

MODULE 3

Technical implementation phase

3.3. Construction and verification phases

Interreg
Baltic Sea Region



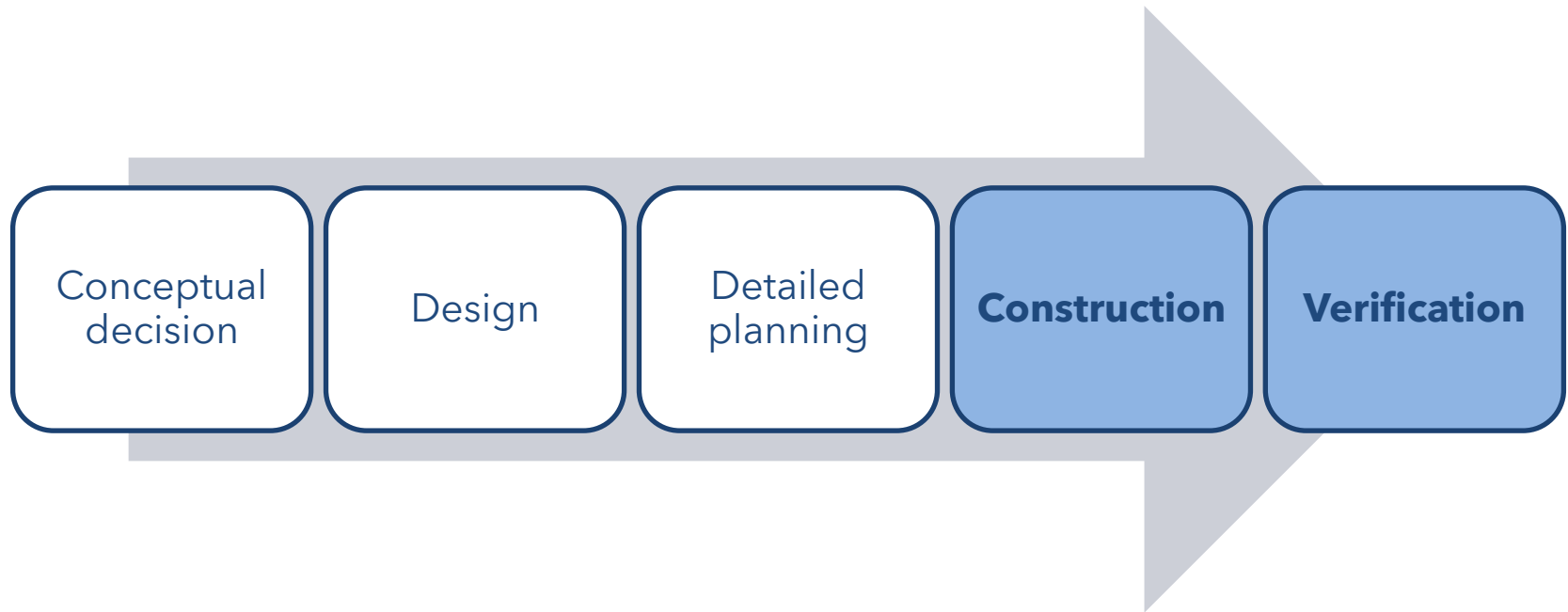
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NonHazCity 3

Construction and verification phase



Procurement of construction works

Criteria related to experience of the construction project manager:

- experience in construction of energy efficient buildings
- experience in installation and submission for exploitation of building energy management systems (BEMS)
- experience in installation of energy efficient water consumption systems
- experience in implementation of waste management plan, minimising waste amounts
- knowledge and experience to ensure possibilities for waste treatment outside the construction site



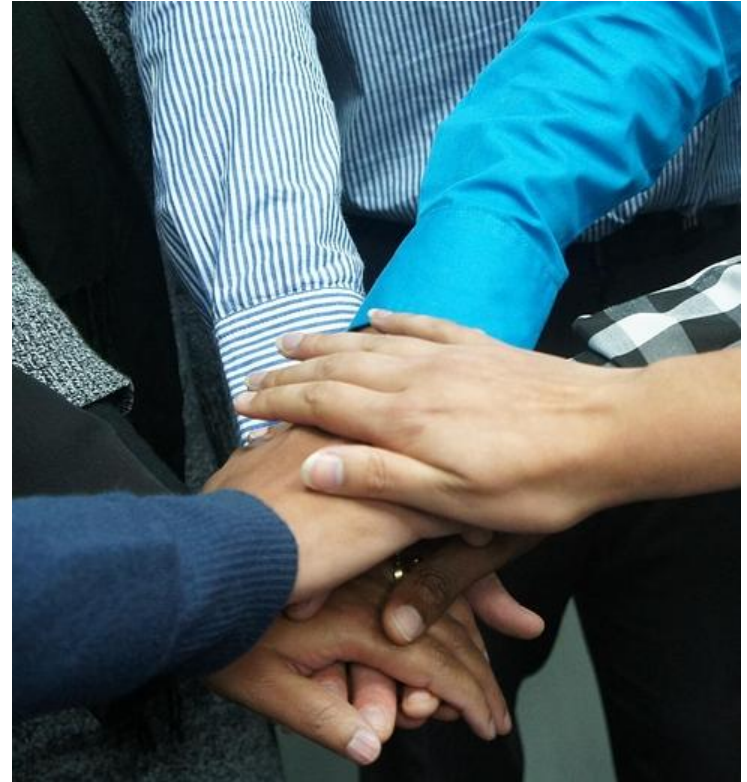
3 pillar criteria in technical specification

Pillars	Requirements in technical specification/terms of reference
Tox free	<ul style="list-style-type: none">▪ Requirements for impact of construction materials and finishing materials on indoor air quality e.g., concentration of VOC and Formaldehyde within the indoor air
Circular	<ul style="list-style-type: none">▪ Requirement for the waste management at the construction site e.g., limits for the volume of construction waste originating at a construction site
Climate neutral	<ul style="list-style-type: none">▪ Requirements for materials e.g., use of timber and timber products of legal origin e.g. timber or timber products used inside the construction must be legally harvested (e.g., FSC, PEFC certificates or equal according to EC regulation 995/2010)



Roles and responsibilities

- Clearly define roles for **implementation, supervision, and control**
- Ensure construction follows **approved designs and technical specifications**
- Apply **regular quality checks** and quality management procedures
- Maintain **continuous coordination** among all involved parties
- Organize **regular meetings** to identify deviations and agree on alternatives



Quality monitoring

- Measurement of quality through **indicators or key figures**
- Randomized **verification of invoices**
- **Survey** submitted to suppliers, clients or third parties (e.g., residents)
- Follow-up of **self-reporting from suppliers**
- Follow-up of **management systems** for environment and quality
- Notified or unannounced **follow-up visits to the supplier**
- Planned or randomized **audits of a supplier**



Verification

- Verification methods and tools shall be agreed and included in the **construction contract**
- The municipality may engage **external experts** to perform measurements and additional tests
- For buildings undergoing **eco-certification** (e.g. Nordic Swan, BREEAM, LEED, DGNB), verification is carried out by the relevant certification body



3 pillar criteria in verification

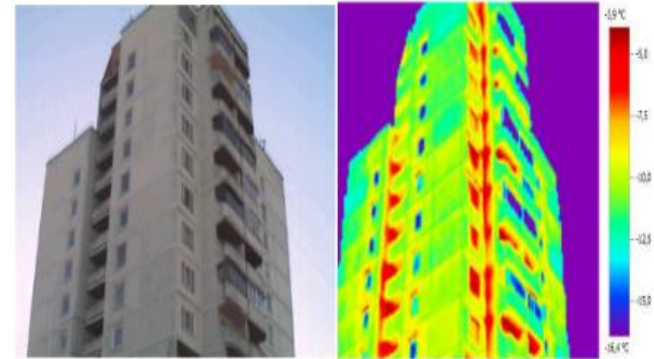
3 pillar approach	Verification methods and tools for new construction / extension / refurbishment
Tox free	<ul style="list-style-type: none">▪ Manufacturer documentation - declarations and technical datasheets confirming compliance with relevant standards and product requirements▪ Chemical safety and health compliance - Safety Data Sheets (SDS) in accordance with REACH Annex II for all chemical products used▪ Air quality measurements and analysis reports
Circular	<ul style="list-style-type: none">▪ Checking the logbook of materials used in the building during construction/ refurbishment/ extension works to identify if re-used/ recycled materials have been used
Climate neutral	<ul style="list-style-type: none">▪ Performing thermographic measurements to identify thermal bridges▪ Performing a blower door test to identify uncontrolled air leakages through the building envelope▪ Performing an energy audit and request for energy performance certificate



Performing tests & measurements

Air quality measurements:

- To check **the indoor air concentration** of volatile organic compounds and formaldehyde
- The obtained result shall be verified against the **maximum allowed concentrations**



Measurements of energy performance:

- **Thermographic measurements** to identify thermal bridges
- **Blower door test** to identify uncontrolled air leakages through the building envelope
- **Energy audit** and request for **energy performance certificate**



Best practice: Holbaek assessed the chemical content of used materials

- **Material assessment using BVB**

All materials were evaluated using the BVB database to support sustainable construction

- **Manual verification challenges**

Manual checks based on receipts and documentation were time-consuming and error-prone due to poor data quality

- **Confidence in sustainability outcomes**

BVB assessments confirmed high-quality materials and increased confidence in sustainability performance



Where to look further?

Step-by-step guide for the **process management** of toxfree, circular and climate-neutral construction at municipalities

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The NonHazCity draft set of practical guides for sustainable construction and construction materials
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Step-by-step guide for the process management of toxfree, circular and climate-neutral construction at municipalities

The NonHazCity guide for design & construction of tox-free, circular & climate friendly municipal buildings

Practical Guide

NHC3 Output 2.3
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The NHC guide for design & construction of tox-free, circular & climate friendly municipal buildings presents practical insights from pilot projects conducted under the NonHazCity3 initiative



Thank you!

Explore further:
[NonHazCity 3 - Interreg Baltic Sea Region](#)



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