BACKGROUND INFORMATION

PROCURER City of Helsinki

OBJECT OF PROCUREMENT
'Design and build' (DB) project for new apartment buildings, involving construction of buildings and plot areas based on the contractor's own plans. The construction project will be carried out on an overall responsibility basis. The client is the Helsinki Housing Production Department (Helsingin kaupungin asuntotuotanto, ATT). The apartment buildings will be built as rental apartments of Helsingin kaupungin asunnot (Heka) and right-of-occupancy apartments of Helsingin kaupungin asumisoikeusasunnot (Haso).

PROCUREMENT VALUE
Approximately €23 million

PROCUREMENT PROCEDURE
Open procurement procedure

Case: Asetelmakatu DB project

The goal is to gain a low-carbon design solution and its constructor

The Helsinki Housing Production Department is responsible for commissioning the City's own housing production in accordance with the City's goals. The Department currently commissions approximately 1,500 buildings a year, and the number will increase in the future with new residential areas and complementary construction.

The objective of the procurement was to find a low-carbon design solution for the construction project, that is high-quality and feasible in terms of architecture and the cityscape, as well as a constructor. The procurement was intended to reduce the project's climate and environmental impacts by setting several minimum requirements and comparison criteria to steer the design and the construction. The central goal was to find out what kind of a steering effect can be achieved with the carbon footprint of the project as part of the procurement's scoring.

The preparatory work utilised special expertise

An HVAC planning manager, developer architect and project manager from the Helsinki Housing Production Department took part in preparing the procurement. The Canemure project experts and climate specialists of the City of Helsinki Environmental Services supported the preparation. Experts from the Finnish Environment Institute and Motiva were consulted regarding the low-carbon objective of the project, while Bionova Oy served as a carbon footprint calculation consultant in the project.

The City's climate actions as a basis

Helsinki is currently developing its existing procurement criteria based on its climate goals and introducing new ones that take the lifecycle impact, circular economy and climate perspective into account better. The tendering for the Asetelmakatu DB project is one of the case procurements of the Towards Carbon Neutral Municipalities and Regions (Canemure) project, in which the objective is to implement the procurement in a low-carbon manner. At the same time, the project is piloting the suitability of carbon footprint calculation as a factor steering procurements. The output of the project will support the City's carbon neutrality actions.

The Asetelmakatu DB project was excellently suited as a case procurement, as it is located in the new Kuninkaantammi residential area, the design of which already features solutions related to climate change mitigation and adaptation. The themes of the Kuninkaantammi area include but are not limited to emphasising walking, biodiversity, circular economy, mass balance, energy efficiency, renewable energy production, wood construction, storm water processing, green roofs, urban farming and the green factor.

Climate criteria steering the design and implementation of the new construction project

In order to reduce the climate impact, the chosen supplier was required to have an ambitious attitude towards achieving a low-carbon solution for the design and implementation of the Asetelmakatu procurement subject. One of the goals of the tendering was to produce as small an E value and carbon footprint as possible, and various minimum requirements and recommendations were used to reach that goal. Furthermore, the Asetelmakatu zoning regulation already required the buildings to have a primarily wooden structure and to apply the principles of low-energy construction.

Climate criteria such as the following were used in the procurement:

- Information about the company's externally verified environmental management system
- The load-bearing frame of the building must have a primarily wooden structure. Furthermore, the use of wood is required in the outdoor and indoor facilities, with the fire safety of the building taken into consideration. The facades must have a primarily wooden upholstery.
- The sites must be planned and implemented so that the building-specific E value is no higher than 75 kWhE/m2/a, placing them in energy efficiency class A.
- The buildings must use renewable energy. The minimum requirement is that the buildings are equipped with a solar power system in accordance with the electrical technology requirements. The use of other forms of renewable energy, such as geothermal and/or solar heating, is recommended as well, as is using waste water heat recovery.
- A charging station for electric cars must be built in the parking hall.
- A centralised supply and exhaust air ventilation system equipped with a heat recovery function.
- In addition to the outdoor temperature, the heating control system must use weather forecasts.
- The ventilation systems' annual degree of efficiency must be at least 70%. The SFP value indicating the electrical efficiency of the ventilation system must not be higher than 1.6 kW/(m3/s).
- The design must favour sustainable solutions and materials.
- The apartment buildings and the parking hall construction site of the project must be implemented in a fossil-free manner.*

* In the context of this procurement, 'fossil-free' means that all worksite machinery is either electric or powered by biodiesel compliant with the EN 15940 (HVO/BTL) standard or similar. The use of worksite machinery powered by other types of fuel must be separately approved by the client. However, if a decision is made to connect the plots to the district heating network, district heating may be used during the construction project.

The carbon footprint of the offer will be monitored during the construction project

The competition was decided on the basis of architectural, technical and climate impact related quality matters and the price in accordance with the following scoring:

- **Qualitative comparison criteria, 50 points (50%)**
  - Environmental criteria, 20 points
    - Lifecycle carbon footprint of the project (residential buildings, parking hall and yard deck), 14 points
    - Energy efficiency (E value) exceeding the minimum requirement, 6 points
  - Architectural and technical quality, 30 points
- **Price, 50 points (50%)**

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As new environmental and climate criteria were included in the procurement, it would be important to listen to the market at least in the form of an information request.

Operators interested in tendering were given access to a commercial carbon footprint calculation tool for the duration of the tendering process. In addition to providing instructions for using the calculation tool, the client provided operators interested in tendering with training for using the tool. The carbon footprint estimation was carried out in accordance with the standard EN 15978 and the simplified procedure of the Ministry of the Environment's carbon footprint estimation method. Bionova, which served as a consultant, verified the carbon footprint calculations of the offers.

The achievement of a carbon footprint corresponding with the offer will be monitored during the construction project. The carbon footprint estimation of the construction project will be repeated in the planning phase before the construction phase begins, and again after the construction phase has ended. The carbon footprint in the planning phase must be equal to or smaller than the carbon footprint estimated in the tendering phase. If the result of the carbon footprint estimation carried out after the construction phase has ended is equal to or better than in the tendering phase, the client will grant the supplier a bonus. If the carbon footprint calculated in the tendering phase is not achieved, the client will have the right to impose a sanction on the supplier.

Dialogue with the market would have been a necessary step in standard conditions

Due to the urgent procurement schedule, no market dialogue could be arranged in connection with the preparatory work. Ordinarily, it would have been important to listen to the market at least in the form of an information request, as environmental and climate criteria that were new to the procurement unit were included in the procurement, such as the tendering phase carbon footprint calculation and the criteria for a fossil-free worksite. Thus, utilising market dialogue is seen as essential in the future, especially when introducing new criteria.

Challenges in the amount and scoring of offers

There are still relatively few wood construction operators in Finland, due to which the tenderer base was already limited and only two offers were received. As a result of the wood construction requirement, there was no major difference in the carbon footprint of the construction materials of the project between tenderers.

The preparatory work for the procurement progressed quickly, and the decision to include carbon footprint estimation as a comparison criterion was made rather late in the process. Having dialogue with the market would have been ideal when adding new criteria to the procurement. Arranging dialogue with the market could have also increased the attractiveness of the project to tenderers, as well as the amount of offers. Furthermore, the information available on the carbon footprints of construction projects is still limited, making it difficult to set threshold scores for the carbon footprint of the project. As there was no minimum level for the carbon footprint, the carbon footprint scoring process utilised interpolation, which was not a very viable method in a competition resulting in only two offers.

Climate criteria to guarantee low-carbon implementation of the project

The parties were happy with the agreement that was ultimately reached, and an architecturally ambitious solution from an operator specialising in wood construction was achieved with the procurement. However, the environmental criteria used in the comparison did not work exactly as hoped. There was no genuine competition in the end, as only two tenderers participated in the competition, and the proposal with more ambitious climate goals dropped out as the client entered negotiation procedure.

The environmental criteria applied to the procurement play an important role in reducing the environmental impact of the procurement. The wood structure requirement of the project, the carbon footprint estimation and the low E value, as well as the requirements for renewable energy and a fossil-free worksite, are particularly important in reducing the greenhouse gas emissions resulting from the procurement. The environmental criteria used served to communicate the City of Helsinki's ambitious climate goals to the market.

In terms of cost effects, it was concluded that the wood construction requirement raises the price of the procurement to a degree. The carbon footprint estimation and other environmental criteria were not assessed as having an effect on the price.

Low-carbon construction to be promoted in the future as well

The project provided valuable experience with using carbon footprint as a procurement comparison criterion. In the future, it will be surveyed how the carbon footprint can be used as comparison criterion in plot conveyance competitions, for example, in addition to DB projects. Additionally, it would be interesting to test the carbon footprint estimation in a location without the wood construction requirement. The fossil-free and low-emission worksite criteria will be applied in the future at all construction sites of the City of Helsinki.

Sufficient emphasis must be placed on the climate criteria

In order to ensure that the environmental and climate criteria selected for the scoring have a real impact and tenderers also see investing in them as sensible, the criteria must be given sufficient weighting. Based on the experiences from Asetelmakatu, the weighting should be at least 20% in similar competitions.

Co-operation between the client, environmental experts and procurement experts is very important in preparing a procurement. In addition to involving the market, external experts should be brought in when developing new kinds of criteria.

Sharing the knowledge

The lessons learned from the procurement will be useful in the future when the carbon footprint of new buildings is regulated by law. Comparing the carbon footprint of offers has potential to work, especially in DB projects, in which the planning and the construction are tendered out in the same package. In the conventional project model, the same goals can be achieved with good steering by the City in the planning phase.

The climate and environmental criteria used in the procurement can be applied to other projects as they are. If a minimum level can be set for the carbon footprint in the future, the carbon footprint can be scored in a more appropriate manner. Furthermore, when the carbon footprint information is requested as part of an offer, it must also be monitored during the construction process. In this tendering, the plan is to inspect the carbon footprint twice: once by the contractor in the planning phase and again by the client after the construction phase has ended. The result of those calculations is tied to a bonus-sanction model.

More information

The Asetelmakatu DB project is the City of Helsinki's first test platform for the criteria for a fossil-free worksite in building construction projects. The city of Helsinki has signed a green deal to reduce emissions at construction sites. With the deal city aims to achieve fossil free construction sites by the end of 2025, meaning they will not use fossil fuels. In addition, by 2030, at least 50 per cent of construction machinery and site transports will be powered by electricity, biogas or hydrogen.

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