



Nordic Council
of Ministers

INDICATORS FOR CIRCULAR CONSTRUCTION

THE ROLE OF PUBLIC PROCUREMENT



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This publication is also available online in a web-accessible version at:
<https://pub.norden.org/nord2024-029>

1. SUMMARY

This study is part of the Nordic Networks for Circular Construction (NNCC) project. It builds on the report *Nordic Networks for Circular Construction WP3: Metrics for Circularity*, which resulted in a list of potential indicators. Most of these indicators will be collected at the macro level. However, strategic criteria should be enforced locally as part of the public procurement process to realise the indicators. The overall objective of this study is to support the inclusion of circular construction criteria in public procurement. The study answers the question: How are the recommended indicators being implemented as part of public procurement for construction projects at the municipal level?

The study has been conducted using a combination of desk research and interviews. For each Nordic country, a municipality that has demonstrated leadership in circular construction has been invited to participate in the study. Semi-structured interviews have been carried out with representatives from the property and, in some cases, the public procurement of the municipalities of Bergen (NO), Copenhagen (DK), Gothenburg (SE), Helsinki (FI), and Reykjavik (IS).

Each municipality has strategies that guide the direction of municipal construction projects towards circular approaches and reducing their carbon footprint. For example, they include:

- Climate and environment/circular economy strategies, which are the key drivers for municipal circular construction.
- The use of certification schemes for large projects, and in the case of Bergen, the use of the national initiative FutureBuilt, which has many of the same characteristics as a certification scheme.
- Development projects to test methods for circular construction, e.g. to develop public procurement criteria and to support reuse and recycling.
- Use of quality points in public procurement to factor in circularity.
- National cooperation between urban municipalities is needed to exchange experiences on sustainable and circular construction.

All eight indicators comprised by this study are relevant across municipalities, although to varying extents. They are generally in line with ambitious local strategies for sustainable and circular construction and climate targets defined at national and local levels. The following highlights the indicators and main conclusions from the study according to their relevance for municipal construction projects' planning and construction phases.

1.1 INDICATORS OF RELEVANCE FOR THE PLANNING PHASE

1.1.1 The utilisation rate of the existing building stock

The utilisation rate of existing building stock can help identify building types available for conversion between functions. Different metrics related to the utilisation data are relevant at different levels of decision-making. At the municipal level, the utilisation rate of the existing building stock is relevant in the construction planning phase. For example, renovation or repurposing of existing (empty) building stock can be considered instead of constructing new buildings.

The indicator is relevant for all municipalities from an economic perspective. It is also relevant because of their strategic focus on preserving existing buildings through renovation instead of demolition and new construction. Some municipalities have methods to maintain an overview of municipally owned property. However, none of the municipalities have a complete overview of the utilisation when identifying buildings/sites to meet the municipalities' need for buildings.

1.1.2 Total renovations vs. demolition and new buildings

Preserving the existing building stock is one of the focal points of the Nordic countries' national sustainability and waste reduction strategies. The metric is closely linked to the utilisation rate of buildings. However, it further specifies the decisions made at the local level concerning renovation vs. demolition.

In many cases, demolishing and building new is more expensive than renovation. However, in addition to price, a strategic shift has occurred to factor in environmental sustainability and carbon footprint when deciding whether to renovate. The municipalities also consider the project's time, the building's state, and the functions needed for the building in each case.

1.1.3 Potentials for Nordic cooperation

There is a general interest in developing methods to monitor the utilisation rate locally and using it to discuss the potential for renovating existing buildings to meet the municipalities' needs. The exchange of good practices between municipalities and/or the development at the Nordic level of methods to support monitoring the utilisation rate are examples of initiatives to support this development.

In Finland, a national Green Deal Strategy to be launched in the autumn of 2024 comprises an indicator for the local utilisation rate. This initiative can serve as a point of departure for Nordic cooperation in introducing the utilisation rate of the existing building stock as a common Nordic indicator.

1.2 INDICATORS OF RELEVANCE FOR THE CONSTRUCTION PHASE

1.2.1 Number of certified building projects

This indicator focuses on the number of buildings, including existing and new buildings, that have successfully obtained a building certificate with circular properties. The indicator is a proxy for the more ambitious part of the construction industry because the requirements for achieving certification schemes are higher than the minimum EU and national legal requirements. Municipalities can require the use of a certification scheme through public procurement.

Four of the five municipalities comprised by this study use certification schemes strategically. The schemes are used as a tool for municipalities to demonstrate leadership and push the development of the construction industry towards more sustainable and circular construction. They provide the municipality's safety that construction projects follow regulations and meet high standards. The study has demonstrated that certification systems influence the implementation of the remaining indicators.

1.2.2 Share of EPDs with circular properties

Environmental Product Declarations (EPDs) provide a standard way of declaring the impacts from manufacturing to usage through Life Cycle Assessment (LCA). To be used for circular construction, the indicator shall monitor the share of EPDs with circular properties compared to the total number of EPDs. It must include product-group benchmarks for what is considered circular building products. Municipalities can set requirements to include EPDs (with circular properties) in public procurement.

It is a challenging indicator to use to assess the circularity of products. Today, it is primarily used by the construction industry and municipalities as an indicator of carbon footprint. Except for two municipalities requiring EPDs for all construction projects to conduct LCA analysis at the building level, EPDs are mainly used as part of certified construction projects.

1.2.3 Number of EU Taxonomy-aligned buildings

The EU Taxonomy introduces a classification system to determine which activities and investments are environmentally sustainable. When reporting on the EU Taxonomy, companies must disclose whether their activities are eligible or aligned with environmental objectives. If an activity is taxonomy-aligned, it means it qualifies as environmentally sustainable. Municipalities are not obliged to report on the EU Taxonomy; however, both companies and investors in the construction sector are.

For most municipalities in the study, compliance with the Taxonomy is not yet a priority, except for one municipality that has started to develop reporting procedures. However, the remaining municipalities address the issue through the projects that are being certified as the schemes continually incorporate new regulations, including the EU Taxonomy, into their frameworks.

1.2.4 Construction and demolition waste

Waste statistics have been used for a long time in the construction sector and are relatively easily accessible.

Despite the degree of regulation and the focus on waste management as part of certification schemes, most municipalities highlight challenges to monitor and ensure that construction and demolition waste is managed correctly on site.

1.2.5 Recycling rates

It is mandatory to report the amount of waste received at the different treatment plants and shipped further in the waste treatment system. The waste-data system often only tracks waste materials for recycling, while materials for reuse are not tracked and documented. In the context of municipal construction projects, requirements for reused materials and recycled materials are relevant.

Municipalities are testing ways to increase reuse and recycling, e.g., through development projects where municipal construction projects are used to test methods. This involves developing requirements for specific materials to preserve for recycling in connection with demolition and supporting mechanisms to secure the supply of reused construction materials.

1.2.6 Carbon footprint in the construction sector.

Recent and current reforms of Nordic building acts are introducing new carbon limits for the carbon footprint. The new limit values and their dependency on LCA tools are expected to improve data collection. The EU Energy Performance of Buildings Directive (EPBD) was revised and formally adopted in early 2024. According to this Directive, calculating the GWP (Global Warming Potential), which is used to calculate LCAs, will be required for new buildings by 2028.

Municipalities have experienced challenges in developing/using a method that ensures that LCA calculations for buildings are harmonised across construction projects. For most municipalities today, LCAs are mainly carried out for large construction projects as part of their certification. However, work is underway to develop methods for LCA calculations at the level of buildings across the municipalities for all projects.

Potentials for Nordic cooperation

Most municipalities experience challenges implementing construction and demolition waste management, recycling, and reuse. Both are influenced by national regulations, which can differ. However, municipalities can benefit from sharing good practices and/or participating in common development projects and the development of common guidelines.

At the national level, sharing practices for solving the challenges of matching supply and demand for reused construction materials can be beneficial, e.g., potential solutions such as the public co-financing of marketplaces to promote the reuse of construction materials.^[1]

1. For example this Finnish initiative: <https://www.materiaalitori.fi/tietoa-palvelusta#kuka>

2. INTRODUCTION

This study is part of the Nordic Networks for Circular Construction (NNCC) project, Work Package 3, which focused on developing indicators to measure circularity within the construction sector. It builds on the report *Nordic Networks for Circular Construction WP3: Metrics for Circularity*. It resulted in a list of 11 potential indicators and a draft implementation strategy to determine the steps required to reach the overall objectives with a new monitoring framework. Most of these indicators will be collected at the macro level. However, strategic criteria should be enforced locally as part of the public procurement process to realise the indicators.

The overall objective of this study is to support the inclusion of circular construction criteria in public procurement. Therefore, the study focuses on municipalities working towards more circular construction, identifying whether municipal strategies as procurers of circular construction align with the recommended indicators. The study aims to answer the question:

- How are the recommended indicators being implemented as part of public procurement for construction projects at the municipal level?

The report is structured as follows: Following a brief presentation of the method, public procurement and circular construction strategies are introduced. Second, the indicators studied are introduced, and a cross-cutting analysis of each indicator's relevance and implementation in the Nordic Municipalities is carried out. Finally, the study's conclusions are presented.

2.1 METHOD

The study has been conducted using a combination of desk research and interviews. The desk research has focused on current guidelines, strategies, and enforcement of green public procurement (GPP) for construction at the EU level and the local-level strategies and policies guiding public procurement for the municipalities included in the study. For each Nordic country, a municipality that has demonstrated leadership in circular construction has been invited to participate in the study. Semi-structured interviews have been carried out with representatives from the property departments and, in some cases, the public procurement departments of the municipalities of Bergen (NO), Copenhagen (DK), Gothenburg (SE), Helsinki (FI), and Reykjavik (IS). The interviews provide a more in-depth understanding of the municipalities' overarching strategy and goals and their use of circular criteria and indicators. The interview guide was structured according to the eight indicators comprised by the study (see [Annex I](#)).

3. STRATEGIES FOR PUBLIC PROCUREMENT AND CIRCULAR CONSTRUCTION

This section first introduces the EU green public procurement (GPP) guidelines. It is followed by an outline of the key strategies for circular construction in public procurement in the Nordic municipalities comprised by this study. National strategies are also highlighted in the local-level strategy sections where the interviewees have referred to them.^[2]

3.1 EU GREEN PUBLIC PROCUREMENT GUIDELINES

Green public procurement (GPP) is defined in the Communication (COM -2008-400) "Public procurement for a better environment" as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured."

GPP is a voluntary instrument, and member states can determine the extent to which policies or criteria are applied. GPP is part of the framework for Strategic Public Procurement, together with Socially Responsible Public Procurement (SRPP) and Innovation Procurement. The basic concept of GPP relies on having clear, verifiable, justifiable, and ambitious environmental criteria for products and services based on a life-cycle approach and scientific evidence base.

The European Commission has been developing voluntary GPP criteria for several product groups. For construction, EU GPP criteria have been designed for Office building design, construction, and management. In the spring of 2024, these guidelines are under revision. Furthermore, following the adoption of the 2020 Circular Economy Action Plan, the Commission is proposing minimum mandatory GPP criteria and targets in sectoral legislation and phase in compulsory reporting to monitor its uptake.^[3]

The GPP guidelines are not directly applied to local strategy and policy for green/circular procurement practices in construction projects in the Nordic municipalities comprised by this study. The strategies adopted by the municipalities are elaborated in the following.

2. For an overview of national policies: Kaarsberg, S.; Kress, L. (2023) Policies Enabling the Reuse of Construction Products in the Nordics. <https://pub.norden.org/us2023-441/#130356>
3. https://green-business.ec.europa.eu/green-public-procurement_en

3.2 LOCAL-LEVEL STRATEGIES

This section outlines the municipalities' key strategies and approaches regarding public procurement of circular construction projects.

3.2.1 Bergen, Norway

The Municipality of Bergen has the overarching *Green Strategy—Climate Strategy for Bergen 2022–2030*.^[4] The target for 2030 is to cut CO₂ emissions by 85% from 2009 to 2030.

The Municipality of Bergen's Division for Buildings has developed the *Strategy for Climate and Environment* in line with the Green Strategy. It includes 11 focus areas for construction projects. The relative weighting of the different focus areas varies between projects, but the strategy guides all municipal construction projects.

The local strategies were developed before a national regulation entered into force in January 2024, requiring all public procurement to incorporate a minimum of 30% focus on sustainability. This requirement is interpreted and implemented case-by-case. In Bergen, it aligns with the existing Strategy for Climate and Environment that guides public procurement for construction projects.

FutureBuilt as a framework for circular construction

One of the focus areas of the Strategy for Climate and Environment is using the *FutureBuilt* framework to implement circular construction projects. FutureBuilt is an innovation and demonstration programme targeting the most ambitious actors in the construction sector. It is funded by local and national authorities in Norway. The organisation's vision is to develop sustainable and attractive zero-emission cities. Pilot projects are used as a strategy for changing the way buildings and urban areas are developed. The goal is to complete 100 pilot projects that cut carbon emissions by at least 50% compared to current regulations and common practices. This is measured by a greenhouse gas accounting tool, and the reductions must be within transport, energy, and materials. The quality criteria which demonstration projects must meet are closely aligned with BREEAM NOR.^[5]

In Bergen, two construction projects are underway to become FutureBuilt demonstration projects. However, the municipality uses the Circularity Index developed by FutureBuilt for all construction projects in the procurement process to calculate each project's impact. The index contains a tool for calculating the impact of, e.g., materials use. The municipality will then lower the

4. <https://www.bergen.kommune.no/hvaskjer/tema/klimaarbeid-i-bergen/gronn-strategi-klimastrategi-for-bergen>

5. <https://www.futurebuilt.no/English>

targets set by the Circularity Index according to the specific construction projects to be implemented.

National network on sustainable construction

The Local Development Division of the Municipality of Bergen takes part in an informal network established with representatives from the same divisions in the urban municipalities of Norway. They exchange experiences and good practices related to climate and environment in construction.

3.2.2 Copenhagen, Denmark

With the *CPH 2025 Climate Plan*^[6], the Municipality of Copenhagen aims to become the world's first CO₂-neutral capital. The CPH 2025 Climate Plan is holistic and includes specific targets and initiatives in the four key areas – energy consumption, energy production, mobility, and city administration initiatives.

In line with the *Danish Strategy for Circular Economy*^[7], the Municipality of Copenhagen has the *Circular Copenhagen Resource and Waste Management Plan 2024*^[8], which includes measures for circular construction, such as reusing construction materials from municipally owned properties and better recycling of construction and demolition waste.

From 2020 onwards, the circular economy has been a focus area for all construction projects in the Municipality of Copenhagen. This was decided before the *Danish Climate Act*^[9], which sets binding national targets of a 70% reduction in greenhouse gas emissions in Denmark by 2030 compared to 1990 and climate neutrality by 2050 at the latest. The national climate targets support the focus on circular construction. Specifically for construction, the Danish Building Regulations (BR18) specify the Building Act's requirements for building construction, renovation, and fitting. It entered into force in January 2023. The new requirements in BR18 make it mandatory to calculate the building's climate impact over its life cycle and set limit values for how much CO₂e/square meter new construction may emit per year.

Two main tools are used in the strategic work with circular construction and as part of public procurement: DGNB certification of large projects and development projects.

Certification of large construction projects

Construction projects with a 20 million DKK or more enterprise sum must be DGNB certified. This includes both new construction and renovation of existing buildings.

6. <https://urbandevdevelopmentcph.kk.dk/climate>
7. <https://www.kk.dk/sites/default/files/agenda/4f2dd2da-eb34-4964-8531-99225ed618f6/eea03aa3-28ea-455a-b48e-fa99d3de2985-bilag-3.pdf>
8. https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1991
9. <https://www.retsinformation.dk/eli/ta/2020/965>

Development projects

Based on a municipal political decision, two to three construction projects receive additional funds each year to develop circular methods. Development projects allow additional costs related to testing new circular approaches for construction to be covered. In 2024, two ongoing development projects include directly reusing concrete elements from demolition in new construction and building a CO₂-neutral kindergarten. Some funds are also allocated to cover additional costs related to circularity for other construction projects.

3.2.3 Gothenburg, Sweden

Gothenburg has an overall strategy to reduce greenhouse gas emissions from procurement by 50% in 2025 and by 90% in 2030, compared to emission levels in 2021. Their goal is to be one out of 100 first climate-neutral cities in the EU by 2030, as outlined in the strategy *Circular Gothenburg by 2030*.^[10] The climate impact of the contractor's proposals is central to the public procurement processes, which can also include circular approaches.

As part of the strategy, the Municipality of Gothenburg has initiated several projects and pilot studies to learn along the way and develop the knowledge and processes necessary to become more circular. Some projects are funded by the EU or national funding programmes in collaboration with academia, business, and national authorities. The municipality has three procurement guidelines for circular solutions: Service solutions, rental solutions, and purchase of used materials and goods.

Procurement criteria for construction and demolition projects

One project that has been part of the strategy and the municipality's work towards 2030 carried out during 2019–2020 was *Procurement Requirements for Circular Flows in the Construction and Demolition Process*. The project aimed to develop concrete proposals for how procurement of public construction projects can be used to steer the construction sector towards increased circularity through reduced waste and more reuse. The proposals include procurement requirements and investments to strengthen the conditions for a circular construction sector. The procurement requirements should be used in publicly procured new construction, re-modelling, and demolition projects. A gap analysis was conducted to develop relevant criteria for the procurement processes, comparing the situation in 2019 with a future scenario in 2030. The city has involved stakeholders from industry, consultants, public procurers, and authorities throughout the process. Their proactive work to become climate-neutral by 2030 forces renovation projects and new projects to prioritise reused and recycled materials to a larger extent than before.

10. <https://goteborg.se/wps/wcm/connect/75a1df85-1e2f-4cf3-a25f-f7a5e74d62b2/Sammanfattningsrapport+2023+Cirkul%C3%A4r+ekonomi.pdf?MOD=AJPERES>

The project has increased overall knowledge of how public procurement can act to drive development towards a circular construction and demolition process. Finalised in 2020, these criteria have been used and tested further in construction projects and will be continuously developed and updated until 2030. The work has been taken further in several concrete construction projects, collaborations, local platforms, and declarations of intent in Gothenburg.

National and international cooperation on circular construction

The municipality is engaged in projects and collaborations with other municipalities (both in Sweden and internationally) and with research institutes. Between 2020-2024, there is an ongoing project, *Metropolitan agreement for circular construction*, with Malmö City, Stockholm City and IVL Swedish Environmental Research Institute to share knowledge and explore the potential for more collaborations among bigger cities in Sweden. Their aim with the project is to stimulate and scale up circular construction solutions from being a small-scale piloting niche to more mainstream regular work in practice.

Gothenburg aims to be as open and transparent as possible regarding its work and projects. They are part of national networks (*Gathering power for circular construction*) as well as international networks (*Circular Cities and Regions initiative, Nordic Forum for Circular Construction and European Circular Cities Declaration*) to exchange experience and be relevant market players to promote circularity.^[11]

3.2.4 Helsinki, Finland

The Municipality of Helsinki has set a goal to become climate-neutral by 2030 as part of the *Helsinki City Strategy 2021-2025*.^[12] The municipality has put emphasis on transitioning to a circular and sharing economy as part of the solutions to reach its target.^[13] Helsinki's climate-neutral strategy consists of 147 measures, of which around 20 are related to circularity, and a few relate to construction.^[14]

During the summer of 2023, Helsinki replaced the previous Roadmap for the Circular and Sharing Economy with an *Action Plan for the Circular and Sharing Economy*. The Action plan is in line with the *Circular Roadmap for Finland*. The action plan consists of four focus areas: construction, procurements, environmental awareness, and sustainable consumption. For building construction and demolition there are two specific measures for each that are scheduled to be in place by 2023 and 2025. Some circularity aspects regard material information management, resource-wise use of building materials, transformability, modularity, use of recycled and repurposed materials, maintainability and repairability, ease of demolition and reusability. Projects

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11. <https://goteborg.se/wps/portal/start/kommun-och-politik/so-arbetar-goteborgs-stad-med/hallbarhet-och-agenda-2030/cirkulara-goteborg>
 12. <https://www.myhelsinki.fi/en/think-sustainably/making-helsinki-carbon-neutral>
 13. <https://kaupunkialustana.hel.fi/sv/anvisningar/cirkular-ekonomi/>
 14. <https://helsinginilmastoteot.fi/sv/city-act/cirkular-ekonomi/>

should by 2025 be able to calculate their impacts through life-cycle costs and carbon footprint over the life cycle. This data should be used as a basis for decision-making in future building projects. The specific measures for demolition are still under development based on experience from ongoing pilot projects.^[15]

Each year, the municipality reports on progress on measures in the action plan of the *Circular Cities Declaration* report.^[16] The initiative is led by the Municipality of Turku in Finland and is funded by Horizon 2020. In total, 54 cities and 18 European countries have joined the collaboration, and 2024 was the first reporting year. Circular Cities Declaration is a cooperation between municipalities across Europe, Finnish Innovation Fund Sitra, ICLEI^[17], and other strategic circular organisations across Europe. The cooperation has enabled the development of a roadmap in collaboration with over 200 stakeholders on five priority topics, one of which is construction.

Circular Economy Cluster Programme

Helsinki has initiated a cluster programme called Helsinki's Circular Economy Cluster Programme. The programme aims to bring together businesses, academia, research institutes and other organisations to try new innovations and processes in practice, experiment and exchange experiences and learn from each other. The programme focuses on circularity within the construction sector, where there is a mix of activities across all stages of the construction phase, including the design stage, extending the life cycle of the building and reuse of materials and building components. Experience and knowledge gained from the cluster programme will feed into and update the procurement criteria as part of the Roadmap for a Circular and Sharing Economy for 2030. The cluster programme has specific training for construction experts, concrete experiments, and pilots in demolition and new construction projects. Further, the city arranges open innovation calls for circular construction projects, where new solutions can be tested in collaboration with companies, research, and other organisations.^[18]

Quality points tool to balance costs of circularity

Helsinki uses specific tools to request more circular solutions for public procurement in a few selected construction projects. "Quality points" are used to request a specific service or good meeting specific circularity criteria. It means that it is not mandatory to fulfil the criteria. Still, if the contractor can include it in the proposal, it gives extra points, adding to the price to compensate for any extra work or costs required to fulfil the specific criteria. Therefore, the maximum final price in the proposal will differ depending on how many criteria can be fulfilled by the contractor within the given price adjustment. Ultimately, a balance between price and quality decides the winning bid.

15. <https://julkaisut.hel.fi/en/reports/city-helsinkis-action-plan-circular-and-sharing-economy/themes-goals-and-measures-0>

16. https://circularcitiesdeclaration.eu/fileadmin/user_upload/Resources/CCD-Report-2024.pdf

17. ICLEI Europe - Local Governments for Sustainability.

18. <https://testbed.hel.fi/en/circular-economy/>

Market dialogue with big contractors

Another strategic tool used by Helsinki involves market dialogues with big contractors. By inviting a market dialogue before the actual procurement process begins, the municipality can better understand the market solutions and ensure they have the most updated knowledge from the companies. This eases the process for the municipality to formulate the requests and requirements. Market dialogue is a methodology national authorities recommend promoting circularity and innovation in public procurement processes.

3.2.5 Reykjavík, Iceland

The *Green Deal* is the Municipality of Reykjavík's overall strategy, outlining the municipality's vision for 2030.^[19] It connects the municipality's key policies and plans to that vision. With an emphasis on environment, economy and society, the Green Deal includes fifteen key priorities that serve as a shared guide across all Reykjavík's municipal departments. It sets the overall objective that Reykjavík will be carbon-neutral by 2040. The Green Deal is the key strategy for construction and public procurement, and certification of large construction projects is a key tool to promote sustainable construction.

Certification of large construction projects

Since 2019, the municipality has required BREEAM or the Nordic Swan Ecolabel certification of construction projects for buildings larger than 2000 m².

19. <https://reykjavik.is/en/green-deal>

4. ANALYSIS: TESTING THE INDICATORS

This section briefly introduces each of the eight indicators comprised by the study. It then provides a cross-cutting analysis, mainly based on the interviews, for each indicator concerning its incorporation as part of public procurement criteria for municipal construction projects.

The *Nordic Networks for Circular Construction WP3: Metrics for Circularity* report recommended 11 circularity indicators. Each indicator has been assessed for its relevance to local-level public procurement, which has led to a delimitation from three indicators.^[20] Table 1 lists the eight indicators comprised by this study, including potential metrics proposed as part of WP3 to monitor each indicator.

TABLE 1 EIGHT SUGGESTED NEW VOLUNTARY INDICATORS FOR CIRCULAR CONSTRUCTION IN THE NORDIC REGION

SHORTLISTED INDICATOR	POTENTIAL METRICS
Utilisation rate of existing building stock	Total number of empty offices, commercial and rental housing. Total number of free-time buildings/summer houses. M ² floor area per resident/staff in rental dwellings and offices.
Total renovations vs demolition and new buildings	Total m ² of building permissions per year. Total m ² of demolitions projects per year. Total m ² of renovation/rehabilitation projects per year.
Number of certified building projects	No. of buildings certified by schemes comprising circular criteria.
Share of EPDs with circular properties	No. of EPDs with reused/recycled and reusable/recyclable content above product group specific benchmarks.
Number of EU Taxonomy-aligned buildings	No. or share of building projects aligned with the circularity criteria specified in the EU taxonomy.
Construction and demolition waste	Total amount of construction and demolition waste. Construction and demolition waste per capita, in relation to turnover for the sector, or per new m ² built.

20. This study does not comprise the following three indicators: circularity properties of buildings and rehabilitation projects, land use change, and resource productivity in construction.

Recycling rates	Circular material use rate (CMUR: recycling in relation to total material consumption). Recycling in relation to total construction and demolition waste. % waste directed to landfill, backfill, and energy recovery in relation to total construction and demolition waste.
Carbon footprint in the construction sector	Whole-life carbon equivalents from the construction and building sector.

The indicators and their implementation in municipal construction projects are further elaborated in the following.

4.1 THE UTILISATION RATE OF EXISTING BUILDING STOCK

The utilisation rate of existing building stock can help identify building types available for conversion between functions, and more efficient use of buildings, e.g. through sharing solutions. Different metrics related to the utilisation data are relevant at different levels of decision-making. At the municipal level, the utilisation rate of existing building stock is relevant in the construction planning phase. It is relevant from an economic perspective, but it also concerns considerations of renovating or repursuing existing (empty) building stock instead of constructing new buildings.

4.1.1 Implementation of the indicator in Nordic municipalities

The municipalities generally have an overview of the building stock in m², but methods to monitor the utilisation rate of building stock are less developed. It is of interest across the municipalities, e.g., regarding their enhanced strategic focus on preserving the existing building stock.

The Municipality of Helsinki aims to have no more than 3–4% unutilised building stock. Internally, the municipality has lease agreements with different departments. There are annual meetings between the department renting out the properties and the departments of the municipality leasing properties about their current and future need for space.

In Bergen, due to the enhanced strategic focus on circularity, recent efforts have been initiated to place the responsibility of maintaining an overview of the building stock and its utilisation in one municipal department. The purpose is to consider the building stock's availability and function. The common practice has been for the municipality to search for an available plot or building but not with a focus on identifying an existing building that could meet the municipality's specific needs in the given situation.

The municipalities have departments responsible for identifying buildings or building sites to meet municipal buildings' needs. In Reykjavik, it is challenging to identify available buildings, and the municipality has several leasing agreements with the private sector.

4.2. TOTAL RENOVATIONS VS. DEMOLITION AND NEW BUILDINGS

Preserving the existing building stock is one of the focal points of the Nordic countries' national sustainability and waste reduction strategies. The metric can be monitored by calculating the number of building permits for renovation against the number of building permits following demolition permits for the same building plot.

This study's focus on public procurement entails a focus on municipally owned buildings for this indicator. The metric is closely linked to the utilisation rate of buildings. However, it further specifies the decisions made at the local level concerning renovation vs. demolition.

4.2.1 Implementation of the indicator in Nordic municipalities

The municipalities comprised by this study all have an enhanced strategic focus on preserving the existing building stock through renovation and conversion of existing buildings. The relation between environmental benefits, price, time, and function is still considered in each case. However, due to the overarching climate and environmental targets, the focus has shifted strategically for all municipalities comprised by the study to preserve the existing building stock, factoring in environmental sustainability as a complement to the economy.

For example, the Municipality of Copenhagen has recently initiated a development project to complete an LCA analysis on the potential of converting a building to a different purpose. The building consultant has concluded that renovating and building an extension of the building will save 20% on CO₂ emissions compared to demolishing and constructing a new building. However, the economic costs of the renovation project are estimated to be approximately 5% higher. The municipality will proceed to realise the renovation project.

For all municipalities, the function of the building in meeting the specific needs is an important consideration, along with its state and compliance with the existing building code, when it is considered for renovation. The energy performance, energy efficiency, and indoor environment/climate of the existing building are issues to consider when deciding whether to renovate. For example, in Reykjavik, there was a period when many buildings were demolished due to mould issues, of which the root could be linked back to the construction phase.

4.3 NUMBER OF CERTIFIED BUILDING PROJECTS

This indicator focuses on the number of buildings that have successfully obtained a certificate with circular properties, including existing and new buildings. It has been recommended that national and international schemes used in individual countries be included to use the indicator to monitor development across Europe. This should include certification schemes that hold minimum circularity requirements. The indicator is a proxy for the more ambitious part of the construction industry because the requirements for achieving certification schemes are higher than the minimum EU and national legal requirements. Municipalities can require the use of a certification scheme through public procurement.

4.3.1 Implementation of the indicator in Nordic municipalities

All municipalities comprised by the study have experience using certification schemes for municipally owned projects, including renovations and new construction. The benefits highlighted by using the certification schemes include the safety and the common reference it provides to discuss the different criteria documented for the construction project, including for circular economy. Furthermore, it is a tool for municipalities to demonstrate leadership and push the development of the construction industry towards more sustainable and circular construction.

The municipalities comprised by the study use the following building certification schemes:

- BREEAM (Bergen, Helsinki, Reykjavik)
- DGNB (Copenhagen)
- The Nordic Swan Ecolabel - for schools and kindergartens (Helsinki, Reykjavik)
- Miljöbyggnad (in English: *Environmental building*) (Gothenburg)
- Rakennustiedon ympäristöluokitus (Rakennustieto environmental certification) (Helsinki)

The strategy for using certification schemes varies between municipalities. Copenhagen and Reykjavik require the use of the schemes for all large projects. Bergen and Helsinki decide on a case-by-case basis whether they require certification of renovation or new building projects. Certification cost is factored into municipalities' considerations for when to certify. In the case of Reykjavik, the use of a certification scheme can facilitate the municipality's permission to take up a loan from the bank in the form of green bonds for construction projects.

Gothenburg is the only municipality that does not strategically focus on using certification schemes. The municipality has strict requirements for its construction projects, which for some criteria also involve higher requirements than Miljöbyggnad's. The municipality has processes to verify and ensure construction projects meet the required standards. They have an internal green framework (green bonds) where all new investments in buildings meet the standards of this framework.

Helsinki has developed its own light version of certification/target setting for construction projects. In Bergen, the municipality uses FutureBuilt's framework to support the inclusion of sustainability criteria in uncertified projects.

4.4 SHARE OF EPDS WITH CIRCULAR PROPERTIES

Environmental Product Declarations (EPDs) provide a standard way of declaring the impacts all the way from manufacturing to usage through Life Cycle Assessment (LCA). This indicator monitors the number of construction products with EPDs. To be used for circular construction, the indicator shall monitor the share of EPDs with circular properties compared to the total number of EPDs. It must include product-group benchmarks for what is considered circular building products. Currently, it is used as an indicator to determine the carbon footprint of a product, and there are challenges to be able to define the circular properties of products with EPDs. Municipalities can set requirements to include EPDs (with circular properties) in public procurement.

4.4.1 Implementation of the indicator in Nordic municipalities

Generally, EPDs verify products' carbon footprint in municipal construction projects. The methods used to include EPDs vary. Circular properties regarding reuse and recycling are generally not the main reason for using EPDs for documentation, but in Bergen and Gothenburg, initiatives are underway to be able to document the circular properties of the construction materials used in construction projects. In Bergen, with the use of EPDs, and in Gothenburg, with the use of the national assessment tool and database, *Byggvarubedömning* (in English: Construction Product Assessment).^[21]

In Bergen, with the Strategy for Climate and Environment, delivering EPDs for all construction projects has become mandatory. Contractors are also encouraged to collect three alternative EPDs to decide which products to choose. There is ongoing work to develop approaches to weighting circular criteria in EPDs. As part of the FutureBuilt framework used for all construction projects, attention is paid to design for disassembly to reuse and eventually recycle the materials used.

21. <https://byggvarubedomningen.com/assessments/>

In Copenhagen, EPDs are required and feed into the completion of LCAs at the level of buildings. The Municipality of Helsinki also requires LCA calculations for all building projects, but EDPs are only required in some of the larger projects when certification schemes are being used. Similarly, the municipality of Reykjavik only requires EPDs in large projects, but this is in connection with using the BREEAM certification. This certification scheme requires using at least five construction products with EPDs.

The Municipality of Gothenburg does not require full EPDs, although EPDs are sometimes used in construction projects. Gothenburg has actively pushed forward the use of the Construction Product Assessment tool, which provides a database with health and environmentally assessed products and a logbook tool for documenting all products used in a construction project. The tool helps document the carbon footprint by documenting the share of recycled and reused materials at both product and building levels. Since the EU Taxonomy was introduced (see section 4.5 for further information on the Taxonomy), the requirements to document climate impact have increased, pushing the agenda even more to use the Construction Product Assessment tool. The Municipality of Gothenburg wishes to be able to compare data between different buildings, including for maintenance, demolition, and renovation, breaking down per square meter, to identify the share of reused material.

4.5 NUMBER OF EU TAXONOMY-ALIGNED BUILDINGS

The EU Taxonomy introduces a classification system to determine which activities and investments are environmentally sustainable. The taxonomy consists of six environmental objectives, and number four is "The transition to a circular economy". Each environmental objective defines so-called technical screening criteria defining environmentally sustainable activities. When reporting on the EU Taxonomy, companies must disclose whether their activities are eligible or aligned with the environmental objectives. If the activity is taxonomy-aligned, it means it qualifies as environmentally sustainable. If the economic activity is taxonomy-eligible, it means that it is within the scope of the taxonomy and must be assessed. The construction sector is specifically pointed out as one of the sectors that must report on the EU Taxonomy. Therefore, the criteria are specified in relation to sector-specific impact.

Municipalities represent a large share of all building developers and owners, making them an important player in the transition to a circular economy at the local level. Municipalities themselves are not obliged to report on the EU Taxonomy, however, both companies and investors in the construction sector are. As of 2024, only large and listed companies must be disclosed under the Taxonomy, but smaller and non-listed companies will be included in the coming years (2025 and onwards). Financial institutions use the EU taxonomy as a foundation for integrating sustainability as part of the decision-making basis for their investments in construction projects.

By adhering to the taxonomy, municipalities can ensure that their local policies comply with regulations and standards and are consistent with broader sustainability objectives. To ensure compliance, municipalities must align with the documentation requirements on the market and integrate these criteria into their planning, permitting and regulatory processes, i.e., procurement processes. Circular procurement initiatives can, therefore, become an important tool to steer activities and investments towards alignment with the EU Taxonomy and send a strong signal to the construction sector.

4.5.1 Implementation of the indicator in Nordic municipalities

Some of the municipalities experience a shift in the market since the Taxonomy is already impacting companies, making it relevant for the municipalities to start integrating the criteria in their processes. However, except for Gothenburg, the municipalities have not yet assessed whether their activities and projects are aligned with the taxonomy. The taxonomy will become more relevant once it has been used for some time and companies and investors have developed internal routines and processes.

The Municipality of Gothenburg has started to ensure alignment with the EU Taxonomy. Efforts to develop internal routines and processes to streamline reporting practices across construction projects are ongoing.

Indirectly, the other municipalities are meeting the requirements of the EU Taxonomy through their use of certification schemes and, in the case of Bergen, the FutureBuilt framework. The schemes ensure alignment with EU and national regulations, including the EU Taxonomy reporting standards.

4.6 CONSTRUCTION AND DEMOLITION WASTE AND RECYCLING RATES

The following focus on two interlinked indicators: construction and demolition waste and recycling rates. Waste statistics have been used for a long time in the construction sector and are relatively easily accessible. It is mandatory to report the amount of waste received at the different treatment plants and shipped further in the waste treatment system. The WP3 report recommended ensuring harmonised definitions that exclude backfilling operations from the definition of recycling. In Denmark, this has been done in recognition that backfilling is an irreversible and low-grade preservation strategy (downcycling) that only maintains a little of the value of the materials. The waste-data system often only tracks waste materials for recycling, while materials for reuse are not tracked and documented.

Municipalities can require the management of construction and demolition waste and using recycled and reused materials in public procurement of construction projects.

4.6.1 Implementation of the indicators in Nordic municipalities

Construction and demolition waste management from construction sites differs among the municipalities comprised by this study. Generally, handling waste on construction sites is challenging because there is often a lack of space and time to sort it into different fractions and containers. Furthermore, it is difficult to set up a body that reviews the sorting on the construction site and ensures it is executed correctly. To ensure the reuse and recycling of materials, the municipalities are still testing approaches to increase this. Helsinki and Copenhagen provide examples of testing this through development projects.

The EU Waste Framework Directive 2008/98/EC states that all construction and demolition waste shall be sorted and recycled in recycling plants. The goal is to recycle 70% of construction and demolition waste by 2020. Implementing this ambitious target is a challenge for most municipalities comprised by the study. However, Bergen has defined a higher target.

Bergen has set a target that 90% of all construction waste from the renovation and new constructions must be sorted. The contractor is required to deliver documentation from the waste handling company. However, there are not yet the same requirements for demolition waste management. Work is underway to develop a Circularity Index, which will guide contractors in delivering a circularity report on the amount of waste sorted for reuse or recycling. The report will include estimations on the number of reused materials presented in the circularity index, indicating how high the recycled amount is. The municipality is further looking into possibilities to introduce requirements on handling demolition waste to improve recycling rates.

Since 2023, there have been legal requirements in Reykjavik for sorting and handling construction and demolition waste. According to the national *Circular Law*^[22], the waste must be sorted and separated into seven fractions, and contractors must show receipts to a legally certified entity for the type of waste submitted to be accepted by the waste company. Furthermore, for a construction project to be BREEAM certified, contractors must report data for demolition waste and other materials to the city's Health Department.

Gothenburg has an enhanced focus on collecting and monitoring waste data because the municipality aims to reduce waste by 40% by 2030 compared to 2021 quantities. The municipality is focusing on improving and following up on national legal waste requirements and how that can be used to a broader extent in their projects. There is still a lack of good key performance indicators for maintenance projects. Since the city has a strict climate goal, it is also the main driver in reducing waste quantities. Gothenburg is developing and improving its measuring and monitoring tools to better measure waste per square meter and convert waste figures into climate emission figures. This

22. <https://urgangur.is/a-new-law-on-waste-takes-effect-in-2023-what-will-change/>

further motivates the incentive for construction projects to reduce overall waste. The Municipality of Gothenburg requires that materials be sorted to prepare for recycling. However, there is no follow-up or tracing of the material waste after it leaves the site.

In Helsinki, instructions have been developed for, respectively, demolition and new construction projects. For demolition projects, tailor-made instructions and guidelines were created and updated in 2022 based on national guidelines and the National Waste Act. The contractor must recycle or reuse the following materials: concrete, bricks, metals, asphalt, glass, gypsum and bituminous felt. If it is technically and economically possible, the contractor should further recycle untreated wood, plastics, mineral wool insulation, ceramics, paper, and cardboard. Hazardous waste must always be sorted and recycled separately. For new construction projects, the city has conducted a few pilot projects since 2019 to learn from and improve the work on recycling and reuse. Glass, gypsum, and plastic are more challenging to recycle. Experience has shown that it is necessary to have a tailor-made budget for circular construction pilots, and the projects need a clear target and plan already in the early design phase to succeed. Commitment and good communication from the people responsible and involved are also crucial for the recycling to be successful all the way to the end of the project.

The Municipality of Copenhagen sees the potential to impact the market and increase the use of recycled and reused materials. However, they experience challenges in practice on the construction sites because there is still a lot of uncertainty on the market regarding the supply and demand of recycled and reused material, and there are many different fractions to consider. Hence, projects are typically challenged regarding increasing the recycling and reuse rates. The certification scheme DGNB is used for some projects, which gives extra points to recycling and re-usage in demolition projects. This is, in theory, favourable for the projects, but it is hard to fulfil in practice. The municipality is considering trying out material passports in a few pilot projects to improve recycling and reuse rates. However, since this is still in the pilot phase, there are no conclusions yet to draw on efficiency.

4.7 CARBON FOOTPRINT IN THE CONSTRUCTION SECTOR

Monitoring the kilograms of CO_{2e} per square meter built may inform the development of reuse, recycling, and introducing renewable/bio-based strategies in new production and maintenance. Recent and current reforms of Nordic building acts are introducing new carbon limits for the carbon footprint [23]. The new limit values and their dependency on LCA tools are expected to improve data collection through increased use of bills of materials and draw

23. See overview of the recent development regarding carbon limit values at table 1 in Kaarsberg, S.; Kress, L. (2023) Policies Enabling the Reuse of Construction Products in the Nordics. <https://pub.norden.org/us2023-441/#130356>

attention to the need to reduce resource use. The EU Energy Performance of Buildings Directive (EPBD) was revised and formally adopted in early 2024. According to this Directive, calculating the GWP (Global Warming Potential), which is used to calculate LCAs, will be required for new buildings by 2028.

4.7.1 Implementation of the indicator in Nordic municipalities

All municipalities calculate the carbon footprint, although the methods vary. Calculating the overall climate impact of construction projects is important to comply with climate and sustainability targets. Generally, calculating CO₂ emissions for new building projects is easier than for renovation, maintenance, or demolition.

Gothenburg is developing a new way to measure carbon footprint, where they try to calculate CO₂e emissions per square meter. This should be in place by 2030. The city has developed a tool for this purpose used in renovation, reconstruction, and extension projects. Specific targets are set for 2030, which are more ambitious than the Circular Economy Action Plan from the EU Commission.

Helsinki calculates the carbon footprint for mainly new building construction and, to a lesser extent, renovation projects. The city is also in the process of defining targets for maximum CO₂ emissions from buildings.

Reykjavik measures the carbon footprint for larger projects as part of the BREEAM certification.

The municipalities of Copenhagen and Bergen use life cycle analysis (LCA) to calculate the carbon footprint for their construction projects. In Bergen, it is done for all projects. All municipalities in Norway are required to conduct LCA calculations on buildings. A template is available with different modules, which can be interpreted and weighted differently. The Municipality of Bergen has revised this into a more specified "climate calculator" to ensure reliable and comparable data.

In Copenhagen, LCAs are conducted for DGNB-certified buildings. The municipality is looking into other tools in the market. However, the main tool currently used is LCAbyg. The Danish Building Regulations (BR18) drive the development towards conducting LCAs for future building projects.

5. CONCLUSIONS

This study has investigated the alignment of selected Nordic municipalities' strategies and methods for municipal construction projects regarding eight proposed indicators for circular construction. It has addressed the overall question: How are the recommended indicators being implemented as part of public procurement for construction projects at the municipal level?

In conclusion, all the indicators are relevant across municipalities to varying extents. They are generally in line with ambitious local strategies for sustainable and circular construction and climate targets defined at national and local levels. The following provides concluding remarks concerning each of the indicators comprised by this study, which are divided into indicators of relevance for the planning and construction phases. This includes considerations concerning the potential for Nordic cooperation.

5.1 INDICATORS OF RELEVANCE FOR THE PLANNING PHASE

The utilisation rate of the existing building stock is relevant for all municipalities because of their strategic focus on preserving existing buildings through renovation instead of demolition and new construction. Some municipalities have methods to maintain an overview of the municipally owned building stock. However, none of the municipalities have an overview of the utilisation of the total building stock when identifying buildings/sites to meet the municipalities' need for buildings.

Total renovations vs. demolition and new buildings refers to the potential to renovate a building rather than demolish and construct a new building. Often, the latter option has higher costs. Factors of time, state, and building function are still considered in each case. However, in addition to price, a strategic shift has occurred to factor in environmental sustainability and carbon footprint when deciding whether to renovate.

Potentials for Nordic cooperation

There is a general interest in developing methods to monitor the utilisation rate locally and using it to discuss the potential for renovating existing buildings to meet the municipalities' needs. The exchange of good practices between municipalities and/or the development at the Nordic level of methods to support monitoring the utilisation rate are examples of initiatives to support this development.

In Finland, a national Green Deal Strategy to be launched in the autumn of 2024 comprises an indicator for the local utilisation rate. This initiative can serve as a point of departure for Nordic cooperation in introducing the utilisation rate of the existing building stock as a common Nordic indicator.

5.2 INDICATORS OF RELEVANCE FOR THE CONSTRUCTION PHASE

Number of certified building projects refers to the use of certification schemes in municipal construction projects. Certification schemes are used strategically by four of the five municipalities comprised by this study. The schemes are used as a tool for municipalities to demonstrate leadership and push the development of the construction industry towards more sustainable and circular construction. It provides the municipality's safety that construction projects follow regulations and meet high standards. The study has demonstrated that certification systems influence the implementation of the remaining indicators and that this approach is used especially for large construction projects.

The share of EPDs with circular properties is a challenging indicator for circularity assessment. Today, it is primarily used by the construction industry and municipalities as an indicator of carbon footprint. Except for two municipalities requiring EPDs for all construction projects to conduct LCA analysis at the building level, EPDs are mainly used as part of certified construction projects.

The number of EU Taxonomy-aligned buildings is generally not a priority, except for one municipality that has started reporting procedures. Still, the remaining municipalities address the issue through the projects that are being certified as the schemes continually incorporate new regulations into their frameworks.

Construction and demolition waste management is a highly regulated area. Strict waste sorting and handling requirements are also part of certification schemes. Despite the degree of regulation and the focus on waste management as part of certification schemes, most municipalities highlight challenges to monitor and ensure that construction and demolition waste is managed correctly on site.

Recycling rates are closely linked to waste management. Municipalities are testing ways to increase reuse and recycling, e.g., through development projects where municipal construction projects are used to test methods. This involves developing requirements for specific materials to preserve for recycling in connection with demolition and supporting mechanisms to secure the supply of reused construction materials.

Carbon footprint in the construction sector. For the municipalities, the indicator refers to calculating carbon footprint at the level of buildings. Municipalities have experienced challenges using a method that ensures that building LCA calculations are harmonised across construction projects. For most municipalities today, LCAs are mainly carried out for large construction projects

as part of their certification. However, work is underway to develop methods for LCA calculations at the level of buildings across the municipalities for all projects.

Potentials for Nordic cooperation

Most municipalities experience challenges implementing construction and demolition waste management, recycling, and reuse. Both are influenced by national regulations, which can differ. However, municipalities can benefit from sharing good practices and/or participating in common development projects and the development of common guidelines.

At the national level, sharing practices for solving the challenges of matching supply and demand for reused construction materials can be beneficial, e.g., potential solutions such as the public co-financing of marketplaces to promote the reuse of construction materials.^[24]

24. For example this Finnish initiative: <https://www.materiaalitori.fi/tietoa-palvelusta#kuka>

6. ANNEX I

INTERVIEW QUESTIONS FOR MUNICIPALITIES.

Introduction

- Which part of the municipality do you work for? What is your role?
- (If not public procurement) How do you coordinate with the procurement department?

Strategy for GPP and circular construction

- Please elaborate on the municipality's approach/strategy for GPP
 - How does the strategy correlate with the EU GPP guidelines and the national strategy for GPP?
 - What is the relative weight of CE in construction, e.g. targets (price/sustainability/CE)?
1. The utilisation rate of existing building stock +2) total renovations vs. demolition and new buildings
 - Are you collecting data on the utilisation of existing building stock?
 - How is this data (or considerations about the existing building stock) used when deciding on construction projects (conversion, renovation, demolition)?
 2. Share of EPDs with circular properties
 - Do you require that building products used in construction projects have verified EPDs?
 - Do you consider circularity as part of EPDs?
 3. Number of building projects certified
 - Does the Municipality make use of certification schemes?
 - If yes, please elaborate on which schemes, which types of projects, to which extent, and the benefit of certification for the Municipality.
 - If not, have there been considerations for using certification schemes? Do you see the potential for future use of schemes?
 - Do you use the Level(s) or other frameworks?

4. Number of EU Taxonomy-aligned buildings
 - Have you planned/considered incorporating compliance with the EU Taxonomy as a criterion in GPP?
 - How do you see your role in influencing the implementation of the taxonomy locally?
 - Challenges/opportunities in this regard?
5. Construction and demolition waste
 - Do you have requirements/targets for construction and demolition waste management? Please elaborate on the requirements.
 - Challenges/opportunities in this regard?
6. Recycling rates
 - Do you have requirements/targets for recycling and/or reuse? Please elaborate on the requirements.
 - Challenges/opportunities in this regard?
7. Carbon footprint in the construction sector
 - Do you measure carbon footprint in municipal construction projects?
 - How? Please elaborate on the approach and any challenges.

AOB, recommendations

- Do you have any recommendations or ideas for strengthening Nordic cooperation in this field?
- Do you have other insight related to monitoring circular construction through GPP?
 - For example, provide good examples/approaches you would recommend to other municipalities.

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Nord 2024:029
ISBN 978-92-893-8043-0 (PDF)
ISBN 978-92-893-8044-7 (ONLINE)
<http://dx.doi.org/10.6027/nord2024-029>

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Cover photo: Brina Blum/Unsplash
Published: 30/8/2024

NORDIC CO-OPERATION

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland and Åland.

Nordic co-operation has firm traditions in politics, economics and culture and plays an important role in European and international forums. The Nordic community strives for a strong Nordic Region in a strong Europe.

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