Zentrales
Gebäudemanagement
Krefeld

Pulse generator

Sustainable procurement in municipalities using the example of the city of Krefeld

All photos: City of Krefeld

Daycare centre Weidenröschenweg
built in timber frame construction

STADT KREFELD
KREATIV – INNOVATIV – WELTOFFEN

Question / Contents

1. What is the general status of the application of sustainability criteria in public procurement?
2. How binding are the application specifications?
3. Application example
4. What is the experience with the implementation?
5. Conclusion

1. sustainability in public procurement

- Acting out of conviction! The standards for sustainable construction were drawn up following a workshop in Venlo town hall
- New construction and major renovations are regulated by building standards
- Implementation of the standards was decided by Krefeld politicians in September 2020 -> Involvement of decision-makers, continuous provision of information
- Focal points: Life cycle assessment, production of energy-efficient buildings, pollutant-free building materials, healthy buildings

1. sustainability in public procurement

Building standards

- Standards for municipal properties are based on the criteria of the BNB (Assessment System for Sustainable Building)
- Target agreements are defined by the internal project team in service phase 0 before the planning services are put out to tender
- Binding compliance with the standards through inclusion in the tender documents and in the contract with (general) planners / general contractors
- Traditional certification process (DGNB, BNB) only for outstanding large-scale projects

1. sustainability in public procurement

Focal points

- Reduction of global warming potential by applying a life cycle assessment in the planning process (variant analysis)
- Specifications on material requirements / compliance with the negative list (undesirable materials and substances in construction products)
- Minimise energy requirements, increase the proportion of renewable energies in the energy supply (no fossil fuels)
- Increased user satisfaction / increased user productivity through thermal comfort, good indoor air quality and acoustics and visual comfort
- Recycling-friendly products / components: easy to dismantle with a high degree of purity, use of C2C*-certified building materials

***Cradle to Cradle**
From the cradle to the cradle
= Closed raw material cycles

1. sustainability in public procurement

Problems

- Lack of capacity among planners for the preparation of life cycle assessments, LCC, simulations
- Experience currently shows that awarding contracts to individual specialist planning offices is not expedient due to the high coordination effort involved -> invitation to tender to general planning teams (contradiction to award guidelines, project-related justification required)
- Experience in the planning of sustainable buildings is unfortunately still too limited or only available to a limited extent
- Requirements do not currently include the maintenance of buildings. Development of easy-to-implement measures is pending (component catalogues of standard components, specifications)

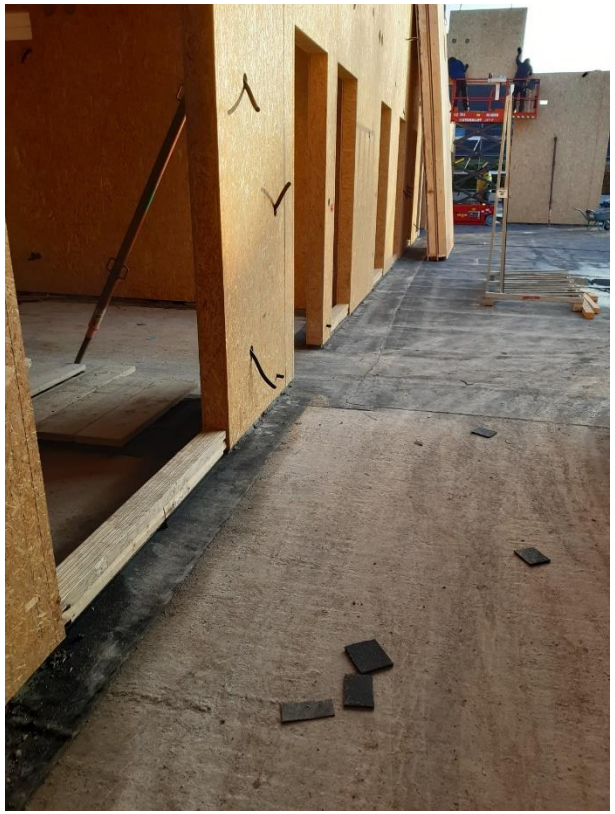
2. how binding are the application specifications?

- Once the political decision has been obtained, the standards are mandatory for the implementation of major construction projects in the city of Krefeld.
- There is a backlog of smaller-scale maintenance work.
- Project-related adjustments / changes may be made in the course of the project, which must then be duly justified.

3. best-practice example: Weidenröschenweg day care centre

- Planning was carried out by Central Facility Management up to LPH 2
- In the tendering process: implementation of the standards for sustainable construction (use of an evaluation matrix to determine the best bidder)
- Close project support from the ZGM project managers and verification of compliance with the specifications
- Quality assurance through (blower door tests, etc.)
- Completion August 2023: within the specified time frame by a total contractor

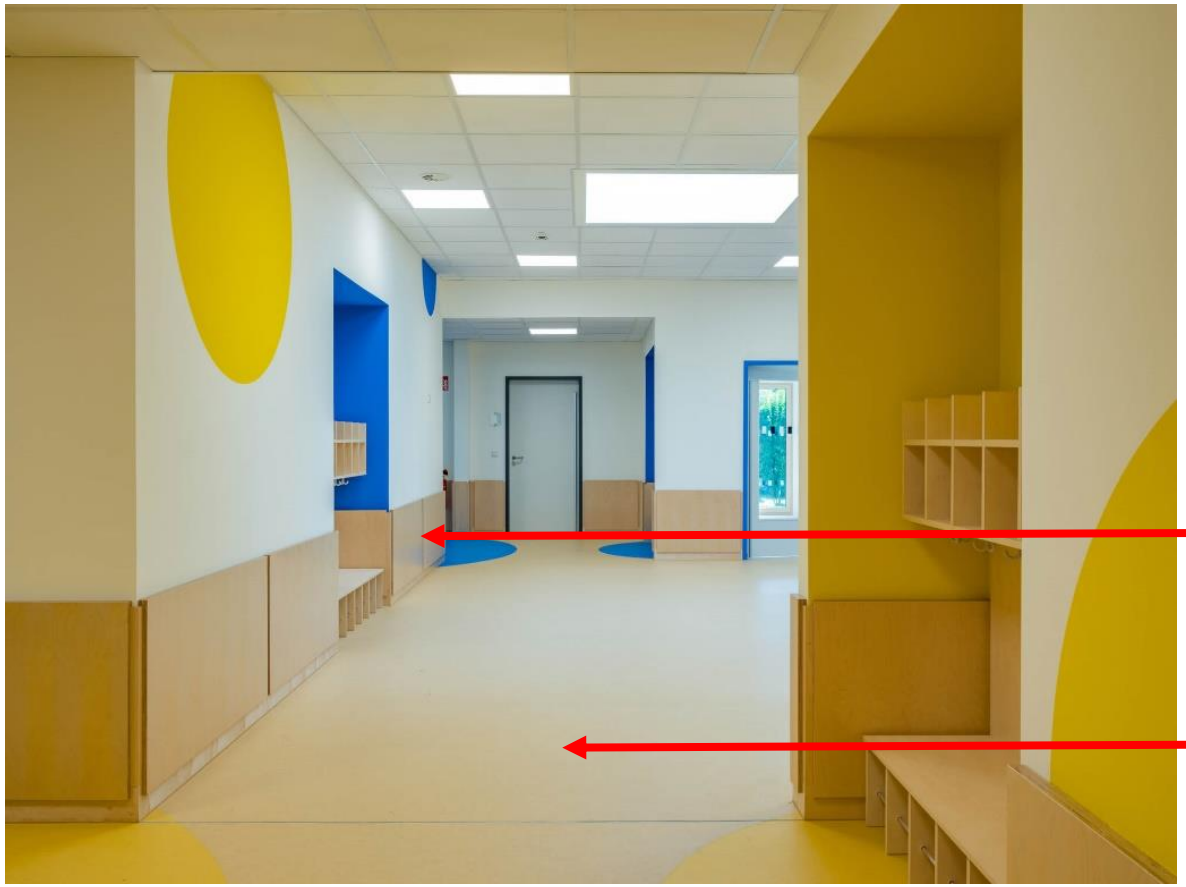
3. best-practice example: Weidenröschenweg day care centre



Characteristics for energy efficiency and use of renewable energies:

- Timber element construction, building envelope to passive house standard
- Photovoltaic system with green roof
- Heat pump with underfloor heating/cooling
- Ventilation system with heat recovery

3. best-practice example: Weidenröschenweg day care centre



Structural features (extract):

- Outer shell to passive house standard
- Example of non-destructive dismantling and reusability: scraper board in the play corridor can be removed and replaced individually, connections are plugged and screwed together
- Cradle to Cradle certified flooring: linoleum

3. best-practice example: Ritterstraße day care centre

- The property is located directly next to an existing daycare centre
- Land consolidation in the city centre

  (no new construction on a greenfield site)
- Brownfield valorisation and soil remediation
- Building is currently under construction

3. best-practice example: Ritterstraße day care centre

Characteristics for energy efficiency and use of renewable energies:

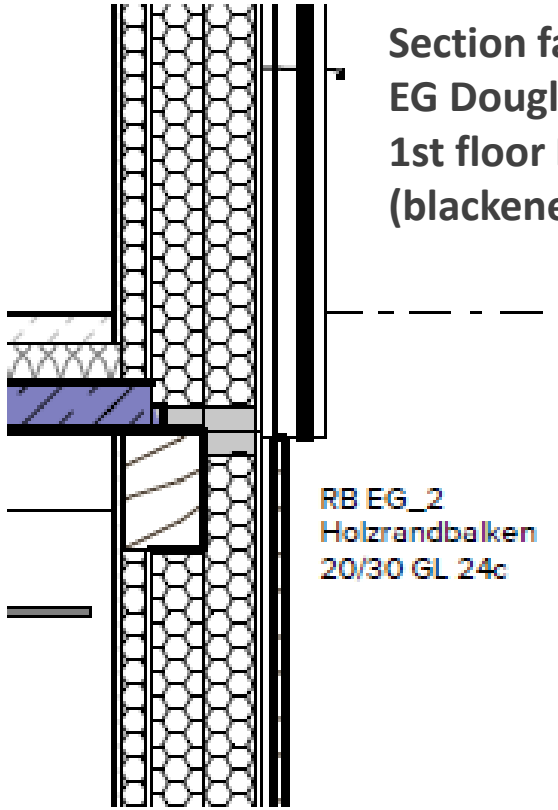
- Photovoltaic system with green roof
- District heating
- Underfloor heating
- Ventilation system with heat recovery

Source: nvg Architekten, Krefeld

3. best-practice example: Ritterstraße day care centre

Structural features (extract):

- Outer shell to passive house standard
- Hybrid construction: Floor slab, ceilings made of reinforced concrete, exterior walls made of wood with wood fibre insulation
- Installation wall on the room side to accommodate the necessary cabling, etc.
- Selection of ecological building materials: including wood fibre insulation and rubber flooring
- Please note: due to the higher thermal conductivity (WLG 040) of the wood fibre insulation, the overall structure of the exterior walls is 37.6 cm. For comparison: on the Weidenröschenweg building approx. 28 cm (mineral fibre insulation with WLG 032)



Section facade:
EG Douglas fir untreated
1st floor Douglas fir carbonised (blackened)

Source: nvg Architekten, Krefeld

4. experience in the realisation

Planning

- Consistent implementation of sustainability goals strongly dependent on the planner and his conviction -> recognisable differences in quality and price
- Lack of expertise at many offices, resulting in a limited number of bidders when awarding contracts
- Close co-operation between all specialist planners required, all must work towards the same goal
- Willingness to implement innovative approaches may also mean additional work for everyone involved

4. experience in the realisation

Execution

- Tenders that deviate from the standard can lead to a reduction in the number of bids received - price comparisons are difficult
- Depending on the trade and basic problem: availability of craftsmen difficult
- Experience with general contractors / planners has been positive so far
- Consistent construction supervision by project managers from all specialist disciplines required
- Quality control important in the follow-up (measurements, etc.)

4. experience in the realisation

Utilisation

- Users must be familiarised with the technical / structural components (manual on site)
- A healthy building can only remain healthy if the furniture / fixtures etc. installed are also free of harmful substances!

The Weidenröschenweg daycare centre went into operation in October. The users are very satisfied with the functionality of the centre. All other aspects will only be surveyed after a longer period of use.

5. conclusion

1. Experiences from projects must be analysed afterwards
2. Standards must be consistently updated
3. Further training and education of employees is important
4. Exchange in networks, including at municipal level, can provide assistance
5. Public relations work should not only serve to inform the population but also to encourage imitation

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Thank you very much

for your attention!

Randstraße day care centre, built in timber frame construction

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