

Research & Innovation projects supporting the Circular Economy Act

Focus Area: Circular public procurement



Independent Expert Report

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Focus area: circular public procurement

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Executive Summary

This report provides a synoptic analysis of 17 Horizon 2020 and Horizon Europe R&I projects relevant to circular public procurement (CPP), with the purpose of identifying solutions that are sufficiently mature, transferable and policy-relevant to inform the Circular Economy Act (CEA). The portfolio spans construction, bioeconomy, healthcare, renewable energy and cross-sector governance. Its principal contribution lies not primarily in the development of individual technologies, but in demonstrating how public procurement can function as a systemic lever for circular transition by creating demand for secondary raw materials, supporting the uptake of circular solutions, and strengthening the framework conditions needed for circular markets to develop.

The portfolio includes a broad range of solution types, including lifecycle-based decision tools, digital systems, innovation procurement models, project development assistance, territorial governance approaches, and mechanisms for market coordination and investment de-risking. In some cases, procurement is the primary intervention; in others, it acts as an enabling mechanism within wider circular transition strategies. This diversity is significant from a policy perspective, as it shows that CPP is relevant across several sectors and can support both direct market uptake and broader system transformation.

Main findings from the portfolio

A central finding is that the main challenge is no longer the lack of promising circular solutions, but the difficulty of embedding them into routine public decision-making. The most successful outcomes are characterised by practical operationalisation, institutional support and replicability. Effective approaches reduce complexity for procurers, align circular objectives with existing procurement logic, and support more structured engagement with suppliers before tender launch. They are also more likely to be transferable where they rely on templates, modular tools, standardised data and clear organisational anchoring.

Across the analysed projects, circularity is operationalised through practical tools, methodologies and governance approaches that enable contracting authorities to apply lifecycle thinking, engage markets more strategically, and integrate circular criteria into procurement processes. These include harmonised reporting approaches, lifecycle comparison tools, digital infrastructures for data and traceability, structured market consultation methods, and procurement support frameworks that reduce uncertainty for public buyers. The portfolio provides examples of the operationalisation of lifecycle-based procurement. The evidence shows that circularity becomes more actionable when contracting authorities can compare options not only on upfront price, but also on long-term value, lifecycle emissions, resource efficiency, recovery potential, and other measurable performance dimensions.

The portfolio also shows that procurement can act as a market-shaping instrument, not merely as an administrative purchasing function. Where public buyers are supported by appropriate guidance, market consultation methods, digital tools and innovation procurement models, procurement can reduce market uncertainty, improve supplier engagement and support the uptake of new circular solutions. Procurement performs most effectively when linked to enabling conditions beyond the individual tender, including project development support, financing readiness, territorial coordination, data standardisation and credible verification mechanisms. CPP should therefore be understood as part of a wider market architecture, not as an isolated policy tool.

Barriers to be addressed

The portfolio also reveals clear limitations. Many promising approaches remain at the pilot or demonstration stage and have not yet been sufficiently mainstreamed beyond early adopters. In several cases, successful outcomes still depend on project-specific expertise, dedicated

support structures, or levels of technical capacity that are not available across the wider public sector.

The portfolio also points to a consistent set of structural barriers. These include limited lifecycle literacy among contracting authorities, fragmented governance responsibilities, insufficient interoperability of sustainability data, and structural barriers for SMEs and innovative suppliers. Market demand for circular solutions also remains fragmented, limiting procurement's ability to stabilise emerging circular value chains. Together, these barriers mean that even where technical solutions exist, they are not yet translated consistently into procurement outcomes at scale.

Policy recommendations

For EU policy-makers, the portfolio provides a strong basis for treating CPP as a core instrument of the CEA. The evidence indicates that CPP can support demand creation for secondary materials, improve lifecycle performance, strengthen circular business models and stimulate innovation across priority sectors. However, these benefits are unlikely to materialise at scale through soft encouragement alone.

The report's final recommendations reflect this logic. They prioritise the institutionalisation of lifecycle-based and circular procurement practices, supported by stronger governance and digital infrastructure. They also address enabling conditions for innovation procurement and SME participation, while positioning demand aggregation as a market-scaling mechanism once foundational procurement practices and data systems are in place. They are summarised as follows:

- **Institutionalise lifecycle-based and circular procurement practices in high-impact sectors**, including the use of minimum thresholds for recycled or secondary-material content where proportionate and market-ready, stronger use of lifecycle-based evaluation in defined sectors, harmonised LCA/LCC reporting templates, and better integration of lifecycle and circular criteria into procurement systems and supporting digital tools.
- **Strengthen institutional capacity and governance for systematic CPP implementation**, including integration of CPP into national procurement strategies, monitoring indicators, competence centres, cross-departmental coordination, structured training, and budgeting approaches better aligned with long-term value.
- **Normalise innovation procurement for circular transitions** through simplified, standardised PCP/PPI templates; clearer market consultation protocols; risk-based milestone funding approaches; technical assistance for smaller authorities; and innovation procurement sandboxes.
- **Enable stronger participation of SMEs and innovative suppliers** through SME-proportionate procurement templates, wider use of lot division and functional specifications, routine Preliminary Market Consultations, and phased contracting models.
- **Aggregate demand to stabilise circular markets**, including through an EU-supported Joint CPP Facility, harmonised technical specifications and governance agreements for pooled procurement, incentives for cross-border demand aggregation, and joint procurement sandboxes.

Conclusion

Overall, the analysed portfolio shows that the EU already has a substantial base of tested approaches to build on. The core challenge is now institutional rather than technological. The CEA can add the most value by helping to turn procurement from an optional practice used by frontrunners into a more systematic and dependable driver of circular markets across the Union.

1. Scope and policy relevance

This report provides a synoptic analysis of selected key projects from various Horizon Europe and Horizon 2020 calls across several economic sectors, all of which address shared circular concepts or challenges. The primary objective of this evaluation is to identify common features of successful circular solutions that merit integration or support within the framework of the Circular Economy Act (CEA). By pinpointing these successful models, the report assists the Commission in fostering the ideal conditions for secondary resource markets and increasing the uptake of secondary raw materials across the Union.

The analysis consists of five reports structured around five specific intervention areas directly linked to the objectives of the Circular Economy Act. Namely, public procurement, recycling of the Waste Electrical and Electronic Equipment (WEEE) with a focus on critical raw materials, the uptake of recycled and bio-based content, trans-national or regional initiatives, and the refinement of extended producer responsibility schemes. Each of these themes has been analysed by a dedicated domain expert to ensure a comprehensive technical assessment. To ensure the findings are suitable for a formal Commission legislative impact assessment, every proposed solution is measured against its specific environmental, economic, and social impacts.

The evidence presented in this report is derived from a detailed review of project deliverables from DG Research and Innovation (DG RTD), supplemented by the experts' professional insights. Where internal data has been augmented, the report provides valid references to published scientific literature and external research to maintain a robust evidence base. Ultimately, this synthesis serves as a foundation for evidence-based policymaking, ensuring that future legislative measures are informed by proven innovations in circularity.

1.1. Role of the 5 intervention areas

To bridge the gap between technical feasibility and market reality, the Circular Economy Act must activate specific regulatory levers. The five intervention areas analysed in the complete report represent the core pillars required to build a functioning, resilient market for secondary raw materials (SRMs) and bio-based alternatives:

- **Refinement of Extended Producer Responsibility (EPR):** EPR is the financial and operational engine of the circular transition. By moving beyond traditional waste-collection fees towards dynamic, data-driven eco-modulation, EPR internalises the environmental costs of products. This corrects a fundamental market failure—the "virginity trap," where virgin fossil materials remain artificially cheaper than secondary feedstock—and provides the necessary price signal to drive eco-design at the source.
- **Circular Public Procurement (CPP):** while EPR pushes supply, public procurement creates the required demand-side "pull." Leveraging the immense purchasing power of European public authorities (accounting for approximately 14% of EU GDP¹), mandatory circular procurement criteria² can provide the "base load" demand needed to de-risk high-

¹ European Parliament (2026). *Fact Sheets on the European Union. Public procurement.*
<https://www.europarl.europa.eu/factsheets/en/sheet/34/freedom-of-establishment?utm>

² SWD (2025) COMMISSION STAFF WORKING DOCUMENT EVALUATION of Directive 2014/23/EU on Concessions, Directive 2014/24/EU on Public Procurement and Directive 2014/25/EU on Utilities. 332 final.

capital expenditure (CAPEX) investments in advanced recycling and bio-based manufacturing infrastructure.

- **WEEE and critical raw materials (CRM) recovery:** the electrification of the European economy hinges on secure access to critical metals. Focusing on WEEE ensures that high-tech "urban mines" are properly exploited. By recovering magnet-grade and battery-grade materials, this intervention area directly supports European strategic autonomy, preventing valuable resources from leaking out of the Single Market through substandard processing or illegal export.
- **Uptake of recycled and bio-based content:** establishing horizontal, mandatory recycled content thresholds – combined with clear, EU-wide End-of-Waste (EoW) criteria – is vital for decoupling industrial growth from fossil extraction. This area guarantees off-take certainty for recyclers and incentivises the substitution of hazardous legacy substances with Safe-and-Sustainable-by-Design (SSbD) bio-based alternatives.
- **Trans-national and regional initiatives – industrial symbiosis:** the circular economy operates at the territorial level. Fostering transnational and regional hubs ensures that by-products from one industry can serve as feedstock for another without being derailed by fragmented, cross-border waste-shipment regulations. This area operationalises material loops by harmonising local governance and creating connected "circular valleys".

1.2. Link to CE Act objectives and related EU legislation

The CEA represents a pivotal shift in European industrial policy, moving from fragmented waste management to a cohesive Single Market for Secondary Raw Materials. As a central pillar of the Clean Industrial Deal, the Act's primary objective is to double the Union's circular material use rate (CMUR) from approximately 12% to 24% by 2030. This ambitious target requires a fundamental reconfiguration of the relationship between producers and the end-of-life stage of their products. By introducing circular public procurement (CPP) requirements that create stable demand for recycled materials and for other circular solutions and business models (e.g., reuse, refurbishment), there is high potential to strengthen the EU market for secondary materials.

The EU public procurement framework is established by Directive 2014/24/EU on public procurement, Directive 2014/25/EU on procurement by entities operating in the water, energy, transport and postal services sectors, and Directive 2014/23/EU on the award of concession contracts (the Public Procurement Directives). These directives establish the legal framework that enables public authorities to integrate environmental, social, and innovation considerations into procurement practices (strategic procurement). Contracts must be awarded based on the Most Economically Advantageous Tender (MEAT). This overarching award concept allows contracts to be awarded based on price, cost, or the best price-quality ratio, rather than solely on the lowest purchase price. It also allows the inclusion of qualitative, environmental and social criteria, provided that these are linked to the subject matter of the contract and applied in a transparent and non-discriminatory manner. In addition, Article 68 of Directive 2014/24/EU introduces life-cycle costing (LCC) as a cost-based award method, allowing contracting authorities to account for costs incurred over the entire life cycle of a product, service or work. By shifting the focus from upfront purchase price to long-term costs, LCC can support the procurement of resource-efficient and circular solutions.

To support the integration of environmental considerations into procurement, the European Commission developed Green Public Procurement (GPP) criteria for a range of product groups that contracting authorities can use when drawing up tender specifications. Several Member States have used the criteria when establishing minimum mandatory or voluntary GPP criteria and guidelines at the national level. Circular public procurement (CPP) is a relatively recent and more targeted approach within the broader development of sustainable public procurement in the EU. CPP focuses specifically on circular-economy objectives, whereas GPP covers a

broader range of environmental goals, including those beyond the circular economy. The overall uptake of CPP remains limited in the EU. A recent EIB report estimated that fewer than 6% of tenders above the EU thresholds have incorporated circular economy considerations³, and an evaluation of the EU Public Procurement Directives shows that the uptake of innovative public procurement comprises less than 1% of contracts in many Member States⁴.

2. Methodology and analytical framework

The CEA must be grounded in scalable market realities and requires translating cutting-edge Research and Innovation (R&I) directly into actionable EU policy. This section details our assessment framework.

We applied a strict policy-readiness lens to filter the Horizon 2020 and Horizon Europe portfolios. By triangulating project data, stakeholder input, and market dynamics, we isolated solutions based on three core criteria: systemic impact, technological maturity, and regulatory viability. The objective of this methodology is straightforward: to advance only proven, high-impact circular models as concrete legislative recommendations for the CEA.

2.1. Analytical logic

The analytical logic deployed in this report is fundamentally outcome-driven and impact-assessment oriented. Rather than simply cataloguing technological achievements, the methodology is designed to perform a synoptic analysis of Research and Innovation (R&I) projects to identify scalable, transferable circular solutions that can directly inform the regulatory mechanisms of the forthcoming CEA.

The approach involves primarily qualitative assessments to evaluate the environmental, economic, and social effects of each solution. The workflow followed a rigorous, multi-stage policy formulation process:

1. Scoping and alignment: initial requirements gathering through DG RTD instructions, paired with an analysis of the CEA public consultation inputs to align technical research with current political and market demands.
2. Purposive sampling: a broader portfolio analysis followed by a purposive sample selection tailored to the specific intervention area.
3. Expert evaluation and synthesis: deep-dive expert evaluations using established databases (CORDIS, SYGMA), followed by cross-expert alignment consultations to identify systemic friction points (e.g., regulatory bottlenecks, market failures).
4. Iterative drafting: structuring the analysis matrix, drafting expert contemplations, and refining the findings through iterative consultations with the DG RTD to ensure final group alignment and policy coherence.

³ European Investment Bank (2025) *Circular Procurement in Cities*.

https://advisory.eib.org/files/_tools/resources/documents/circular-public-procurement-in-cities.pdf

⁴ SWD (2025) COMMISSION STAFF WORKING DOCUMENT EVALUATION of Directive 2014/23/EU on Concessions, Directive 2014/24/EU on Public Procurement and Directive 2014/25/EU on Utilities. 332 final.

2.2. Sources and evidence

To ensure the highest standard of evidence-based policymaking, the analysis draws upon a triangulated set of primary and secondary data sources. The evidence base relies strictly on validated, peer-reviewed, or officially reported outputs:

- **Primary project data:** the core evidence is extracted from official project deliverables, periodic reports, and milestone achievements accessed via the European Commission's SYGMA portal and CORDIS database, supplemented by data from official project websites.
- **Scientific and economic literature:** where project data required broader contextualisation, the report references published scientific literature, techno-economic assessments, and independent policy briefs.

2.3. Project portfolio attribution and assessment method

The initial project portfolio was attributed by DG RTD, providing a baseline of Horizon 2020 and Horizon Europe projects targeting circularity and resource efficiency. However, to ensure strict relevance to the focus area, the portfolio underwent a rigorous expert validation and filtering process.

3. R&I Project Portfolio scope & overview

3.1. Portfolio overview

The Circular Public Procurement (CPP) portfolio comprises 17 Horizon 2020 and Horizon Europe projects that position public procurement as a structural lever for circular transition. Unlike technology-centred portfolios, this set of projects focuses primarily on the institutional, methodological and market mechanisms through which public demand can influence material flows, industrial investment and innovation trajectories. The portfolio addresses how public demand can be systematically increased to enhance the use of circular materials, reduce dependence on primary resources, and stimulate secondary raw material (SRM) markets.

Across sectors, including construction, healthcare, renewable energy and urban governance, the projects collectively test whether and how procurement can:

- Increase demand for secondary raw materials
- Enable life-cycle-based evaluation instead of upfront price comparison
- Reduce market uncertainty for circular solutions
- Support innovation deployment
- Lower administrative and behavioural barriers to circular uptake

To reflect their structural function within the procurement system and their relevance for impact assessment, the portfolio is clustered into three groups, introduced below.

Life-cycle operationalisation and digital infrastructure

This cluster of six projects translates life-cycle thinking into operational tools, digital systems, and decision-support frameworks, mainly in construction but also including the renewable energy and bioeconomy sectors. These initiatives develop practical methodologies, datasets and digital infrastructures that enable contracting authorities and project developers to apply

life-cycle assessment (LCA), life-cycle costing (LCC) and circularity indicators in concrete planning and procurement processes. Together, they strengthen the technical backbone of CPP by embedding measurable environmental performance, material tracking, and data interoperability into design, tendering, and asset management practices.

Innovation procurement and demand-side market creation

This cluster comprises six projects that use public procurement as an active demand-side instrument to stimulate innovation and accelerate market uptake across healthcare, urban planning and cross-sector contexts. The projects apply and refine instruments such as Pre-Commercial Procurement (PCP), Public Procurement of Innovative Solutions (PPI), innovation partnerships, and structured market consultations, while also developing guidance, evaluation models, and digital platforms that strengthen institutional capacity. They contribute to CPP by reducing legal and organisational barriers, testing innovation-friendly procurement models in practice and creating clearer demand signals for novel, sustainable and scalable solutions.

Enabling framework conditions

This cluster includes five projects that strengthen the structural, financial and governance conditions necessary for CPP to function effectively, particularly in the bioeconomy. Rather than focusing on individual tender procedures, these initiatives develop project development assistance models, territorial governance frameworks, certification and labelling guidance, joint procurement concepts and investment de-risking mechanisms. They improve project maturity, market credibility, policy alignment and access to finance, thereby reinforcing the enabling environment within which CPP can scale and create stable demand for circular and bio-based solutions.

Table 1 – clusters of the portfolio

Strategic cluster	Project name	Grant agreement ID	Primary sector / Material focus
Life-cycle operationalisation and digital infrastructure	CINDERELA	776751	Construction
	RECONSTRUCT	101082265	Construction
	CityLoops	821033	Construction and Bioeconomy
	CIRC-Boost	101082068	Construction
	XPRESS	857831	Renewable energy
	WORM	101135392	Bioeconomy
Innovation procurement and demand-side market creation	ECLIPSE	101157473	Cross-sector
	PROCEDIN	101070830	Cross-sector
	CLIMABOROUGH	101096464	Urban planning
	THERESA	101226565	Medical
	suHCO	101226802	Medical
	REHEAL	101226919	Medical

Enabling framework conditions	HOOP	101000836	Bioeconomy
	FRONTSH1P	101037031	Bioeconomy
	TREASoURcE	101059491	Bioeconomy
	3-CO	101086086	Bioeconomy
	DEFINITE-CCRI	101082224	Cross-sector

3.2. Portfolio characterisation

The portfolio is strongly concentrated in construction and bioeconomy, with additional representation in healthcare, renewable energy and cross-sector governance initiatives. The emphasis lies on SRM in construction, biobased resources and waste streams, alongside digital solutions for energy and healthcare systems.

The degree of focus on CPP varies across projects. In construction and urban initiatives, CPP is often directly operationalised through lifecycle criteria, digital tools and procurement templates. In bioeconomy and governance-oriented projects, procurement more frequently appears as a strategic lever within broader territorial, investment or market-creation frameworks rather than as the primary intervention. In healthcare and energy projects, innovation procurement instruments (e.g. PCP/PPI) are central, but primarily as pathways to market deployment rather than mainstream CPP reform.

In terms of solution types, the portfolio spans technological innovation (e.g. LCA-enabled digital tools, wastewater treatment, energy storage), governance frameworks (territorial coordination models, procurement roadmaps), financial and business models (project development assistance, pooled procurement, investment de-risking) and social or organisational innovation (stakeholder engagement, capacity building, labelling and trust mechanisms). Overall, it reflects a diversified mix of technical, institutional, and market-oriented interventions, with CPP serving, in some cases, as a direct operational tool and, in others, as an enabling or complementary mechanism for the circular transition.

3.3. Key challenges addressed

3.3.1. Circular Public Procurement

R&I projects address several key challenges that hinder CPP, including market failures, regulatory fragmentation, technical barriers, fiscal measures, and social and behavioural obstacles.

Market failures and fiscal measures

A primary challenge is the market failure that leads to the under-prioritisation of long-term environmental and economic benefits in favour of short-term, lower upfront costs. Despite the inclusion of life-cycle costing (LCC) under the EU Public Procurement Directives, circular solutions are often perceived as more expensive in practice because of their higher initial costs⁵. This is compounded by rigid fiscal measures, such as single-year budgeting and financial

⁵ SWD (2025) COMMISSION STAFF WORKING DOCUMENT EVALUATION of Directive 2014/23/EU on Concessions, Directive 2014/24/EU on Public Procurement and Directive 2014/25/EU on Utilities. 332 final.

structures that prioritise immediate savings over long-term value, making it difficult for contracting authorities to invest in sustainable solutions⁶.

Regulatory fragmentation and legal uncertainty

Regulatory fragmentation is another key barrier, as multiple sector-specific and horizontal legal acts create a complex landscape for contracting authorities to navigate. Uncertainty and perceived legal risk associated with key provisions, including the “link to the subject matter” requirement in the Public Procurement Directives, lead procurement officials to adopt a more cautious approach. This perceived risk of litigation, combined with ambiguity in regulatory guidance, may foster risk aversion and inhibit the adoption of life-cycle and system-based procurement approaches⁷.

Technical barriers and capacity gaps

Many contracting authorities face technical barriers due to insufficient administrative capacity and a lack of expertise in applying and evaluating green and circular procurement criteria. Tools like LCC and Life-Cycle Assessment (LCA) remain underutilised due to fragmented knowledge across departments and jurisdictions. Smaller administrations are particularly affected by resource constraints, including limited staff and funding, which hinder their ability to manage more complex procurement procedures⁸.

Social and behavioural barriers

Social and behavioural barriers also contribute to the slow uptake of CPP. Public procurement officials often favour familiar, lower-cost options due to a short-term focus, rather than considering the broader environmental and societal benefits of circular solutions. This bias is further entrenched by the perception that green and circular solutions are financially risky or overly complex to implement⁹.

⁶ Sönnichsen, S. D., & Clement, J. (2020). *Review of green and sustainable public procurement: Towards circular public procurement*. *Journal of Cleaner Production*, 245, Article 118901. <https://doi.org/10.1016/j.jclepro.2019.118901>; Mélon, L. (2020). *More than a nudge? Arguments and tools for mandating green public procurement in the EU*. *Sustainability*, 12(3), 988. <https://doi.org/10.3390/su12030988>

⁷ Janssen, W. A. (2025). The coherence of public procurement legislation in the European Union: A study into the external coherence of the public procurement directives and other legislative instruments regulating public procurement. Publications Office of the European Union.; European Commission. (2021). *Report from the Commission: Implementation and best practices of national procurement policies in the Internal Market* (COM(2021) 245 final). EUR-Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0245>

⁸ Sönnichsen, S. D., & Clement, J. (2020). *Review of green and sustainable public procurement: Towards circular public procurement*. *Journal of Cleaner Production*, 245, Article 118901. <https://doi.org/10.1016/j.jclepro.2019.118901>; Mélon, L. (2020). *More than a nudge? Arguments and tools for mandating green public procurement in the EU*. *Sustainability*, 12(3), 988. <https://doi.org/10.3390/su12030988>; Ortega Carrasco, P., Iannone, F., Ferrón Vilchez, V., & Testa, F. (2025). *Green public procurement as an effective way for sustainable development: A systematic literature review and bibliometric analysis*. *Sustainable Development*, 33(2), 2364–2391. <https://doi.org/10.1002/sd.3234>

⁹ European Commission. (2021a). *Report from the Commission: Implementation and best practices of national procurement policies in the Internal Market* (COM(2021) 245 final). EUR-Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0245>; Pouikli, K. (2020). *Towards mandatory Green Public Procurement (GPP) requirements under the EU Green Deal: Reconsidering the role of public procurement as an environmental policy tool*. *ERA Forum*, 21(4), 699–721. <https://doi.org/10.1007/s12027-020-00635-5>; Mélon, L. (2020). *More than a nudge? Arguments and tools*

R&I projects are addressing these challenges by developing tools and frameworks to simplify regulatory compliance, enhance technical expertise, and provide evidence of the long-term benefits of circular procurement.

4. Outcomes and impacts across the portfolio

4.1. Tangible results and knowledge generated

4.1.1. Life-cycle operationalisation and digital infrastructure

Several R&I projects use life-cycle-based frameworks to support procurement decisions that account for environmental, economic, and social impacts across the life cycles of products and services. The aim is to shift procurement away from upfront price comparisons toward long-term value, while providing comparable, auditable data that contracting authorities can use to evaluate tenders.

BIM-enabled life-cycle integration in construction

In construction-focused projects, life-cycle frameworks are increasingly supported by Building Information Modelling (BIM). BIM enables structured, digital tracking of materials, quantities, and properties across the asset life cycle, including secondary raw materials.

- The early pilots in CIRC-BOOST and RECONSTRUCT demonstrate how BIM-based digital twins can integrate LCA, LCC and S-LCA directly into the design and demolition planning phases. CIRC-BOOST uses BIM-based digital twins and pilots to monitor demolition, recovery, and reuse processes. The focus is on CDW recovery, regional marketplaces, and ecosystem coordination to enable system-level procurement that stimulates reuse markets¹⁰. In RECONSTRUCT, the three methodologies are embedded directly in the 6D-BIM digital twin and linked to material passports and traceability modules. The focus is on embodied carbon, circular concrete and life-cycle metrics, enabling performance-based procurement (technical specifications) of circular materials and buildings¹¹.

Tools and guidance for life-cycle assessment in construction

As outlined below, projects have also equipped contracting authorities with structured methods for comparing circular and conventional solutions that are not reliant on BIM. Each project provides structured, user-oriented tools designed for municipal authorities, lowering administrative and technical barriers.

- The CINDERELA project operationalised life-cycle thinking in public construction procurement by developing a standardised reporting and comparison document that summarises LCA, LCC and S-LCA results for SRM-based construction products, aligned with the EU Product Environmental Footprint methodology. For contracting authorities, this supports the use of MEAT-based award criteria. The Footprint enables comparisons of SRM-based solutions with conventional alternatives across resource use and other impact categories, as well as life-cycle costs. CINDERELA recommended criteria for GPP, which include the requirement submission of a Sustainability Footprint or equivalent PEF-aligned

for mandating green public procurement in the EU. Sustainability, 12(3), 988.
<https://doi.org/10.3390/su12030988>

¹⁰ CIRC-BOOST (2025) Interim Circ-Boost policy brief. COOPERATION WITH AND RECOMMENDATIONS TO REGIONAL AND EUROPEAN POLICYMAKERS.

¹¹ RECONSTRUCT (2025) Raising awareness of construction barriers.

LCA/LCC documentation, set minimum recycled-content thresholds for specified product groups, restrict hazardous substances through recognised certifications or EPDs, and mandate pre-demolition plans and end-of-life recovery targets¹².

- The CityLoops project provided local and regional authorities with a simplified lifecycle CO₂e calculator tailored to demolition and renovation projects. The tool enables ex-ante comparison of alternative scenarios for concrete, excavated soil and construction and demolition waste management. It functions as a spreadsheet-based calculation tool that allows contracting authorities to define lifecycle CO₂e benchmarks in tender documents, require bidders to document projected emissions for specified material streams, and use lower lifecycle emissions as a weighted award criterion under MEAT, rather than relying solely on price¹³. It is designed as a practical decision-support calculator aligned with procurement processes.
- Addressing barriers to CPP as experienced by public contractors, CityLoops developed a handbook series on bio-waste and construction procurement that embeds lifecycle and circular criteria within standard EU-compliant procedures. The guidance promotes functional and performance-based specifications, early market dialogue to test the feasibility of reuse quotas or recycled-content thresholds, and structured integration of circular criteria into award and contract performance clauses. The handbooks provide adaptable process steps that support authorities in moving from lowest-price logic to lifecycle-informed decision-making, while maintaining legal certainty and enabling replication through continued support from ICLEI – Local Governments for Sustainability¹⁴.

Lifecycle frameworks and guidance beyond construction

Beyond construction, the portfolio also demonstrates how life-cycle frameworks can guide procurement in sectors such as humanitarian operations and renewable energy. These approaches translate complex sustainability considerations into more practical decision-support tools for contracting authorities.

- The WORM project conducted comparative LCAs of bio-based and fossil-based products and embedded the results in systems-thinking tools such as causal loop diagrams. The project delivers procurement-oriented decision-support materials for humanitarian operations, including guidelines for specifying and assessing bio-based products based on functional performance and life-cycle considerations. The guidance explicitly addresses risks and trade-offs related to technical performance, waste management, land use, food security, and social impacts, and links upstream procurement choices to downstream reuse, recycling, and end-of-life outcomes in contexts such as field hospitals¹⁵.
- The WORM Bio-Based Solutions Catalogue functions as an open-access market intelligence tool for sustainable humanitarian procurement. It provides structured information on 41 bio-based products across five priority product groups and enables buyers to specify technical and compliance criteria relevant to medical and operational standards. The platform also supports market assessments and buyer requests where

¹² CINDERELA (2022) D7.6: Final Report including Sustainability Footprint Declarations and Policy Recommendations Paper.

¹³ CityLoops: Lifecycle CO₂e Calculator for Demolition and Renovation Sites. Tool factsheet.; CityLoops (2023) Circular Procurement in Europe: Toolkit for local and regional governments.

¹⁴ <https://cityloops.eu/cities-and-the-circular-economy/circular-procurement>.

¹⁵ WORM (2024) D2.2 Procurement Guidelines for Bio-Based Solutions.

suitable products are not yet available, facilitating early market dialogue. It is multilingual and continues to operate beyond the project lifetime¹⁶.

- The XPRESS project delivered a methodological framework and guidance on integrating LCC, alongside LCA and S-LCA, into the tender definition stage of public procurement processes. The XPRESS project guidance is derived from datasets on 27 case studies across 10 countries related to renewable energy system technologies¹⁷.

4.1.2. Innovation procurement and demand-side market creation

Several R&I projects demonstrate how innovation procurement can be operationalised in practice, lowering perceived risks for contracting authorities while supporting policy objectives related to circularity, sustainability, and system transformation. The table below provides a glossary of the innovation procurement concepts referred to in this section.

Table 2 – Innovation procurement glossary¹⁸

Concept	Description
Competitive dialogue	Procedure for complex contracts where technical solutions are not predefined. It allows the authority to enter into structured dialogue with pre-selected candidates to develop one or more suitable solutions before final tenders are submitted.
Innovation Partnerships (IPs)	A structured procurement route when no adequate market solution exists, combining R&D and subsequent purchase into a single procedure.
Pre-commercial Procurement (PCP)	A structured approach used to stimulate innovation when no commercial solutions exist. It allows public buyers to procure R&D services only, without committing to buy the final product.
Public procurement of innovative solutions (PPI)	The purchase of solutions that are close to market deployment.
Preliminary market consultation	Consultation with market operators before launching a tender to prepare the procurement, refine specifications, and assess market capacity.

¹⁶ https://worm.solvoz.com/en_GB.

¹⁷ XPRESS (2022) Cost analysis: economic assessment and results; Environmental assessment: life cycle impact assessment and results; Social LCA analysis of selected case studies.

¹⁸ European Commission (2021b) COMMISSION NOTICE Guidance on Innovation Procurement. C(2021) 4320 final.

Reducing the legal and procedural complexity of innovation procurement

The PROCEDIN project produced a set of practical support instruments to strengthen cities' ability to implement innovation-oriented procurement, including circular public procurement. Rather than focusing solely on dedicated innovation procedures, the project clarified how existing EU procurement rules can be applied to enable innovation and sustainability objectives within standard tenders. Concretely, the project developed:

- Legal roadmaps that translate EU procurement provisions into step-by-step guidance for cities, clarifying when and how to use procedures such as competitive dialogue, competitive procedure with negotiation and innovation partnerships, and how to justify non-price and lifecycle-based criteria.
- A Market Consultation Roadmap providing a structured methodology for planning and conducting preliminary market consultations, including internal preparation steps, supplier engagement formats and safeguards to ensure transparency and equal treatment.
- A decision-support framework helping contracting authorities determine whether a procurement need requires R&D, first commercial deployment or can be addressed through innovation-oriented specifications within standard procedures.
- A Resource Bank compiling training materials, case examples, legal guidance, competence-building tools and stakeholder mapping to support both buyers and suppliers.
- Capacity-building formats, including peer learning activities and cross-city exchange through the Innovation Procurement Task Force, designed to embed innovation practices within organisational routines.

The project established the Innovation Procurement Task Force, a cross-project “network of networks” that supports continuity through peer learning, joint events, and regularly updated training materials¹⁹.

Building a structured ecosystem, including digital matchmaking infrastructure

The ECLIPSE project strengthens innovation procurement capacity by moving from conceptual advocacy to operational tools and digital infrastructure that public authorities can directly use.

- A core outcome is the ECLIPSE Advisory Services, comprising a structured handbook, modular training materials and instructional videos. These resources provide step-by-step guidance for PCP and PPI, including functional needs articulation, structured market consultation, tiered evaluation models and risk-based scoring (SRLS). The materials introduce milestone-based funding logic and impact-oriented KPIs, enabling contracting authorities to apply mission-driven and innovation-friendly procurement within existing legal frameworks²⁰. Rather than remaining high-level guidance, the Handbook includes practical templates, evaluation matrices and structured approaches to sandbox testing and investor engagement.
- In complement to the capacity-building component, ECLIPSE will deliver a digital marketplace hosted on EuroQuity. The platform includes a dedicated innovation procurement community, a Calls for Tenders publication module, AI-based matchmaking and structured buyer–supplier–investor interaction tools. Public buyers can publish innovation challenges with defined fields (budget, deadlines, documentation), while startups and investors can identify opportunities through filtering and recommendation tools. This

¹⁹ PROCEDIN (2024) D2.3 White paper Enabling procurement of innovation Leadership and capacity building in cities.

²⁰ ECLIPSE (2025) ECLIPSE Advisory Services, Version 1.2.; <https://www.eclipseproject.eu/for-public-procurers-1>.

embeds PCP and PPI workflows in a live digital environment, linking training and guidance to real procurement practice and cross-border collaboration²¹.

Operational use of Innovation Partnerships and structured Preliminary Market Consultations

Together, IPs, PMCs and the sandbox approach demonstrate how innovation procurement can be de-risked, structured and institutionalised, enabling cities to transition from isolated pilots to more durable procurement and policy practices. These approaches were adopted by the CLIMABOROUGH project.

- The CLIMABOROUGH project operationalises Innovation Partnerships (IPs). In the call for tender, five lots of equal value were launched, each linked to a specific city challenge, with two innovation partnership contracts awarded per city. The procedure combined the development, negotiation, and subsequent deployment phases within a MEAT-based framework, enabling cities not only to purchase a solution but also to co-develop, test, and scale it to address a functional urban challenge. A concrete example is the Grenoble lot, which sought socio-technical systems to create a coordinated reuse marketplace for IT equipment. A key driver for this call is French law, which requires local authorities to ensure that at least 20% of their IT equipment purchases come from reuse. However, the existing supply is not yet structured to meet this demand. The tender required interoperable digital tools, traceability mechanisms and stakeholder coordination solutions to be piloted locally and designed for scalability²².
- Preliminary Market Consultations (PMCs) were systematically used before launching the call. In January 2025, each participating city organised a PMC (workshop) to present its climate-neutrality challenge and gather structured market feedback. This reduced procurement risk by clarifying technological feasibility, gauging market maturity, and refining challenge descriptions prior to formal tendering. As documented in the Deployment Report, PMCs also helped align expectations between contracting authorities and potential suppliers, improving the quality and relevance of subsequent bids²³.
- Within CLIMABOROUGH, the use of “sandboxes” extends beyond a purely regulatory sandbox. It provides a controlled experimentation environment where awarded solutions are tested in real urban contexts across regulatory, technological and social dimensions. In public procurement terms, this means: structured experimentation under time-bound contracts (e.g., nine-month deployment phases per lot); iterative negotiation and refinement before final award; monitoring tools, measurable objectives, and peer-learning formats during deployment; and explicit planning for scaling, mainstreaming, and handover to municipal ownership beyond the pilot phase²⁴.

Healthcare projects centred on solution maturation and validation through PCP

Three healthcare projects launched in 2025 – THERESA, REHEAL and suHCO – all centre explicitly on Pre-Commercial Procurement (PCP) as their core innovation procurement instrument and are currently in the R&D and validation phase rather than producing deployment outcomes.

²¹ ECLIPSE (2025) ECLIPSE Digital Tender Publication and Matching Marketplace.

²² CLIMABOROUGH (2025) D4.5 Innovative Procurement Tender Documentation v.2.

²³ CLIMABOROUGH (2025) D5.4 Deployment Report 2.

²⁴ CLIMABOROUGH (2025) D5.4 Deployment Report 2.

- THERESA applies a phased competitive PCP process to develop and test on-site hospital wastewater treatment solutions that are not yet market-ready, with the planned outcome of validated technical solutions suitable for subsequent deployment-oriented procurement²⁵.
- REHEAL uses PCP to mature digital tools for more circular healthcare supply chains, aiming to generate interoperable, pilot-tested solutions that can underpin future large-scale procurement and scaling²⁶.
- suHCO applies PCP to develop and validate an AI-enabled, white-label Public Service Platform for sustainability planning in healthcare systems, designed to strengthen coordination and support more coherent future green and circular procurement decisions²⁷.

4.1.3. Enabling framework conditions

The outcomes from this last cluster of projects aim to improve market credibility, policy alignment and access to finance, contributing to stable demand for circular and bio-based solutions.

Project development and investment readiness for CPP

The following projects illustrate how structured project development assistance models strengthen the investment readiness of circular projects while reinforcing procurement's role as a market-shaping instrument. Outcomes support public authorities and regional ecosystems.

- HOOP supports cities and regions in developing investment-ready circular bioeconomy projects through baseline assessment, stakeholder engagement, technology selection, business model development and financial structuring. Primarily through its structured Project Development Assistance (PDA) model, which supports assessments of stakeholder alignment, technology screening and business model development. But also the complementing tools, the Bio-Circularity Label, the Project Maturity Level (PML) framework, and the Circular Valuation Method, help authorities assess project readiness, circular performance, and bankability. Guidelines developed for regional and local authorities highlight CPP as a market-pull mechanism that can stimulate demand for bio-based products. This includes integrating circular indicators into procurement policies, aligning tenders with broader circular-economy strategies, and strengthening internal procurement capacity. Innovation procurement, including PPI, is highlighted as one possible pathway for more advanced or novel projects²⁸.
- Through its Deal Engine and Project Development Assistance model, the DEFINITE-CCRI project aggregates technical, financial and circular expertise to de-risk projects, align them with EU Taxonomy criteria and improve access to private finance. This reduces the gap between circular policy ambition and investable market solutions, supports the maturation of secondary material and circular service models, and highlights how procurement can create stable demand signals.

²⁵ THERESA PCP Consortium (2024). *THERESA PCP – Pre-Commercial Procurement for Healthcare* (Proposal, Part B – Section 1). Horizon Europe, Call HORIZON-HLTH-2024-CARE-14.

²⁶ REHEAL Consortium (2025). *REHEAL Project Handbook* (Deliverable D9.1, Version 1.0). Horizon Europe Programme, Grant Agreement No. 101226919.

²⁷ suHCO (2024) *Sustainable Healthcare through Continuous Optimisation* (Horizon Europe proposal, Grant Agreement No. 101226802). European Commission.

²⁸ HOOP (2024) D4.5 PDA Business Models Report II; HOOP (2024) D8.5 HOOP guidelines for local and regional authorities.

Strategic governance and territorial market architecture

The following projects illustrate how territorial governance models can embed procurement within broader cross-sector circular transition strategies. The primary support is directed at public authorities and regional governance structures.

- The FRONTSH1P project developed the CircuPuncture Model, a territorial governance framework that positions procurement as a lever for cross-sector circular transitions. The model promotes coordinated action across sectors and encourages the use of CPP criteria related to reuse, repairability, and recycling, while also using monitoring indicators to track GPP uptake. It also emphasises the joint use of environmental and social clauses to support social-economy actors in implementing circular solutions.
- TREASoURcE contributes to CPP primarily through governance design, stakeholder anchoring and replicable demand-side models. Through the ELiCO concept and its replication model, the project has demonstrated a structured pathway for identifying unmet public needs, organising innovation competitions and embedding open-source, scalable solutions within municipal structures. This includes an open-source digital training tool on recycling and circular-economy practices. The concept demonstrates how innovation competitions and co-creation with public service units can be used to procure user-centred digital solutions that remain adaptable and scalable across regions. In public procurement, the relevance lies in linking citizen engagement, service design, and procurement processes within a structured, transferable model²⁹.

Operational procurement tools

The following projects demonstrate how standardisation and guidance tools can strengthen procurement coherence and credibility in circular markets. The support primarily targets contracting authorities and market governance frameworks.

- TREASoURcE is developing a procurement “recipe” booklet to guide contracting authorities on setting bio-based criteria and conducting structured market dialogue aligned with regional circular strategies³⁰. The project has piloted joint procurement approaches, including harmonised technical specifications and pooled-demand models for battery energy storage systems, designed to reduce transaction costs, strengthen market signals, and lower entry barriers for innovative suppliers³¹.
- The 3-CO project, through its analysis of EU labelling and certification frameworks and its policy recommendations on harmonised methods, LCA integration and governance of environmental claims, provides guidance that can help contracting authorities distinguish credible labels from weaker schemes. This supports the design of award criteria and technical specifications that rely on transparent, science-based standards³².

4.2. Impact assessment

This section provides a qualitative synthesis of observed and expected impacts across the Horizon portfolio of projects addressing circular public procurement (CPP), drawing on project-reported evidence and expert assessments. Overall, the assessment indicates that the impact

²⁹ TREASoURcE (2025) D2.3 Report on ELiCO Concept.

³⁰ TREASoURcE (2025) D5.4 Value chain models, mapping, and procedures.

³¹ TREASoURcE (2025) D6.3 Report on funding, public and private investments and building investment pipelines; <https://treasource.eu/joint-procurement-of-battery-energy-storage-08-12-2025/>

³² 3-CO (2025) Policy recommendations towards the regulatory framework for consumer-based labelling of biobased products.

of CPP depends less on the availability of new technologies and more on institutional capacity, experience, expertise, and the routinisation of circular procurement practices. Scaling impact will require sustained implementation support, standardisation, and capacity building to ensure that demonstrated and intended benefits extend beyond early adopters.

4.2.1. Environmental Impacts

Environmental impacts across the portfolio primarily arise from integrating life-cycle thinking into public procurement, as described in Section 4.1. Life-cycle-based frameworks, including life-cycle assessment (LCA), life-cycle costing (LCC), social LCA, simplified CO₂ calculators, and environmental footprint methodologies, enable contracting authorities to assess procurement options based on full life-cycle environmental performance, rather than upfront price alone.

In construction and infrastructure, projects such as CINDERELA, CIRC-BOOST and RECONSTRUCT show that the use of BIM-supported life-cycle tools, sustainability footprint declarations, and circularity assessment instruments leads to reductions in embodied carbon, increased use of secondary raw materials, and improved end-of-life planning. These impacts result from procurement decisions that prioritise circular design, reuse, and material recovery at early planning and specification stages. CINDERELA and CIRC-BOOST further demonstrate that, when applied through public procurement, such approaches allow project-level environmental gains to be replicated across multiple public works and infrastructure programmes.

Across the wider portfolio, projects consistently report positive environmental impacts linked to circular procurement practices. These include reduced waste generation (WORM, HOOP, CityLoops), improved resource efficiency and circular material flows (RECONSTRUCT, suHCO), and lower life-cycle environmental impacts (CINDERELA, CIRC-BOOST).

Greenhouse gas emissions reduction across life cycles

Reducing greenhouse gas (GHG) emissions is a central environmental priority.

- In construction, CIRC-BOOST, CINDERELA, RECONSTRUCT, and CityLoops demonstrate reduced embodied carbon intensity in building materials and components, achieved through secondary-material substitution, component reuse, and the use of low-carbon binders³³.
- Evidence from CINDERELA and RECONSTRUCT indicates that CPP is critical for scaling solutions beyond pilots, enabling project-level carbon savings to be applied across public infrastructure portfolios. Technical feasibility and carbon savings were demonstrated at the project level through the use of SRM and optimised design choices. However, without procurement criteria that require or reward recycled content, lifecycle carbon performance and end-of-life recovery, such solutions risk remaining niche applications.
- In energy, waste, and bio-based systems, FRONTSH1P, XPRESS, TREASoURcE, and HOOP report quantified CO₂ reductions resulting from improved resource recovery, renewable energy uptake, and circular bioeconomy solutions, while REHEAL and suHCO identify CO₂ reductions as intended impacts as implementation progresses³⁴.

Reduction in primary resource extraction and waste impacts

Another key environmental impact concerns reduced demand for primary raw materials, particularly in material-intensive sectors.

³³ CircBoost (2025) Deliverable D5.1 Preliminary report on goal, scope and systems' boundaries definition;

³⁴ HOOP (2023) Circular Evaluation Framework Guidance Report (Deliverable D5.3).

- Construction-focused projects show that CPP-driven uptake of recycled aggregates and reused components significantly reduces demand for virgin minerals, as demonstrated by CINDERELA, CIRC-BOOST, RECONSTRUCT, and CityLoops³⁵.

Several projects also demonstrate how CPP can achieve higher-value material recovery and waste prevention.

- CPP requirements, such as recycled-content thresholds, pre-demolition audits, and material-recovery targets, divert large volumes of construction and demolition waste from landfill, as shown by CINDERELA, CIRC-BOOST, RECONSTRUCT, and CityLoops.
- In healthcare and consumer product contexts, ongoing projects are designed to enable reductions in product waste and improved end-of-life management, as intended outcomes of REHEAL, suHCO, and THERESA PCP³⁶.
- Waste diversion and recovery also reduce associated emissions and environmental externalities, including landfilling and pollution, as reported by WORM and FRONTSH1P³⁷.

While many environmental impacts are currently demonstrated at the pilot or demonstrator level, the portfolio shows clear potential to scale, provided that circular criteria are mainstreamed and consistently applied in public procurement.

4.2.2. Economic Impacts

At the market level, CPP functions as a demand-side instrument supporting the formation and scaling of circular and innovative solutions. Innovation procurement approaches, joint procurement models, and structured market consultations provide clearer signals to suppliers, reduce investment risk, and facilitate market entry, as evidenced by CLIMABOROUGH, ECLIPSE, HOOP, and TREASoURcE. Digital platforms further reinforce these effects by improving market transparency and access to procurement opportunities (WORM and ECLIPSE).

Economic impacts are primarily linked to improved efficiency and increased competitiveness of circular solutions. CINDERELA and XPRESS show how CPP enables value-based evaluation rather than lowest-price competition, while TREASoURcE reports tangible benefits such as cost savings and value-added growth. Similar outcomes are identified as intended impacts in REHEAL.

Several projects also highlight the role of CPP in stimulating regional economic development. HOOP and PROCEDIN illustrate how public procurement can enhance market access for sustainable businesses, encourage private investment in green technologies, and contribute to local and regional economic activity.

At the same time, economic impacts are conditional. They depend on sufficient scale, institutional capacity, and policy continuity. Fragmented or one-off application of circular

³⁵ CINDERELA D7.6: Final Report including Sustainability Footprint Declarations and Policy Recommendations Paper.

³⁶ suHCO (2024) Sustainable Healthcare through Continuous Optimisation (Horizon Europe proposal, Grant Agreement No. 101226802); THERESA PCP (2024) THERESA PCP – Pre-Commercial Procurement for Healthcare (Horizon Europe proposal, Grant Agreement No. 101226565); REHEAL (2024). REHEAL – Reverse Healthcare Supply Chains for Circular Economy (Horizon Europe proposal, Grant Agreement No. 101226919).

³⁷ WORM Consortium (2025). Deliverable D6.1: Limitations of Bio-based Solutions. Horizon Europe.

procurement criteria limits market confidence and reduces benefits for both public buyers and suppliers.

4.2.3. Social Impacts

Social impacts across the portfolio are primarily associated with employment creation, skills development, and institutional capacity building. The shift towards circular procurement supports employment in circular value chains, including material recovery, reuse, recycling, life-cycle assessment, and digital sustainability services. This effect is demonstrated by CIRC-BOOST, CINDERELA, and XPRESS, where circular procurement is linked to specialised technical and professional roles.

Several projects also highlight social inclusion and community-level benefits. FRONTSH1P and TREASoURcE illustrate how sustainable procurement strategies can create green jobs while promoting social inclusion, particularly in circular bioeconomy and resource recovery activities. CINDERELA demonstrates contributions to local employment and skills development, while WORM supports vulnerable communities in humanitarian contexts through improved waste and resource management.

In addition, outcomes described in Section 4.1 show that functional specifications, preliminary market consultations, and innovation partnerships can lower entry barriers for SMEs and innovative providers. By clarifying procurement expectations and reducing procedural complexity, CPP can support more inclusive market participation, provided that appropriate guidance and capacity-building measures are in place.

4.2.4. Behavioural Impacts

The dissemination and use of practical tools, templates, and real-life demonstrations support a shift in procurement behaviour from compliance-driven and lowest-price approaches towards strategic, outcome-oriented procurement. This change is evidenced in CityLoops, CIRC-BOOST, and RECONSTRUCT, where procurers increasingly apply value-based criteria and life-cycle considerations.

The practical application of tested life-cycle frameworks, innovation procurement procedures, and pilot tenders reduces perceived legal, financial, and operational risks among contracting authorities. Projects such as CLIMABOROUGH, ECLIPSE, and PROCEDIN show that increased confidence and procedural familiarity support the uptake of CPP criteria, life-cycle costing, early market dialogue, and innovation-oriented procurement instruments within existing legal frameworks.

Behavioural change is further reinforced through governance-level effects, including improved coordination across departments and stronger alignment between procurement, sustainability, and climate objectives, as demonstrated by FRONTSH1P, CityLoops, and HOOP. At the same time, the portfolio indicates that behavioural change remains fragile if not institutionalised. Durable impact depends on translating pilot experiences into standard procedures, guidance, digital tools, and organisational routines, as highlighted by RECONSTRUCT, CIRC-BOOST, and PROCEDIN.

5. Success and failure analysis

5.1. Enabling factors

Success in CPP is less dependent on technological novelty and more on institutional maturity, governance coherence and the systematic application of circular criteria. Projects demonstrate that isolated pilots have limited impact unless circular procurement practices are embedded in standard procedures, supported by data infrastructure, and backed by institutional capacity.

Regulatory clarity and policy alignment

Clear EU-level frameworks, such as the Public Procurement Directives, the Circular Economy Action Plan, and sector-specific legislation, provide a legal basis for integrating circular criteria. Success is strongest where procurement is explicitly aligned with broader climate, circular economy and industrial strategies, reducing perceived legal risk and increasing political backing.

Systematic application and institutionalisation

Projects such as CityLoops, CIRC-BOOST, RECONSTRUCT and CINDERELA show that impact increases when life-cycle criteria, recycled-content thresholds and circular specifications are embedded in standard templates rather than applied ad hoc. Institutionalisation includes:

- Standardised sustainability data requirements (e.g. LCA, LCC, EPD, PEF-aligned reporting)
- Replicable procurement templates and handbooks
- Integration of circular criteria into internal procurement guidelines
- Monitoring indicators linked to GPP uptake

Durable impact arises when circular procurement becomes routine rather than pilot projects.

Digital and data infrastructure

Digital tools significantly enhance CPP performance by enabling measurable and verifiable evaluation. BIM-based digital twins, material passports, and lifecycle calculators enable objective comparisons under MEAT, reduce uncertainty, and support traceability. Standardisation of data formats and interoperability frameworks is a critical precondition for scaling. The CIRC-BOOST and RECONSTRUCT projects demonstrate how BIM-based digital twins and circularity tools support objective evaluation, traceability and lifecycle monitoring. More broadly, data-driven platforms, AI and blockchain enhance market transparency, scenario modelling and verification of secondary material content, lowering transaction costs and enabling performance-based, auditable circular procurement.

Market dialogue and demand aggregation

Structured preliminary market consultations, joint procurement models and innovation procurement instruments reduce market risk and create clearer demand signals. Projects such as CLIMABOROUGH, ECLIPSE and TREASoURcE demonstrate that early engagement and pooled demand lower entry barriers for innovative and circular suppliers.

Capacity building and cross-departmental coordination

Successful CPP requires organisational learning. Training programmes, peer networks and cross-sector collaboration reduce risk aversion and improve familiarity with life-cycle tools and innovation procurement procedures. The ability of public procurement officers and organisations to manage complex circular procurement processes is a critical enabler. Projects like ECLIPSE focus on building the capacity of public authorities by providing tools, frameworks, and training to support the adoption of circular procurement practices. Similarly, XPRESS and CityLoops

underscore the importance of knowledge transfer and upskilling to ensure that procurement officers are equipped to evaluate and manage circular solutions effectively.

5.2. Hindering factors

Despite the enabling conditions, several barriers hinder the performance, uptake, and scalability of CPP. These barriers stem from regulatory, financial, technological, and cultural factors.

Regulatory fragmentation and legal uncertainty

Divergent national interpretations of waste status, secondary material use and procurement rules create uncertainty. For instance, in the construction sector, national regulations on waste management and recycling often differ, making it difficult to implement a uniform circular approach. Similarly, in healthcare, a lack of harmonised regulations for hospital wastewater treatment and antimicrobial resistance presents obstacles to scaling circular solutions³⁸. This regulatory inconsistency across sectors limits the effectiveness of CPP and slows its adoption. Ambiguities such as the “link to the subject matter” requirement further contribute to conservative procurement behaviour.

Short-term budgeting and fiscal constraints

Single-year budgeting and accounting practices prioritising upfront price over life-cycle value remain structural barriers. Furthermore, in many cases, the initial cost of implementing circular solutions, such as in construction, where BIM systems require substantial investment, can be a barrier for public authorities, especially in smaller municipalities or healthcare institutions with limited budgets. In healthcare, upfront costs for data integration technologies and wastewater treatment systems are high³⁹. While financial incentives exist, the lack of immediate cost savings for many public authorities slows down the uptake of circular solutions.

Data gaps and interoperability limitations

Lack of harmonised product data, limited access to environmental performance information, and fragmented digital systems constrain the practical use of lifecycle evaluation. Smaller municipalities are particularly affected. The REHEAL project will address the challenge of integrating data across fragmented healthcare systems to enable circular supply chains. Similarly, in construction, projects like CityLoops highlight the difficulty of tracking material flows and managing circular procurement data due to the lack of standardised data formats and integrated digital platforms.

Institutional inertia and risk aversion

Entrenched lowest-price practices and limited familiarity with circular specifications slow behavioural change. Innovation procurement instruments remain underused due to perceived procedural complexity.

Capacity and resource constraints

Smaller authorities face staff shortages, limited technical expertise and insufficient resources to manage complex procedures such as PCP, innovation partnerships or lifecycle-based evaluation. Many procurement officers are unfamiliar with green public procurement (GPP) criteria, life-cycle assessments, and circular economy principles. The XPRESS project highlights the importance of training programs for public procurement officers to bridge these knowledge gaps. Overcoming these knowledge gaps through capacity-building initiatives is essential for successful CPP.

³⁸ Theresa PCP (2024) Proposal: Technical description.

³⁹ REHEAL (2024) Proposal: Technical description.

5.3. Common features of successful solutions

Successful CPP solutions share several characteristics:

- Lifecycle-based evaluation embedded in MEAT, supported by standardised data.
- Structured market engagement, reducing uncertainty prior to tender launch.
- Integration of digital tools to enable measurable circular performance.
- Institutional anchoring, including internal guidelines and monitoring.
- Replicability through templates and modular tools, reducing transaction costs.
- Alignment with financing mechanisms, linking procurement to investment readiness.

The evidence suggests that scaling CPP under the Circular Economy Act will require less emphasis on new pilot experimentation and greater focus on institutionalisation, harmonisation of sustainability data and systematic integration of circular criteria into standard procurement practice.

6. Upscaling, replication, and transferability

The portfolio demonstrates that CPP solutions are technically feasible across multiple sectors. However, large-scale replication depends primarily on institutional capacity, regulatory coherence and market readiness rather than on further technological development. The key question for EU-wide scaling is therefore not whether circular procurement works in pilot settings, but under which conditions it becomes routine practice. Several outcomes show transferability.

Standardised reporting templates and simplified lifecycle tools (e.g. Sustainability Footprints, CO₂ calculators, structured LCC templates)

The tools and templates are scalable, where product categories are comparable.

- Some frameworks are designed for integration within BIM-enabled digital environments, where material quantities and technical parameters can be automatically extracted and linked to LCA, LCC and circularity indicators. This is most evident in RECONSTRUCT and CIRC-BOOST. These approaches are data-intensive and better suited to larger projects or authorities with digital capacity.
- Other projects explicitly target simplified assessments. CINDERELA provided structured Sustainability Footprint documentation aligned with established EU methodologies, enabling contracting authorities to compare secondary raw material solutions under MEAT and to shift modelling responsibility to suppliers while keeping evaluation manageable for contracting authorities.
- CityLoops provides spreadsheet-based lifecycle CO₂e calculators tailored to demolition and renovation projects, offering a more accessible entry point for smaller procurement teams. Broader, the CityLoops handbooks embed circular and lifecycle criteria within standard procedures, including guidance on early market dialogue and performance-based specifications.
- Beyond construction, replication potential exists but is more conditional and sector-specific. XPRESS and WORM demonstrate that lifecycle approaches can be embedded at the

tender definition stage. The most scalable elements developed include supplier-based reporting formats and structured LCC templates integrated into procurement procedures.

Innovation procurement methodologies (e.g., PCP, PPI, Innovation Partnerships)

For innovation procurement, the outcomes with the highest scaling potential are those that standardise procedures and reduce perceived risk for contracting authorities. Overall, innovation procurement methodologies have greater scalability potential when accompanied by standard templates, training modules, and digital support tools that facilitate their use within routine procurement practice.

- Structured Preliminary Market Consultation roadmaps (PROCEDIN) and reusable Innovation Partnership tender packages (CLIMABOROUGH) can be readily integrated into national procurement guidance, making innovation-oriented procedures more accessible beyond pilot cities.
- Risk-based and milestone-funded evaluation approaches (ECLIPSE) further enhance scalability by aligning public procurement with investment logic and SME participation.
- Digital platforms, such as the Innovation Public Procurement Marketplace hosted on the EuroQuity platform developed in ECLIPSE, enable the replication of circular procurement at scale.

Joint procurement and pooled demand models are transferable across municipalities with similar infrastructure needs

By aggregating demand, sharing tender preparation and standardising specifications, joint procurement and pooled-demand models increase purchasing power, create predictable market signals, and lower entry barriers for innovative and circular suppliers.

- TREASoURcE piloted joint procurement approaches for battery energy storage systems, including harmonised technical and safety specifications and pooled purchasing structures, reducing transaction costs and market uncertainty.
- Similarly, the territorial coordination approach in FRONTSH1P illustrates how cross-sector governance can align procurement across municipalities to support circular value chains.
- In construction-related contexts, projects such as CityLoops show how coordinated procurement strategies for demolition and material recovery can stimulate SRM markets at a regional scale.

Limits and risks to scaling

Despite the high potential for replication, several barriers and risks must be addressed to ensure the successful scaling of CPP across the EU.

- *Institutional Capacity:* Many public authorities, particularly in smaller municipalities, lack the resources, expertise, and staffing to implement CPP solutions at scale. This can be mitigated through targeted capacity-building initiatives.
- *Regulatory Fragmentation:* Divergent national interpretations of End-of-Waste status, secondary material standards and procurement practices hinder cross-border replication. Regulatory uncertainty reduces supplier confidence and limits scaling.
- *Pilot Dependency:* Many CPP solutions depend on early-adopting cities and regions. Without integration into national procurement frameworks, templates and digital systems, demonstrated benefits may not translate into systematic adoption.
- *Data and standardisation gaps:* Lack of harmonised sustainability metrics and interoperable data systems constrain comparability and verification.

Expected impacts of EU-wide deployment

If systematically applied, the portfolio's solutions indicate substantial EU-level impact potential.

Environmental impacts:

- Reduced embodied carbon in construction through SRM uptake and lifecycle-based design.
- Lower primary resource extraction through mandatory thresholds for recycled content and reuse criteria.
- Reduced waste generation and improved recovery rates.

Economic impacts:

- Stabilisation of markets for secondary raw materials and bio-based products.
- Increased investment confidence due to clearer demand signals.
- Improved long-term cost efficiency through lifecycle optimisation.

Social impacts

- Job creation in circular value chains.
- Strengthened SME participation via innovation procurement.
- Increased institutional competence in sustainable procurement.

However, impact materialises only under conditions of systematic application. Fragmented or voluntary uptake produces limited aggregate effects.

7. Regulatory insights for the Circular Economy Act

7.1. Regulatory gaps identified

The regulatory gaps relate less to missing legal bases and more to the absence of harmonised standards, consistent implementation and strong demand-side signals. Addressing these gaps under the Circular Economy Act would primarily require clarifying the status of secondary materials, standardising sustainability data requirements, and strengthening the institutionalisation of circular criteria in public procurement practice. Other upcoming legislative initiatives may have a significant impact on circular public procurement, including the 2026 revision of the EU public procurement framework and the proposed Industrial Accelerator Act under the Clean Industrial Deal. Depending on their final scope and design, these reforms could also contribute to a more systematic integration of circular economy objectives into public procurement.

Fragmentation of secondary material frameworks

Projects in construction and bioeconomy repeatedly point to inconsistent national rules governing secondary raw materials (SRM), including recycled aggregates and bio-based products. Divergent interpretations of quality standards and waste status create uncertainty for contracting authorities and suppliers, limiting cross-border market development and reducing confidence in specifying recycled content in tenders.

Ambiguities in End-of-Waste (EoW) criteria

Several projects identify unclear or unevenly applied End-of-Waste criteria as a structural barrier. Without harmonised EU-level clarification, contracting authorities face legal risk when specifying materials derived from waste streams. This constrains the inclusion of mandatory

recycled-content thresholds and limits the scaling of circular construction and bio-based solutions.

Insufficient standardisation of sustainability data

While life-cycle costing and environmental criteria are legally permitted, the absence of harmonised, mandatory sustainability reporting formats limits their systematic application. Projects such as CINDERELA, RECONSTRUCT and WORM demonstrate that lifecycle-based procurement is more feasible when structured reporting templates, environmental declarations and traceability tools are standardised. Without EU-wide consistency, evaluation remains complex and administratively burdensome.

Limited integration of circular criteria into procurement frameworks

There is currently no horizontal EU obligation requiring contracting authorities to systematically integrate CPP, although limited requirements exist in certain sector-specific legislation. The portfolio suggests that voluntary uptake results in fragmented implementation and limited market impact. Clearer EU-level guidance or minimum requirements for specific high-impact sectors would strengthen demand signals for circular products and materials.

Underutilisation of innovation procurement instruments

Although innovation procurement instruments (PCP, PPI, Innovation Partnerships) are legally available, their uptake remains low. Projects highlight that administrative complexity, limited expertise and lack of financial incentives constrain use, particularly among smaller authorities. Regulatory simplification and clearer operational guidance could lower these barriers.

7.2. Legislative and administrative burdens

While the EU Public Procurement Directives provide sufficient legal flexibility to integrate circular criteria, the portfolio shows that legislative complexity and administrative burdens significantly constrain effective implementation of Circular Public Procurement (CPP).

Procedural complexity and risk aversion

Public procurement procedures remain administratively demanding, particularly when integrating lifecycle costing, recycled-content thresholds or innovation-oriented instruments. Contracting authorities often perceive circular specifications as legally sensitive due to uncertainty around proportionality, “link to the subject matter” requirements and verification of sustainability claims.

Fragmented compliance landscape

CPP implementation requires navigating multiple overlapping legal frameworks, including waste legislation, product standards, chemicals regulation and sector-specific requirements. The lack of alignment between procurement rules and secondary material legislation increases administrative workload and discourages ambitious circular criteria, particularly in construction and bio-based sectors.

Verification and data burdens

The absence of harmonised sustainability reporting formats increases transaction costs for both buyers and suppliers. Contracting authorities must assess diverse environmental declarations, lifecycle data formats and certification schemes without standardised benchmarks. This creates evaluation complexity and increases litigation risk, especially in cross-border procurement.

Capacity constraints in smaller authorities

Smaller municipalities and healthcare institutions face disproportionate administrative burdens when applying innovation procurement or lifecycle-based evaluation. Limited staff capacity, a lack of technical expertise, and insufficient digital infrastructure make complex procedures such

as PCP, Innovation Partnerships, or BIM-based evaluation difficult to manage. While capacity constraints are not limited to small authorities and affect contracting bodies of varying size and sector, they are often particularly pronounced in smaller organisations.

Budgetary and financial governance constraints

Public financial rules often prioritise short-term expenditure control over lifecycle value optimisation. Annual budgeting frameworks and rigid accounting practices discourage higher upfront investment even when lifecycle savings are demonstrable, limiting effective use of MEAT and LCC methodologies.

8. Policy recommendations

8.1. Prioritisation logic

The policy recommendations for CPP are presented in evidence-based prioritisation. They start with the core transformation lever (lifecycle institutionalisation) and reinforce it with the governance capacity required to implement it. They then address enabling system conditions, including the normalisation of innovation procurement, as well as targeted accelerators such as SME participation. Demand aggregation is presented last as a market-scaling mechanism once the underlying governance, data and procurement practices are in place.

8.2. Prioritised recommendations

Moving from isolated pilots to a systemic CPP model under the CEA requires a shift from compliance-oriented purchasing to ecosystem-oriented market-shaping. The portfolio of CPP-related projects demonstrates that circular procurement becomes transformative only when embedded in governance structures, digital infrastructure, financing mechanisms and coordinated demand across regions. Based on cross-sector evidence from construction, bioeconomy, healthcare and urban innovation projects, the following policy recommendations reflect a purposeful systemic design approach. They are organised across ecosystem, governance and infrastructure perspectives and highlight the need for a pan-European design of the CEA, including cooperation with neighbouring non-EU countries. The potential for a regulatory sandbox is indicated where relevant.

For the policy objectives presented below, no. 1 contains the strongest hard regulatory component, whereas objectives 2–5 rely primarily on soft governance reform, coordination and incentive mechanisms. Implementation is multi-level, with the EU setting framework conditions and Member States operationalising.

1. Policy objective: Institutionalising lifecycle-based and circular procurement practices

- **Intervention area relevance:** Circular Public Procurement, MEAT implementation, lifecycle costing, building on the existing Green Public Procurement frameworks.
- **Sectors/value chains:** Construction, infrastructure, bio-based materials
- **Evidence from projects:** In the construction sector, projects such as CityLoops and CINDERELA demonstrate the feasibility of integrating recycled aggregates or SRM in concrete, asphalt or backfilling applications, where recycled content targets could be introduced gradually without compromising performance. Similar approaches could apply to bio-based materials or reused components where reliable supply and certification

mechanisms exist, allowing thresholds to be phased in as markets and standards develop. Projects such as CINDERELA, CityLoops, RECONSTRUCT and CIRC-BOOST demonstrate that lifecycle costing, structured LCA reporting and clearly defined circular indicators can be operationalised within existing MEAT-based frameworks when supported by standardised templates and digital tools. In particular, RECONSTRUCT and CIRC-BOOST demonstrate how circularity indicators and lifecycle data can be integrated into BIM-supported environments, enabling the extraction of material, carbon, and circular performance data directly from digital building models. WORM and XPRESS highlight the need for harmonised reporting for renewable and bio-based systems.

Actionable recommendations:

- Mandate minimum thresholds for recycled or secondary-material content for high-impact sectors, where proportionate and market-ready.
- Require the use of lifecycle-based evaluation in defined high-impact sectors (e.g. LCC as the default cost method under MEAT).
- Promote the development and gradual adoption of harmonised LCA/LCC reporting templates in priority sectors, aligned with existing EU methodologies, to enhance comparability and reduce administrative burden.
- Embed lifecycle and circular criteria in national procurement toolkits and e-procurement platforms, moving beyond voluntary uptake.
- Introduce EU guidance linking BIM requirements in public works to lifecycle and circular performance data.
- Promote interoperability between procurement systems, BIM environments and Digital Product Passports to enable automated lifecycle data integration.

Policy objective 1 combines hard EU-level measures (e.g. mandatory recycled content thresholds and lifecycle-based evaluation in high-impact sectors) with soft standardisation and digital integration tools, including harmonised LCA/LCC templates, BIM-based data use and interoperability guidance. Implementation would be set at the EU level, integrated into Member States' national procurement systems, and applied operationally by contracting authorities.

2. Policy objective: Strengthening institutional capacity and governance for systematic CPP implementation

- **Intervention area relevance:** Public procurement governance, administrative capacity building, implementation of the CEA, and public sector modernisation
- **Sectors/value chains:** Cross-cutting
- **Evidence from projects:** Across projects (PROCEDIN, ECLIPSE, CLIMABOROUGH, HOOP, DEFINITE-CCRI), recurring barriers are: risk aversion, lack of internal expertise, fragmented responsibilities, limited cross-departmental coordination, insufficient lifecycle literacy, and administrative overload in smaller authorities.

Actionable recommendations:

- Require Member States to integrate CPP into national procurement strategies with monitoring indicators.
- Support permanent national CPP competence centres.
- Promote cross-departmental procurement units that link finance, sustainability, and infrastructure.

- Provide structured lifecycle and procurement training modules for innovation.
- Encourage lifecycle-based budgeting approaches aligned with MEAT.

This policy objective relies mainly on soft governance instruments, complemented by selective hard requirements such as integrating CPP into national strategies. Implementation would involve EU coordination and funding support, Member State-level institutional reform, and local organisational embedding.

3. Policy objective: Normalising innovation procurement for circular transitions

- **Intervention area relevance:** PCP, PPI, Innovation Partnerships
- **Sectors/value chains:** Healthcare, climate-neutral cities, digital circular services
- **Evidence from projects:** THERESA, REHEAL, and suHCO show PCP as a structured R&D pathway; ECLIPSE introduces milestone-based risk evaluation; PROCEDIN and CLIMABOROUGH provide operational templates and PMC frameworks.

Actionable recommendations:

- Simplify and standardise PCP/PPI templates at the EU level for circular challenges (e.g., call documentation, evaluation and contract templates, and market consultation protocols).
- Integrate risk-based milestone funding approaches into EU and national procurement guidance (e.g., by dividing a PCP or innovation contract into stages).
- Provide technical assistance facilities for smaller authorities to manage innovation procedures (e.g, organised through a national competence centre, an EU-level helpdesk, or an extension of existing networks).
- Establish innovation procurement sandboxes to test reduced administrative thresholds and blended-finance models, allowing selected contracting authorities to pilot simplified procedural rules and financing structures for innovation-oriented tenders.

This policy objective is mainly procedural and support-oriented, relying on standardised templates, milestone-based guidance and technical assistance. Implementation would be led through EU guidance, integrated nationally, and deployed locally in innovation tenders.

4. Policy objective: Enabling SME and innovative supplier participation in circular public procurement

- **Intervention area relevance:** Innovation procurement, demand-side market creation, and administrative simplification
- **Evidence from projects:** ECLIPSE demonstrates that risk-based milestone funding and digital matchmaking platforms can reduce entry barriers for startups; XPRESS identifies overly complex tender documentation and disproportionate eligibility criteria as barriers to SME participation; CLIMABOROUGH and PROCEDIN show that structured market consultations improve SME access by clarifying expectations early.

Actionable recommendations:

- Standardise SME-proportionate procurement templates, particularly for circular and innovation-oriented tenders.

- Encourage lot division and functional specifications to avoid excluding smaller suppliers.
- Embed structured Preliminary Market Consultations as a routine step to improve transparency and reduce information asymmetry.
- Promote milestone-based and phased contracting models that reduce upfront financial risk.
- Align procurement guidance with existing SME policies at the EU and national level.

This policy objective focuses on soft regulatory adjustment and administrative simplification, including SME-proportionate templates and structured market consultations. Implementation would occur via EU guidance, Member State administrative reform, and practical application in local tenders.

5. Policy objective: Aggregating demand to stabilise circular markets

- **Intervention area relevance:** Joint procurement, pooled demand, market creation
- **Sectors/value chains:** Energy storage, secondary raw materials, urban infrastructure
- **Evidence from projects:** TREASoURcE demonstrates pooled procurement for battery energy storage; territorial coordination models in FRONTSH1P; CLIMABOROUGH illustrates cross-city innovation tenders.

Actionable recommendations:

- Create an EU-supported Joint CPP Facility enabling inter-municipal procurement alliances to aggregate demand, coordinate procurement procedures, and jointly implement circular criteria, particularly for capital-intensive or innovative solutions.
- Develop harmonised technical specifications and model governance agreements for pooled procurement.
- Incentivise cross-border demand aggregation through, e.g., Cohesion Policy funding.
- Test cross-border joint procurement sandboxes, including participation by neighbouring non-EU countries with integrated supply chains. Including neighbouring non-EU countries with integrated supply chains would test the interoperability of standards, the mutual recognition of sustainability data, and the alignment of definitions of secondary materials.

This policy objective is primarily incentive-based and coordination-oriented, using soft instruments such as a Joint CPP Facility and harmonised specifications, supported by EU funding. Implementation would be coordinated at the EU level and executed through Member States and local procurement alliances.

9. Conclusions

Circular Public Procurement (CPP) is increasingly recognised as a strategic demand-side instrument that can accelerate transitions to the circular economy. Across sectors such as construction, bioeconomy, energy and healthcare, the analysed projects show that circular criteria, lifecycle-based evaluation and innovation procurement approaches can be operationalised within existing procurement frameworks when supported by appropriate governance structures, digital tools and market engagement mechanisms. In particular, several projects demonstrate the feasibility of integrating lifecycle costing, circularity indicators, and recycled-content targets into procurement processes, while others highlight the role of digital infrastructure, such as BIM environments and interoperable sustainability data systems, in enabling scalable implementation.

The portfolio reveals that the systemic uptake of CPP remains constrained by institutional, procedural and market barriers. These include limited lifecycle literacy among contracting authorities, fragmented governance responsibilities, insufficient interoperability of sustainability data, and structural barriers for SMEs and innovative suppliers. The analysis also shows that market demand for circular solutions often remains fragmented, limiting procurement's ability to stabilise emerging circular value chains.

The policy recommendations developed from the portfolio, therefore, prioritise systemic interventions that institutionalise lifecycle-based procurement practices and reinforce the governance and digital infrastructure required to implement them. Enabling conditions, such as innovation procurement frameworks and SME participation mechanisms, are proposed to accelerate the market entry of circular solutions, while demand aggregation mechanisms are identified as important tools for scaling circular markets once foundational procurement practices and data systems are in place. Together, these measures highlight the potential of CPP to move from isolated pilot initiatives to a mainstream policy instrument that supports the CEA's objectives.

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11. Annexes

11.1. Annex I: Full Project Portfolio Matrix

Strategic cluster	Project name	Grant agreement ID	Primary sector / Material focus
Life-cycle operationalisation and digital infrastructure	CINDERELA	776751	Construction
	RECONSTRUCT	101082265	Construction
	CityLoops	821033	Construction and Bioeconomy
	CIRC-Boost	101082068	Construction
	XPRESS	857831	Renewable energy
	WORM	101135392	Bioeconomy
Innovation procurement and demand-side market creation	ECLIPSE	101157473	Cross-sector
	PROCEDIN	101070830	Cross-sector
	CLIMABOROUGH	101096464	Urban planning
	THERESA	101226565	Medical
	suHCO	101226802	Medical
	REHEAL	101226919	Medical
Enabling framework conditions	HOOP	101000836	Bioeconomy
	FRONTSH1P	101037031	Bioeconomy
	TREASoURcE	101059491	Bioeconomy
	3-CO	101086086	Bioeconomy
	DEFINITE-CCRI	101082224	Cross-sector

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This report finds that the main challenge for circular public procurement is no longer the lack of solutions, but the difficulty of embedding them in routine practice. Across 17 Horizon projects, the strongest results come from lifecycle-based tools, digital systems and procurement approaches that make circularity more practical, comparable and market-shaping. However, many solutions remain at the pilot stage, and uptake is still constrained by limited capacity, fragmented governance and weak data conditions. Overall, the report concludes that circular public procurement should be treated as a core instrument of the Circular Economy Act, with priority given to scaling approaches that have already proven effective.

Studies and reports

