Policy Brief
for
Municipalities

For a Circular, Tox-free and Climate-neutral Construction Sector in Municipalities

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People spend around 90 % of their lives indoors and inhale 11,000–12,000 litres of air per day. That air should be healthy. Yet screenings of indoor dust from preschools under the NonHazCity3 project[1] ('Reducing hazardous substances in construction to safeguard the aquatic environment, protect human health and achieve more sustainable buildings') showed that significant amounts of hazardous substances such as plasticisers, bisphenols, PFAS and brominated flame retardants are present in indoor air and dust[2,3]. All of these chemicals are likely to pose health risks to children and educators. Bisphenols, for example, affect hormone function, and PFAS are associated with immune effects and cancer risks.

Construction materials and furniture in the indoor environment can be one important source of these hazardous substances. To reduce children's exposure to hazardous substances, the City of Stockholm launched the 'Chemical Smart Preschool' initiative, demonstrating how municipalities can act to provide a healthier environment for children. By following specific product-substitution rules and removing items with a high risk of hazardous substance content

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Summary

- **Indoor dust reflects what we build.** PFAS, plasticisers and other hazardous substances are released from construction materials into indoor air and the environment.
- Current **EU and national legislation** is **not strong enough to ensure a safe indoor environment.**
- **Municipalities** have the **power to close this gap** with green public procurement and local regulations that go beyond national standards.

Interreg Baltic Sea Region
Co-funded by the European Union
SUSTAINABLE WATERS
NonHazCity 3

(eg., old polyvinyl chloride (PVC) items), Stockholm significantly reduced harmful chemicals in preschool indoor environments[4].

Municipalities' building stocks are large and diverse, ranging from educational buildings such as schools and kindergartens to apartment blocks, health-care and office buildings, canteens, museums and sports halls. People use these public buildings every day, and municipalities have a clear responsibility to ensure that these environments are as tox-free as possible and do not harm people or nature.
However, the preschool dust screenings show that current national and European legislation is not strong enough to ensure a truly tox-free indoor environment. Municipalities therefore need to adopt requirements that go beyond current EU and national laws if they want to make their public buildings safer.

The influence of pollutants from construction materials is not limited to indoor air. Rain mobilises chemicals from exterior materials such as roofs, facades or pavements, transporting them via runoff and drainage systems into soil, groundwater, rivers and the sea. Analyses of storm water within the NonHazCity3 (NHC3) project, for example, have detected a wide spectrum of contaminants, including biocides, organophosphate esters, metals, and PFAS[2].

Several municipalities, especially in the Nordic countries, have already introduced stricter building requirements to protect people and the environment. However, across cities in the EU Member States, regulatory approaches remain fragmented, and hazardous substances continue to leak into the environment over time, ultimately reaching sensitive ecosystems such as the Baltic Sea.

NonHazCity3 (Interreg BSR Project, 2023–2025) unites 21 partners from all EU Baltic Sea countries to cut hazardous substances in construction and advance tox-free, circular and climate-friendly building practices. It is aimed at all those who have to make decisions about the construction, renovation or purchase of buildings and facilities. This means residents buying or renovating their homes, companies building buildings, and local governments commissioning larger buildings.

To address this shared challenge, the public and private sector as well as civil society stakeholders of all eight EU countries bordering the Baltic Sea joined the NHC3 project to develop strategic and practical solutions for making construction materials and sites circular, tox-free and climate-neutral (three-pillar approach). Seven pilot studies in nine cities across the eight countries of the Baltic Sea tested these solutions and showed how municipalities can use their own regulations to create a safer environment for people and nature. Their lessons form the basis of this brief and its recommendations for municipalities.

Figure 1. Construction materials release hazardous substances into indoor air and the surrounding environment.

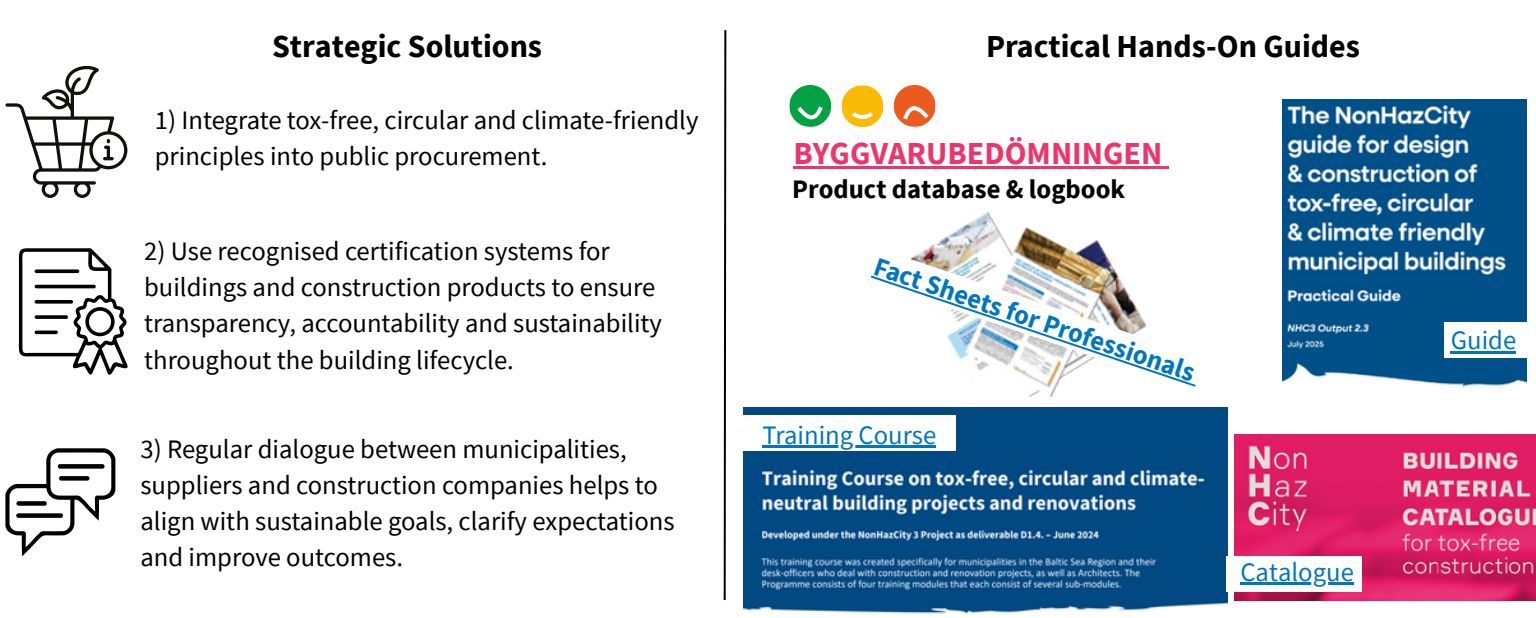


Figure 2. The NonHazCity3 outputs for municipalities. Tested and refined practical and strategic solutions that help designers, public procurers, construction managers and private builders to realise tox-free, circular and climate-friendly constructions. The selection of resulting hands-on guides give municipalities concrete, ready-to-use approaches that they can directly apply in their own projects.

Case studies

Tox-free, circular and climate-friendly constructions in municipalities

Within the NHC3 project, seven pilots tested the NHC3 strategic and practical solutions (overview in Figure 3 and on the NonHazCity 3 homepage).

The following three municipal examples illustrate different entry points: Helsinki demonstrates how a municipality can integrate circularity into its overall approach to construction, while Holbæk and Västerås show how tox-free, circular and climate-friendly criteria can be implemented in concrete public building projects

Helsinki, Finland (686,595 inhabitants, March 2025)**:** Next to the Carbon-neutral Helsinki 2035 Action Plan, the city adopted a Roadmap for Circular and Sharing Economy with a long-term goal of a carbon-neutral circular economy by 2050. Construction is thereby one of its key focus areas (Helsinki's Roadmap).

Within the NHC3 project, Helsinki updated the building material instructions to better address hazardous substances in public construction projects. The proposed revision included no further use of materials containing substances of very high concern (SVHC), mandatory M1-classified materials and a preference for eco-labelled materials. To ensure feasibility, the market availability and financial impacts were assessed.

Västerås, Sweden (156,838 inhabitants, end of 2023) designed a preschool that fully applies the three-pillar approach of circular, tox-free and climate-friendly construction. Already in the designing phase, future reuse options of the construction were considered (easily repurpose to a municipal psychiatric accommodation, by simply adding a few walls and bathroom adjustments) and materials were selected using the Byggvarubedömningen (BVB)[5] database with an implemented rating system. Minimum 20 % of the products should be rated in BVB as 'Recommended' and less than 5 % as 'To be

Figure 3. Overview of the pilot studies implementing the NHC3 solutions. For more information, visit: interreg-nonhazcity3

Stockholm, Sweden: The municipal builder Familjebostäder is building 87 new apartments, achieving Miljöyggnad Gold certification by using procurement and design choices that prioritise indoor air quality and best available techniques.

Västerås, Sweden is building a non-toxic, climate neutral preschool using a collaborative contract model. One target is that 20% of the products are assessed as 'Recommended' according to the BVB[4] criteria.

Helsinki, Finland is updating the city's construction instructions so that hazardous substances are systematically considered in both new buildings and renovations.

Holbæk, Denmark: A kindergarten that received DGNB Gold certification and prioritised life-cycle assessment, ecological quality and resource efficiency. Facades were made of salt-impregnated wood to avoid toxic wood preservative treatments.

Tallinn, Estonia built a kindergarten that emphasised the focus on tox-free materials, energy efficiency and circular construction. Using wood improved indoor conditions for children and reduced the CO_2 footprint.

Hamburg, Germany: Renovation of the parish house Maria Magdalena, with focus on updating meeting rooms and resolving issues with the roof. Parishioners were regularly informed and had the opportunity to participate in the planning process.

Riga, Latvia focused on tox-free, circular and climate-neutral renovation of Soviet-era housing and a social apartment. They prioritised eco-friendly materials, energy efficient windows, and waste sorting.

avoided', whereas these products needed to be individually approved before installation. All products are logged in the BVB[5] building logbook, ensuring long-term traceability of chemical content and reuse potential.

Holbæk, Denmark (74,935 inhabitants, end of 2025): In this pilot, a new kindergarten was built with a strong focus on life cycle assessment (LCA), social, economic and ecological quality and resource efficiency. The building received DGNB Gold certification (Deutsche Gesellschaft für Nachhaltiges Bauen), a German sustainability label for buildings. Large canopies both protect the building facade and the indoor environment from overheating. Shielding of windows and facades extends the lifespan of building materials, and salt-impregnated wood prevents the use of toxic wood preservatives. The roof is covered with roofing felt and grass, and indoor materials were selected for their natural and long-lasting properties, such as wood and linoleum. The BVB[5] system was used for material selection and logging.

The three examples demonstrate that tox-free, circular and climate-friendly construction is technically feasible today and that municipalities have the possibility to implement regulations stricter than the national laws to protect people's health and the environment.

The Power and Impact of Green Public Procurement (GPP)

Public procurement is directly and indirectly linked to around 15 % of global greenhouse gas emissions (about 7.5 billion tonnes annually)[6] and with over 250 000 public authorities about 2.5 trillion euros per year are spent on the purchase of services, works and supplies[7]. Hence GPP is one of the most powerful tools to shape an economy that is

more innovative, resource and energy efficient, and socially inclusive. Within the NHC3 project, the pilots showed that the three-pillar approach of tox-free, circular and climate-friendly construction in public procurement is socially accepted, transferable and a powerful driver for market transformation. When sustainability criteria like chemical transparency are clearly formulated, suppliers engage proactively, especially when future procurement opportunities are visible.

Policy Recommendations

Municipalities that want to protect their citizens' health and local environment cannot rely on national and EU regulations alone. Hazardous substances in building materials, circular solutions and sufficient climate standards are still not systematically addressed in current legislation. If municipalities want tox-free indoor environments and lower emissions, they need to go beyond the minimum requirements. The good news: they already have a strong tool. Green public procurement can start with small, targeted improvements in existing buildings and grow into city-wide initiatives that cover the entire building stock.

Green Public Buildings

Municipal building projects should consistently aim to be tox-free, circular and climate friendly. To achieve this:

- **Use a step-by-step process from concept to verification**

Apply a structured process, from the early phase to final verification, to plan and implement public construction projects (for example the 'Step-by-Step Guide of NHC3'). Complete the provided checklist in the step-by-step guide for each project phase and aim for an eco-certification for buildings. A shared overall goal helps to bring all construction stakeholders to the same level, simplifies communication and can already align design decisions with the final target (for example the preschool in Västerås adjusted the position of the building by 90° compared to the original plan, in order to optimise energy efficiency and sustainability).

Example for building certifications include DGNB, BNB, QNG, Nordic Swan, Miljöbyggnad, BREEAM, LEED.

- **Set clear targets to reduce harmful materials in construction.**

Define targets for the amount of 'Recommended' and 'To be avoided' products already in the planning phase. Materials should be free of substances of very high concern, equivalent concern and biocides. For an easy implementation, use as many third-party certified materials such as: Blauer Engel, M1, Nordic Swan. In addition, the NHC3 Building Material Catalogue can support the selection of products and the Interreg project ReactiveCity gives advice for a biocide-free, proactive city.

Västerås, Sweden required that at least 20 % of products should be certified as 'Recommended' and less than 5 % as 'To be avoided' under the BVB[5] system. Such targets should be progressively strengthened in future projects (see exemplary in Figure 4).

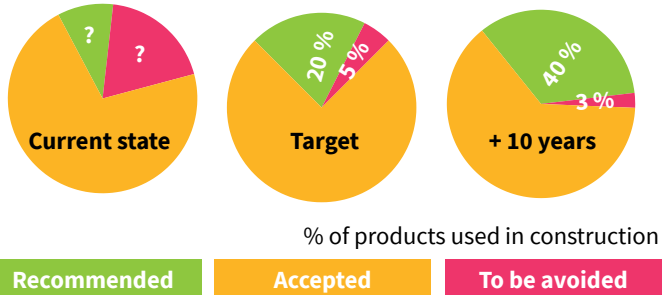


Figure 4: Integrated construction products in a building project, rated according to toxicity, circularity and climate-neutrality.

- **Calculate life-cycle costs instead of focusing on lowest-bidder procurement.**

As the initial costs of tox-free, circular and climate-friendly materials can appear higher, life-cycle assessment (LCA) and life-cycle costs should be integrated into selection criteria. Several pilots found that sustainable buildings can have lower operational costs (e.g., higher energy efficiency) and better, longer material performance. Therefore, environmental impact and life cycle costs should be a key element in public tenders.

Denmark has mandatory LCA calculations with implemented limit values for new buildings, taking into account all the life cycle stages defined by European standards (EN 15978) (Find out more).

- **Require a building logbook for all new constructions and renovations.**

All used materials and their chemical compounds should be logged in a building logbook (such as BVB[5] or Baubook) to provide information to all relevant stakeholders throughout the building life-cycle. Use the logbook to identify recyclable and reusable products and high-risk materials at the end of the building life-cycle.

- **Develop and share a criteria bank for public procurement.**

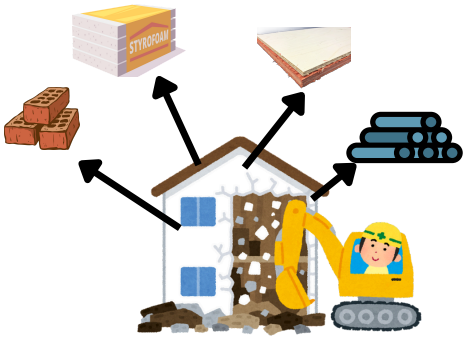
A criteria bank with standardised tender texts and requirements for tox-free, circular and climate-friendly construction helps different departments and other municipalities to reuse and adapt tested procurement wordings instead of starting from scratch each time. Example: Helsinki criteria bank

Establish mandatory pre-deconstruction audits and services

If buildings cannot be renovated or retrofitted, they should be selectively deconstructed rather than demolished in a conventional way. Pre-deconstruction audits help to identify components and materials with reuse or recycling potential.

- **Make pre-deconstruction audits mandatory** for all buildings or larger renovations. As a reference, municipalities can use existing guidance such as the EDA guidelines.
- **Provide guidance for private owners**. Offer a municipal helpline that explains to private owners which steps to take after a pre-deconstruction audit.
- **Promote platforms for reusable building materials**, such as Centrum för cirkulärt byggande – CCBuild, Loopfront, Restado.

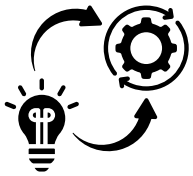
In Denmark all properties over 250 m² need to be resource-mapped prior to deconstruction. During dismantling, materials need to be mapped, separated and sorted for reuse or recycling. Any materials containing substances of concern must be identified and disposed of properly (Find out more).



Selective deconstruction instead of demolition.

Invest in capacity building and structured stakeholder interaction

- Train municipal staff and construction professionals. It is particularly important that the construction workforce has the skills and know-how to deliver tox-free, circular and climate-friendly construction projects.
- Support and join regional, national and European networks between cities to implement climate and circular measures. Joint initiatives can help municipalities to develop criteria together, share tender texts and exchange lessons learned.
- Join existing forums where municipalities can share their needs and experiences with EU institutions, helping to align local practice with the policy framework.



Dublin City Council piloted a passive house project and required the contractor to complete a Passive House Tradesperson's training course to ensure sufficient expertise[8].

Brussels offers skills development programmes with various circular construction training modules for companies to support broad and effective implementation of circular buildings (Homepage - Build Circular).

Within the NHC3 project, proactive municipal initiatives showed that tox-free, circular and climate-friendly constructions are achievable today. Municipalities have the potential to set their own stricter regulations to safeguard their citizens and environment.

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