LCC focuses on financial costs over the life cycle (and can include assigning monetary value to environmental externalities), whereas LCA evaluates environmental impacts, such as greenhouse gas emissions, across the life cycle. Both are valuable for sustainable procurement. The difference is that LCC can be relatively straightforward for procurers to apply, while LCA demands more time and specialist expertise. For this reason, it is often advisable to rely on existing LCA studies, such as those developed for ecolabel criteria.

²⁷ Grants Europe Consulting LLC. Commissioned by: Ministry of Foreign Affairs and Trade of Hungary: Green Public Procurement Guidance Booklet for Project Partners, 2023

²⁸ Grants Europe Consulting LLC. Commissioned by: Ministry of Foreign Affairs and Trade of Hungary: Green Public Procurement Guidance Booklet for Project Partners, 2023



4.2. EU GPP Guidelines for Office Building Design, Construction, and Management

Life cycle impacts of EU construction and use of buildings are generally considered to account for half of all extracted materials, 40% of all energy consumed, a third of all water consumed and around a third of all waste generated in Europe.²⁹

Building stock in the EU is dominated by residential buildings (ca. 75%). Public buildings (e.g. social housing) accounts for anywhere between 0 and 29% of total residential buildings in European countries. With non-residential buildings, the share covered by public offices and educational buildings can account for anywhere between one fifth and one half of total non-residential buildings, depending on the European country in question. Consequently, setting green public procurement criteria for the design, construction, renovation, demolition and management of buildings can potentially deliver major environmental benefits.

The following is a **synthesized overview of potential environmental impacts**³⁰, presented in bullet-point format to support clarity and underline the rationale for integrating GPP criteria:

Energy Use During Operation

- The highest environmental impact occurs during the building's use phase.
- Key contributors: **lighting, heating, cooling, and ventilation**.
- Impact levels vary by **thermal efficiency** of the building and **climate zone**.
- Emphasizes the need to optimize **overall energy performance** and consider **clean energy generation**.

Construction Product Impacts

- The second major source of impact is the **production of construction materials**.
- Involves resources used, emissions and ecosystem effects from **raw material extraction, processing, and transport**.
- High volumes of **construction and demolition waste** stress the importance of **resource-efficient design**.
- Key building components to address: **floors, roofs, structure, and external walls**.
- **Recycling and reuse** of materials support circular economy goals.

Transportation of Construction Materials

- Transporting large, heavy materials like **aggregates** contributes significantly to emissions—especially over **distances >25 km**.
- Emissions from transport can be as high as or higher than those from material production.
- Use of **rail or shipping** over road transport is encouraged.
- Supports market development for **recycled aggregates** in line with EU goals.

²⁹ <https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/e50edce4-35f3-493b-a14f-e742ba1fbd82/details>

³⁰ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Office Building Design, Construction and Management, Brussels, 20.5.2016.



Building Lifespan (Service Life)

- **Longer-lasting buildings** generally have lower life cycle environmental impacts. This benefit assumes good **energy performance** is maintained throughout the lifespan.
- **Designing for adaptability** at end-of-life stages can extend lifespan and improve sustainability.

Other factors, such as **Healthy and Functional Work Environments** and **Nature-Based Solutions (NBS)** can also influence the service life.

Healthy and Functional Work Environments

- A healthy indoor environment with **good air quality and natural light** increases **occupant productivity** and reduces **sick leave**.
- Such qualities also reduce the need for frequent **renovations**, extending service life.

Nature-Based Solutions (NBS)

- Elements like **green roofs, green walls, courtyards, trees, and SUDS** (Sustainable Urban Drainage Systems) have multiple benefits:
- Support **biodiversity**
- Reduce **rainwater runoff**
- Enhance **natural cooling** and **thermal efficiency**
- Improve **air quality**
- Make the workplace **more attractive and productive**

The most important impact categories considered across the life cycle include:³¹ global warming potential, acidification, exploitation of renewable and non-renewable primary energy resources, ecotoxicity, human toxicity, eutrophication, abiotic resource depletion, water consumption, use of secondary and re-used materials and waste material flows.

To reduce potential environmental impacts and limit contributions to key impact categories, the EU has developed the **EU GPP Office Buildings approach**, which serves as the foundation for the EU GPP Criteria for Office Building Design, Construction, and Maintenance:³²

- Design and construction to achieve high energy efficiency performance and low associated CO2 emissions
- Installation of high efficiency and renewable energy technologies which make use of site-specific opportunities to reduce energy consumption and CO2 emissions
- Design and specification to reduce the embodied impacts and resource use associated with construction materials
- Design, specification and site management to minimise construction and demolition (C&D) waste and to use building products or materials with a high recycled or re-used content

³¹ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Office Building Design, Construction and Management, Brussels, 20.5.2016.

³² COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Office Building Design, Construction and Management, Brussels, 20.5.2016.



- Specification of fit-out and finishes that minimise hazardous emissions to indoor air
- Ventilation design in order to ensure healthy air and minimise the intake of external air pollution
- Specification and installation of water saving technologies
- Installation of physical and electronic systems and technologies to support the ongoing minimisation of energy use, water use and waste arisings by facilities managers and occupiers
- Implementation of staff travel plans to reduce transport related fuel use and CO2 emissions, including infrastructure to support electric vehicles and cycling.

Application of the GPP criteria for Office Building Design, Construction and Maintenance³³

Designing and procuring an office building with a reduced environmental impact, whether it be new-build or a major renovation, is a **complex process**. The form of procurement and the way in which GPP criteria are integrated into the procurement process can have a significant influence on the outcome. To help public authorities to ensure that office building projects are procured and implemented with a reduced environmental impact, EU GPP Criteria for Office Building Design, Construction and Maintenance have been drafted and their usage is recommended.

Constructing a new office building or undertaking a major renovation involves a **series of procurement activities** tied to specific contracts, each influencing the project's environmental performance. The type of procurement route chosen—whether through **separate contracts or integrated models like Design and Build (DB) or Design, Build and Operate (DBO)**—affects interactions between the client, design team, contractors, future occupants, and facilities managers. To ensure improved environmental outcomes, it is important to identify **key points in the procurement process** where GPP criteria should be applied. These criteria align with common stages such as **selecting design teams and contractors, detailed design and defining performance requirements, demolition and site preparation, construction or renovation, installing energy systems, completion and handover, and facilities management**.

Depending on the project's ambition and the contracting authority's experience, not all GPP criteria will be relevant, and their application may vary by stage or contract structure. Strategic environmental goals should be set early, and the best stages for integrating GPP criteria should be identified once the procurement route is chosen. Regardless of the approach, integrating GPP criteria from the beginning of both planning and procurement is strongly recommended to achieve desired environmental outcomes and ensure value for money.

Performance requirements³⁴

The **EU GPP criteria** for office building design, construction and management set out clear performance requirements aimed at minimizing environmental impacts and enhancing sustainability throughout the building's life cycle. These requirements focus on energy efficiency, emissions reduction, waste and water management, indoor environmental quality, material use, and operational performance.

In terms of **energy efficiency and use**, the criteria require that buildings meet a minimum energy performance standard. Additionally, a Global Warming Potential (GWP) assessment is to be carried out, based on Environmental Product Declarations (EPDs) for key building components such as foundations, structural frames (including beams, columns, and slabs), external and internal walls, insulation, windows,

³³ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Office Building Design, Construction and Management, Brussels, 20.5.2016.

³⁴ <https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/e50edce4-35f3-493b-a14f-e742ba1fbd82/details>



roofs, ceilings, and floors. Buildings should also be designed either to connect to highly efficient and cost-effective energy systems or to generate at least 10% of their primary energy demand through localized renewable sources.

To address **emissions and waste management**, the GPP criteria promote the development of sustainable mobility plans in cooperation with local authorities and infrastructure providers. The design is to include dedicated storage spaces to support the separation and recycling of waste and end-of-life products, thereby encouraging proper waste segregation and reducing landfill dependency.

For **water use and indoor environmental quality**, the design and construction processes should aim to achieve water efficiency in sanitary and kitchen installations. Buildings should also be specified and constructed to ensure optimal indoor comfort, covering aspects such as thermal conditions, natural lighting with glare control, adequate ventilation, and high air quality.

In the area of **material use**, the criteria emphasize sustainability through the incorporation of recycled content in concrete and masonry materials. Measures should also be taken to reduce the carbon footprint of transporting aggregates, including setting targets for CO₂e per tonne. Additionally, contractors must ensure all timber used is legally sourced.

Regarding **site preparation**, a demolition waste audit and management plan should be in place to support the separation of materials for reuse, recycling, and recovery before construction begins. During **construction or renovation**, energy systems should be properly installed and tested to confirm their performance. Building materials and finishes should comply with emission limits for Total Volatile Organic Compounds (TVOCs) and formaldehyde to ensure healthy indoor environments.

When **installing energy systems and services**, the criteria include specific provisions for systems such as Combined Heat and Power (CHP), which contribute to energy efficiency. Upon **completion and handover**, a series of audits are promoted to confirm the effectiveness of the insulation and air tightness, the functionality of lighting controls, and the proper commissioning of the Building Energy Management System (BEMS). Additionally, the building should be tested for indoor air quality and should include low or zero-carbon energy sources.

In the **facilities management** phase, energy use should be continuously monitored and controlled. The building should be managed under an Energy Performance Contract (EPC) to ensure accountability and ongoing energy savings. Furthermore, waste management systems should be provided to enable occupants, including on-site catering services, to effectively separate waste streams such as paper, cardboard, and food and drink packaging.

4.3. EU GPP Guidelines for Road Design, Construction, and Maintenance

Almost all roads are unique and have their own specific conditions. Therefore, a large range of impacts are possible for all the components of the road life cycle. GHG emissions could range from negligibly small values to 60,000 t of CO₂e per lane-kilometre over a service life of 50 years.

The following is a **synthesized overview of potential environmental impacts**³⁵, presented in bullet-point format to support clarity and underline the rationale for integrating GPP criteria:

Use Phase (Daily Traffic)

- The biggest environmental impact comes from vehicles using the road—especially fuel consumption.

³⁵ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Road Design, Construction and Maintenance, Brussels, 10.6.2016.



- Rolling resistance (affected by road surface texture) has the greatest impact on fuel use. A 10% reduction can improve fuel economy by 1-2%.
- Congestion (from traffic, accidents, or construction) increases fuel consumption due to idling and slowdowns.

Construction Phase

- Second-largest impact due to material use, emissions from production, and transportation of resources.
- Earthworks, sub-base, and surface materials are major contributors.
- Using recycled materials can reduce impacts and support the circular economy.

Material Transport

- Transporting heavy materials like aggregates over long distances (especially more than 25 km) can generate emissions as high as, or higher than, the emissions from producing the materials themselves.
- To reduce these emissions, rail or shipping is preferred over lorries.
- Promoting the use of recycled aggregates can help to develop a market for such materials, supports EU circular economy goals and improves resource efficiency.

Earthworks in Difficult Terrain

- In areas with complex geography (e.g., hills or unstable soils), earthworks and soil stabilization can contribute to a large share of emissions and up to 30% of total project costs.

Maintenance and Rehabilitation

- As new road construction decreases, maintenance becomes more important.
- It is not just repair work but a strategic process that involves optimizing for rolling resistance, congestion, and material durability.
- Using durable materials reduces the need for frequent repairs and lowers long-term environmental impacts.

Impact Differences Based on Traffic Volume

High-traffic roads (like highways):

- Main impacts come from rolling resistance, congestion, and then materials production/transport.

Low-traffic roads (like secondary roads):

- Main impacts are from materials production and transportation, with less influence from rolling resistance and congestion.

Additional Impacts Often Overlooked

- Noise pollution: Road traffic is a leading source of noise across the EU. Can be mitigated by low-noise surfaces or noise barriers.
- Stormwater drainage: Roads can pollute watercourses through runoff. Proper drainage systems can reduce pollution and also help manage flood risks. These systems can be either hard engineering (concrete-based) or soft engineering (nature-based), both of which can be effective in flood prevention.



The most important impact categories considered across the life cycle include³⁶: global warming potential, photochemical ozone formation, abiotic resource depletion, acidification, eutrophication, human toxicity, eco-toxicity, land use, exploitation of renewable and non-renewable primary energy resources, use of secondary and re-used materials and waste material flows.

To reduce potential environmental impacts and limit contributions to key impact categories, the EU has developed the **EU GPP Road Design, Construction and Maintenance approach**, which serves as the foundation for the EU GPP Criteria for Road Design, Construction and Maintenance:³⁷

- Design and construction to achieve low rolling resistance (within technically acceptable safety parameters) and low associated fuel consumption and emissions in motorways and highways by means of optimizing the macrotexture (measured as Mean Profile Depth MPD) and monitoring it during the road use phase;
- Design and specification to reduce the embodied impacts and resource use associated with construction materials;
- Design, specification and site management to maximize the on-site re-use of excavated materials and soils (including topsoil), maximize the re-use/recycling of construction and demolition waste (C&DW) and of waste from other industrial processes and to use construction materials with a high recycled or re-used content including by-products;
- Specification of approaches to lower noise emissions (including nature-based solutions) during construction, use and maintenance phase;
- Increasing material durability and reducing maintenance needs;
- Maintenance and rehabilitation strategies including a monitoring plan and a maintenance plan;
- A Traffic Congestion Mitigation Plan including solutions such as alternative routes, tidal flow lanes and hard shoulders evaluated by means of an LCC analysis;
- Introducing water pollution control components and stormwater retention capacity components, including soft engineered solutions (e.g. nature-based solutions) in the drainage system, including potential for habitat creation notably to reduce runoff into storm sewers and the overall amount of water entering local storm sewers or surface waters thereby significantly reducing flooding-related damages.

Application of the GPP criteria for Road Design, Construction and Maintenance ³⁸

Designing and procuring road construction, maintenance or rehabilitation activities with a reduced environmental impact is a **complex process**. To help public authorities to ensure that road projects are procured and implemented with a reduced environmental impact, EU GPP criteria for Road Design, Construction and Maintenance have been drafted and their usage is recommended.

The construction or maintenance of a road involves a sequence of procurement activities, each linked to specific contracts that can significantly influence the project's outcome. These contracts may involve **different parties or be combined under integrated models such as Design and Build (DB) or Design, Build**

³⁶ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Road Design, Construction and Maintenance, Brussels, 10.6.2016.

³⁷ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Road Design, Construction and Maintenance, Brussels, 10.6.2016.

³⁸ COMMISSION STAFF WORKING DOCUMENT, EU GPP Criteria for Office Building Design, Construction and Management, Brussels, 20.5.2016.



and Operate (DBO), where a single contractor handles design, construction, and potentially even maintenance and operation. Because of the impact procurement choices have, it is important to **identify key stages where GPP criteria should be applied**. The GPP criteria are aligned with common procurement stages—such as **selecting design teams and contractors, setting performance requirements, construction, usage, maintenance and operation, and end-of-life planning**.

Not all criteria will apply to every project; their relevance depends on factors like project goals, timelines, and procurement routes. However, it is strongly recommended to integrate GPP criteria early in both planning and procurement to ensure strategic objectives are met and best value for money is achieved.

5. National GPP Frameworks in the Programme Area

National GPP frameworks play a critical role in translating high-level environmental policy goals into operational, enforceable measures within public procurement systems. These frameworks typically assign concrete obligations or performance targets to contracting authorities, aiming to ensure the widespread integration of environmental considerations in public purchasing.

Countries adopt **various approaches** depending on national priorities, institutional capacities, and legal frameworks, no different it is for ReBuilt project countries (Slovenia, Croatia, Germany, Poland, Czech Republic, Italy, Hungary, Austria and Slovakia).

In several European countries, GPP obligations are mandatory for specific product or service categories. **Italy**³⁹, for instance, has **developed and mandated Minimum Environmental Criteria (CAM)** across 18 product categories, which apply to **all levels of government regardless of contract value**. This policy mandates the integration of environmental standards into **100% of public building contracts**—both new construction and renovation—making Italy the first EU country to take such a comprehensive approach. The criteria include requirements for recycled content in construction materials, obligation to implement selective demolition processes, mandatory implementation of pre-demolition audits, and minimum thresholds (70%) for recovery of construction and demolition waste, design for disassembly/deconstruction for 50% of all materials used, all aligned with circular economy principles. While initial implementation rates were modest (approximately 18% in major cities in 2020), the policy has significantly influenced market behaviour, increasing the availability of compliant products and raising awareness among suppliers and contractors. **Austria** mandates sustainable procurement for federal institutions and encourages adoption by other public entities, for products and services for which GPP criteria are clearly defined in Austrian Action Plan for Sustainable Public Procurement (naBe).

Some other countries have adopted both mandatory requirements and GPP targets. For example, **Hungary** aims to ensure that, by 2027, at least 30% of all public procurement contracts incorporate green considerations. Public procurements above EU threshold have to integrate at least one green criterion in procurement of buildings and roads. **Slovakia** has set a national target to ensure that 70% of public procurement—by both value and number of contracts—meets GPP standards by 2030. **Poland and Czech Republic** currently lack both binding GPP criteria and defined targets, reflecting differing levels of commitment across Europe.

Transparency and accountability are often supported through public disclosure of GPP performance data. Many countries regularly publish procurement statistics and progress toward targets, making this information available online (for example **Slovenia**). This practice not only supports institutional trust but also facilitates monitoring and evaluation of GPP implementation.

³⁹ <https://www.interregeurope.eu/good-practices/mandatory-italian-gpp-minimum-environmental-criteria-for-buildings>



In some cases, outcomes such as reductions in greenhouse gas emissions or resource use are not systematically measured, limiting understanding of GPP's broader environmental impact. **Croatia** is one of the few countries that reports on the environmental outcomes of its GPP framework (impact on greenhouse gas emissions), providing insight into how procurement contributes to national sustainability objectives.

In addition to national initiatives, cities across Europe frequently lead in implementing advanced GPP strategies. **German cities** City-states like Berlin, Hamburg, and Bremen, as well as Vienna in **Austria**, have made GPP mandatory at the local level, demonstrating that subnational authorities can serve as key drivers of sustainable procurement innovation.

While approaches differ among countries, the development of national and municipal GPP frameworks across Europe reflects an **increasing acknowledgment of public procurement as an effective instrument for advancing climate and environmental objectives**.

Please refer to the Annexes for details on the nine countries within the Interreg CE ReBuilt project programme area: Slovenia, Croatia, Germany, Poland, Czech Republic, Italy, Hungary, Austria, and Slovakia.

6. Recommendations for Enhancing GPP in Circular Construction

6.1. Barriers to the Effective Implementation of GPP in Circular Construction

6.1.1. Introduction

Although GPP is increasingly promoted across Europe as a driver for circular construction, its practical use in the office building and road infrastructure sectors remains uneven. During the review of national legislation, policies, and practical experience, project partners identified numerous challenges that prevent contracting authorities from systematically applying advanced GPP criteria. Many of these barriers appear across several countries. The following section consolidates and synthesises them into a single overview. This synthesis highlights the key economic, technical, institutional, and cultural obstacles currently slowing down the uptake of circular and sustainable approaches in public construction projects.

6.1.2. Synthesis of Reported Barriers

1. Economic and Budgetary Constraints

- **High upfront costs** for sustainable materials, energy-efficient technologies, and innovative construction solutions (e.g., low-temperature asphalt, recycled aggregates, high-performance insulation) discourage adoption, particularly in **small and medium municipalities** with limited budgets.
- **Short-term budget focus:** many procurers still award contracts to the **lowest bidder** rather than applying the most economically advantageous tender (MEAT) principle or life-cycle costing (LCC). This hinders investments that would reduce costs and impacts over the building or road's lifetime.



- **Lack of dedicated funding or incentives:** few mechanisms exist to offset the higher initial cost of green solutions, despite their potential for long-term savings.

2. Technology and Market Limitations

- **Limited availability of advanced low-carbon or recycled materials** in some regions; local supply chains for products such as recycled asphalt (RAP), climate-friendly cement, or bio-binders remain underdeveloped.
- **Performance and durability concerns:** both procurers and contractors may be sceptical about the long-term reliability of high recycled content or novel materials.
- **Slow adoption of modern construction technologies** (e.g., warm mix asphalt, digital material tracking, innovative demolition waste processing). Many companies – especially SMEs – have not yet upgraded equipment or processes for circular construction.
- **Uncertain and fluctuating market prices** for sustainable materials and energy complicate cost planning and can deter bids.

3. Knowledge and Capacity Gaps

- **Insufficient technical expertise** among contracting authorities to prepare and evaluate tenders that use complex GPP tools such as LCA, LCC, carbon footprinting, or EPDs.
- **Low familiarity with Building Information Modelling (BIM)** and other digital tools required for monitoring material flows and performance.
- **Inconsistent use of EPDs:** even where product declarations exist, buyers lack skills to verify or compare them.
- **Staff shortages and limited internal guidance** in many public bodies restrict the ability to manage innovative procurement models or engage with the market early.

4. Policy, Regulatory, and Institutional Challenges

- **Non-binding or fragmented frameworks:** in several countries GPP application is voluntary or not uniformly enforced, leading to uneven practice.
- **Overlaps or ambiguities** between national and regional rules create confusion for contracting authorities.
- **Limited strategic alignment:** GPP is often treated as an **operational tool** rather than a way to achieve climate and circular economy goals; whole-of-government strategies and coordination mechanisms are missing or weak.
- **Administrative burden:** green tenders often require more documentation and justification (e.g., to comply with frameworks such as AVV Klima in Germany or CAM in Italy). Some authorities avoid complex GPP procedures to save time and reduce risk.

5. Monitoring and Data Deficiencies

- **Weak post-procurement verification:** in many countries, there is no mandatory system to check whether green criteria were actually implemented after contract award.
- **Lack of sector-specific indicators** (e.g., % recycled asphalt, embodied carbon per km of road, or waste diversion rates for buildings). Data remains scattered in research reports or pilot projects and is not centrally collected.



- **Manual and resource-intensive monitoring** (e.g., Austria's naBe) discourages wide adoption and scaling.

6. Cultural and Market Acceptance Barriers

- **Risk aversion:** public authorities and contractors prefer tried-and-tested materials and methods over innovative low-carbon or circular alternatives.
- **Limited political commitment at local level:** while national governments may set climate and circularity goals, local decision-makers often prioritise cost, speed, or risk minimisation.
- **Perception of sustainability as an “add-on”** rather than an integral project requirement persists in some administrations.
- **Stakeholder resistance:** local objections, permitting delays, or NIMBY/BANANA effects can slow or block the uptake of circular solutions.

7. Digitalisation Challenges

- **Lack of common digital standards and low readiness among suppliers** make it difficult to require BIM or other digital reporting tools in tenders.
- **Insufficient training and support** for public buyers to use digital solutions for material tracking, LCA/LCC, or procurement management.

Key Insight

Across all participating countries, the same structural barriers recur:

- High upfront costs and budget rules favouring the lowest price;
- Limited technical capacity of contracting authorities;
- Fragmented or non-binding policy frameworks;
- Immature supply chains for circular materials; and
- Insufficient monitoring and digital tools to track results.

Addressing these obstacles – by introducing/strengthening mandatory GPP criteria, providing incentives and funding, building technical capacity, expanding digital standards, and creating reliable monitoring systems – is critical to mainstreaming circular and low-carbon construction in public procurement.

6.2. General Recommendations for Improving the Implementation of GPP in Circular Construction

6.2.1. Introduction

To overcome the barriers identified in the national reviews, project partners proposed a range of practical and policy recommendations to make green public procurement more effective in driving circular and sustainable construction. While each country's suggestions reflect its specific context, they converge on a set of shared priorities: stronger skills and capacity, better policy frameworks and enforcement, improved



data and monitoring, and closer collaboration with industry. The following synthesis consolidates these inputs into a coherent set of recommendations applicable to both office building design, construction and management and road design, construction and maintenance.

6.2.2. Synthesis of Reported Recommendations

1. Strengthen Technical Skills and Capacity Building

- **Specialized training for public procurers** on life cycle costing (LCC), life cycle assessment (LCA), carbon footprinting, Environmental Product Declarations (EPDs), and Building Information Modelling (BIM).
- **Practical case studies and pilot demonstrations** showing the economic and environmental benefits of GPP to build confidence and acceptance among contracting authorities.
- **Dedicated support tools and guidance** (templates, checklists, pre-defined criteria) to help smaller municipalities and less experienced buyers integrate advanced GPP requirements.
- Expand **digital skills** for procurement teams so that BIM and other data-driven approaches can be used to track materials, carbon, and performance across the building or road lifecycle.

2. Make Policy and Regulatory Frameworks More Effective

- **Gradually increase mandatory GPP criteria** in strategic sectors (e.g., office buildings, public roads) to ensure consistency and reduce the current variability between authorities.
- Start with **core criteria** (e.g., minimum recycled content, energy performance), then expand towards **comprehensive criteria** once the market and authorities are ready.
- **Develop road-specific GPP guidance** where missing, aligned with EU benchmarks, to ensure equal sustainability standards across federal, regional, and municipal projects.
- **Regularly update national GPP schemes** (e.g., CAM in Italy, naBe in Austria) to reflect new technologies, market maturity, and EU policy changes.
- **Clarify and simplify procedures** by harmonising regional/national requirements and reducing administrative burden, while ensuring that environmental aspects remain robust.
- **EU-wide action:** The European Union could strengthen this transition by **mandating that Member States achieve a minimum share of green public procurement in their total contracts**. Such a provision would not only push public buyers to integrate sustainability but also encourage governments to invest in the **systems, guidance, and skills** needed to implement GPP consistently.
- **Introduce minimum recycled content requirements** for key construction products to create market demand for recycled materials, divert CDW from landfills, and make recycled aggregates more competitive – either via direct regulation or through integration into GPP criteria.

3. Integrate Life Cycle and Performance-Based Approaches

- Require **LCA and LCC analysis** at design, construction, and maintenance stages of buildings and roads.
- Shift from **prescriptive technical specifications** to **performance-based procurement** (e.g., targets for energy consumption, embodied carbon, circularity indicators, indoor environmental quality).
- **Embed end-of-life planning:** include demolition waste audits, reuse and recycling targets, and materials passports in tender requirements.
- Introduce **durability and service-life standards** to reduce long-term costs and environmental impact, especially for road pavements.



4. Expand Use of Digital and Monitoring Tools

- Make **BIM integration** standard for design, construction, and facility/asset management to enable tracking of material flows, cost optimisation, and predictive maintenance.
- Create **digital monitoring platforms** to gather post-procurement data (e.g., actual energy use, CO₂ emissions, recycled content achieved).
- Standardise **reporting templates and KPIs** (e.g., % recycled materials, carbon per m² or per km of road) to ensure comparable and reliable data.
- Automate monitoring processes where possible to reduce the burden on contracting authorities and make compliance easier to verify.

5. Provide Financial and Market Support

- Introduce **funding incentives** or preferential financing to offset higher upfront costs of sustainable materials and technologies.
- Promote **market dialogue and early engagement** with suppliers to stimulate innovation and ensure the availability of low-carbon and recycled materials.
- Support SMEs in **adopting LCA/LCC tools and digital workflows** to meet GPP requirements.
- Encourage **pilot projects** showcasing cost-effective circular solutions in both buildings and roads to inspire replication.

6. Strengthen Enforcement, Monitoring and Impact Assessment

- Develop **clear mechanisms to monitor compliance** with GPP criteria during and after contract delivery.
- Establish **harmonised metrics** to track real environmental and financial performance (e.g., CO₂ savings, operational energy reduction, waste diversion rates).
- Carry out **regular audits and reviews** to ensure that GPP policies translate into measurable action.
- Publicly share success stories and performance data to build confidence and political support.
- **Monitoring GPP remains a challenge:** most countries only estimate GPP share via e-procurement data, with little systematic reporting on CO₂ or waste savings. Creating **shared indicators and baselines** is needed.

7. Foster Cross-Sector Collaboration and Culture Change

- Encourage cooperation between **public authorities, environmental agencies, industry, and academia** to exchange best practices and develop innovative solutions.
- Support **networks of procurers** to share experiences and tools, especially useful for smaller municipalities.
- Promote **cultural change** by framing GPP as a strategic investment aligned with the **EU Green Deal, Circular Economy Action Plan, and climate neutrality targets**, rather than as an administrative add-on.
- Increase **political commitment** at regional and local levels to give sustainability equal weight alongside cost and speed of delivery.

Key Message

Countries consistently recommend a balanced approach:



- Build capacity and reduce complexity for procurers;
- Strengthen policy frameworks with gradually mandatory, well-defined criteria;
- Enable life cycle, digital and performance-based procurement; and
- Back these measures with monitoring, funding, and market development.

Together, these steps can transform GPP from a voluntary, often minimal practice into a powerful driver of circular, low-carbon construction across both the building and road infrastructure sectors.

6.3. Specific suggestions for possible additions to national guidelines: GPP Criterion Voting - Methodology and Results

In order to move beyond the general recommendations already produced from the review of national legislation and policy frameworks on **Green Public Procurement in construction**, activity leader POR decided to add an additional participatory step to the activity (Voting task). The aim was to obtain **specific, prioritised feedback from project partners** on which **EU-level GPP criteria** should be recommended for inclusion or strengthening in national GPP guidelines for construction for enabling the transition into circular construction.

6.3.1. Results

6.3.1.1. Focus Area: Office Building Design, Construction and Management

The seven criteria that emerged as most important after the voting are summarised below:

1. **Construction product recycled content - Incorporation of recycled content in concrete and masonry (Related to GPP Criteria: B10.2)**
 - *Core requirement:* The procurer shall award points to tenderers that achieve greater than or equal to 15% by value of recycled content and/or by-products for the sum of the main building elements;
 - *Comprehensive requirement:* The procurer shall award points to tenderers that achieve greater than or equal to 30% by value of recycled content, re-used content and/or by-products¹¹ for the sum of the main building elements.
 - This criterion encourages the use of secondary raw materials and recycled construction products to close material loops and reduce environmental impacts of new buildings.
2. **Competencies of the project manager (Related to GPP Criteria: A1)**
 - Experience in managing contracts with environmental performance requirements,
 - Implementation of innovative environmental technologies and design,
 - Financial appraisal of such technologies.
 - More competences required for *Comprehensive* criteria. It ensures that the person overseeing the construction has the skills to implement circular and sustainable solutions effectively.
3. **Demolition waste audit and management plan (Related to GPP Criteria: C1)**
 - *Core:* at least 55% (by weight) of non-hazardous demolition waste shall be prepared for reuse, recycling or recovery;
 - *Comprehensive:* at least 80%.



- The contractor shall carry out a pre-demolition/strip-out audit in order to determine what can be re-used, recycled or recovered, including hazardous waste risk assessment and detailed bill of quantities.
- Supports high-quality waste management and resource recovery during refurbishment or demolition phases.

4. Energy supply systems (Related to GPP Criteria: B4)

- *Core*: Where the building is located so as to benefit from the potential to connect to a high efficiency and cost-effective alternative energy systems, the building's energy systems shall be designed to connect to this infrastructure. The primary energy savings shall be quantified.
- *Comprehensive*: A minimum of 10% of the primary energy demand for the building shall be supplied/generated by localised renewable energy sources or high efficiency and cost-effective alternative systems installed within the curtilage of the building or which are shared with other buildings. The minimum requirement could be varied depending on the local context.
- Drives low-carbon operation and reduces long-term emissions of the building.

5. Minimum energy performance (Related to GPP Criteria: B1)

- The calculated energy performance of an office building shall meet the requirements, which can be set in relation to either energy performance or cost. Please see GPP Criteria for exact requirements, separate for new-builds and major renovations, and different for *Core* and *Comprehensive* criteria.
- Where the national minimum requirement is stricter than these requirements, the award criterion (B8.1) shall be used instead of this criterion to encourage further cost effective improved performance.
- Aligns public projects with EU energy efficiency goals and nearly zero-energy building standards.

6. Competencies of the design team (Related to GPP Criteria: A2)

- Proven expertise in areas such as:
 - Energy efficient building fabric and services design for new-build or renovation projects,
 - Installation of Building Energy Monitoring Systems (BEMS), communication of how they work to building managers and their use to diagnose energy use patterns in buildings;
 - Specification, procurement and installation of resource-efficient construction materials,
 - The development and implementation of staff travel plans, including infrastructure for low emission vehicles and bicycles,
 - Additionally, for *Comprehensive*: Application of multi-criteria building assessment and certification schemes. The use of assessment tools such as LCC and LCA. Address daylighting and glare, thermal comfort and indoor air quality
- Guarantees that early design decisions support circularity and life-cycle efficiency.

7. BEMS installation (Related to GPP Criteria: B3)

- A building energy management system (BEMS) shall be installed and commissioned that provides occupants and facilities managers with real-time information on the building's energy use by using networked sensors and a minimum of half hourly utility metering.
- The user interface shall allow for information on the buildings energy use to be analysed and downloaded by occupants and facilities managers without requiring significant training.
- The performance of key aspects of the building that can be controlled by the system shall be easy to adjust i.e. lighting, heating, cooling.



- *Comprehensive*: The system should allow further for measures such as ‘Diagnosis of the reason for any deviations from design performance’ and others listed in the Criterion.

6.3.1.2. Focus Area: Road Design, Construction and Maintenance

The seven most supported criteria for the road sector were:

1. Recycled content (Related to GPP Criteria: B15)

- *Core*: The contracting authority shall award points to tenderers that achieve greater than or equal to 15% by weight of the recycled content, re-used content and/or by-products for the sum of the main road elements (e.g., reclaimed asphalt pavement - RAP, supplementary cementitious materials - SCMs, recycled aggregates);
- *Comprehensive*: $\geq 30\%$.
- Encourages circular use of materials in road construction.

2. Life-cycle performance of main road elements (Related to GPP Criteria: B14)

- *Core*: Points will be awarded on the base of the improvement of the carbon footprint (CF) of the road including at least the main road elements in comparison with a reference road or other competing designs. The bidder that shows the lowest carbon footprint will be ranked with the highest value.
- *Comprehensive*: full life-cycle assessment (LCA).
- Applies to earthworks and ground works, sub-base, base/binder/surface courses or concrete slabs, and ancillary elements.
- Drives holistic evaluation of embodied carbon and other impacts.

3. Competencies of the project manager and design team (Related to GPP Criteria: A1)

- Expertise in areas such as: project management of road construction and maintenance contracts that have delivered improved environmental performance; assessment of road environmental performance using multi-criteria certification schemes and carbon footprint tools in compliance with ISO 14067 or equivalent; the specification, procurement and use of low environmental impact construction materials; the use of construction materials with high recycled and re-used content and by-products in road construction and maintenance; noise and congestion mitigation; pavement durability, and stormwater pollution control.
- Additionally, for *Comprehensive* requirements such as: Traffic congestion mitigation plans and LCC analysis to identify the cost-optimal solution, etc.
- Ensures informed design and delivery of sustainable, resilient roads.

4. Demolition Waste Management Plan (Related to GPP Criteria: E2)

- *Core*: Demolition Waste Audit and Management Plan
- A minimum of 70% by weight of the non-hazardous waste generated during demolition, including backfilling, shall be prepared for re-use, recycling and other forms of material recovery. This shall include: Concrete, RAP, aggregates recovered from the main road elements; Materials recovered from ancillary elements.
- Pre-demolition audit to be carried out in order to determine what can be re-used, recycled or recovered, including identification and risk assessment of hazardous waste; a bill of quantities etc.
- *Comprehensive*: $\geq 90\%$.
- Reduces landfill and supports circular material flows.

5. Materials transportation CO₂e emissions (Related to GPP Criteria: B16)

- Focuses on reducing greenhouse gas emissions per tonne of transported materials - Points will be awarded in proportion to the reduction in the CO₂e emission/tonne of aggregates for use in the production of the main road elements



- Particularly relevant if a broader LCA or carbon footprint criterion is not applied.
- 6. **Performance requirements for durability of pavement (Related to GPP Criteria: B11)**
 - Sets minimum nominal service lifetime that shall be specified by the contracting authority but should not be shorter than:
 - *Core*: 15 years (binder), 20 years (base), 40 years (sub-base);
 - *Comprehensive*: 20/40/60 years respectively.
 - Promotes long-lasting pavements and minimises whole-life environmental impact and costs.
- 7. **Competencies of the main construction contractor (Related to GPP Criteria: A2)**
 - The main construction contractor shall have relevant competencies and experience in the completion of road construction and maintenance contracts that have been shown to have delivered improved environmental performance.
 - Relevant experience should cover: road performance monitoring and maintenance, durability assessment of materials, congestion mitigation planning and management, procurement and use of low-impact and recycled construction materials, demolition waste and excavation soil management, low-temperature asphalt and worker safety, low-noise and long-lasting pavements, and stormwater pollution control/retention solutions (including soft engineering).
 - Ensures that contractors have the operational capacity to deliver circular outcomes.

Outcome

The voting exercise provided **clear, partner-driven priorities**:

- **Incorporation of recycled content** ranked first in **both focus areas** (office buildings and roads).
- Strong emphasis was also placed on **competencies of key actors** (project managers, design teams, contractors), **life-cycle performance assessment**, and **effective demolition/waste management planning**.

These results can serve as **recommendations for updating national GPP guidelines**, making them more **performance-oriented, circular, and implementation-ready** for public authorities preparing tender documentation.

7. Annexes

- Report on review of national GPPs focused on construction and suggestions for new additions for:
 - Croatia
 - Slovenia
 - Austria
 - Germany
 - Italy
 - Slovakia
 - Poland



- Czechia
 - Hungary
-
- Voting Tables from project partners, including Joint voting table