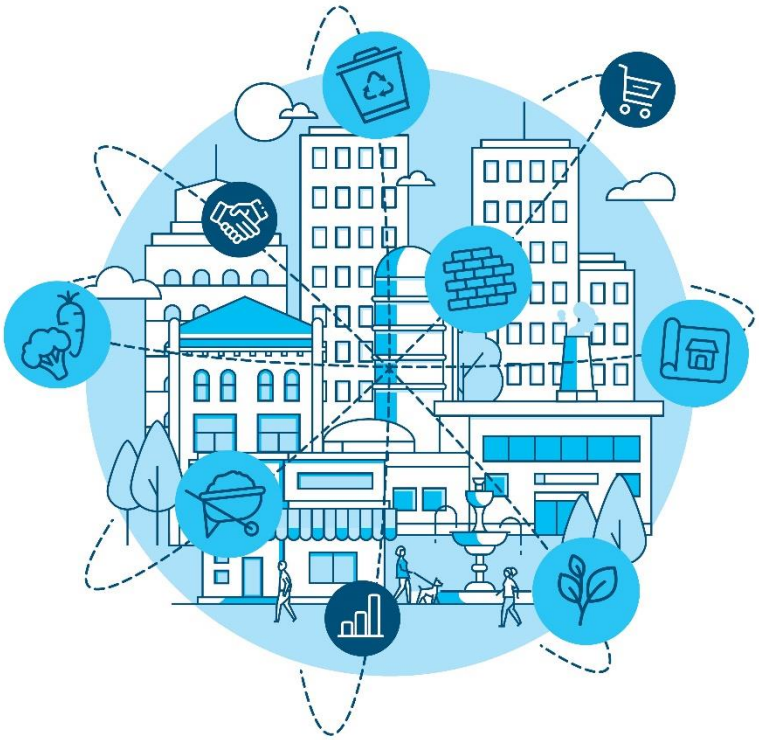
Circular procurement in Høje-Taastrup

Extract from the Demonstration Report

Høje-Taastrup, Denmark



Contents

This text describes Høje-Taastrup's experience in circular procurement in the demolition of the old City Hall and the construction of the new City Hall. The sections come from Høje-Taastrup's CityLoops demonstration report available here.

Transformation of old city hall grounds

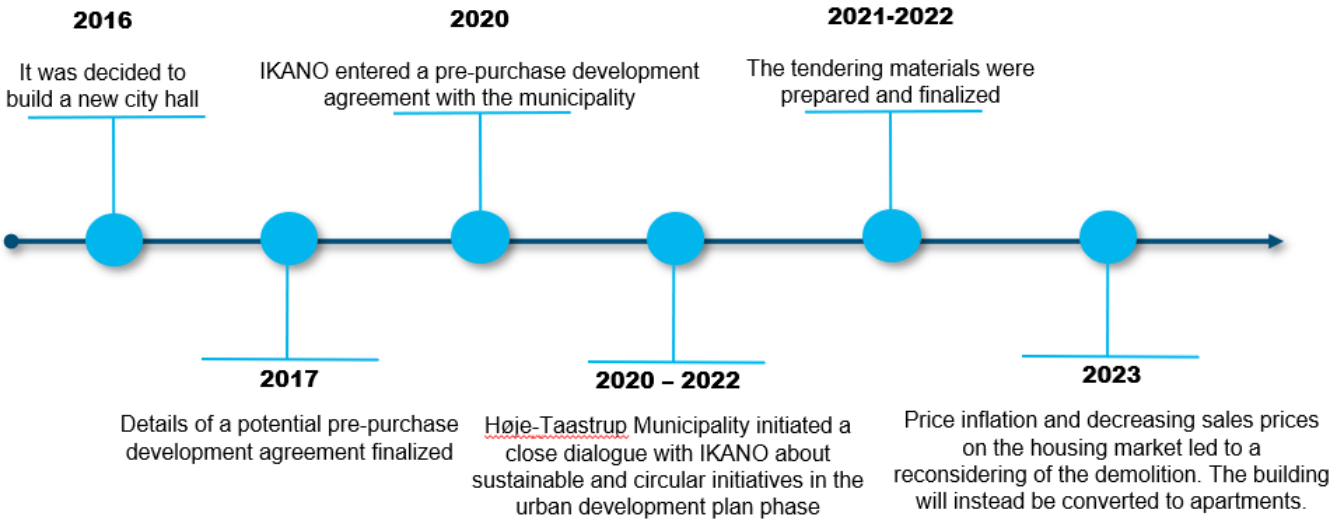
In 2016 it was decided that Høje-Taastrup would build a new city hall due to the need for extensive renovations in the existing city hall. It was furthermore decided that the municipality would sell the old city hall, and that the area would be developed into a residential area resembling the nearby old village of Høje-Taastrup. The old city hall and surrounding property would therefore be sold for demolition.

Høje-Taastrup municipality owned the property and was therefore responsible for selling it. The CityLoops project managers sought the opportunity to impose circular conditions in the tender about how the demolition should take place and how soil should be handled. The aim was to impose criteria ensuring that as much building material as possible should be reused, if possible, on-site, and as much soil as possible should be kept on-site.

According to the original plan, the demolition was planned to start in 2023. During the demolition process, the CityLoops project managers would be in close dialogue with the developer and the demolition contractor as well as potential buyers of the materials from the demolition. The reusable materials would be incorporated into new buildings or crushed on-site and used as filler. Some materials could also be used in other (yet unidentified) building projects off-site. Soil would be, as much as possible, either prevented from being dug up or reused on site. However, the high quality of the foundation and load-bearing structures of the building as well as price inflation and decreasing housing prices led the developer to reconsider demolition, and they are now working towards adaptive reuse for (part of) the old

city hall as apartments. Soft-stripping and partial demolition will still take place, but not within the CityLoops timeline.

Timeline for demonstration action 1: Selling the old city hall



Planning and decision-making process

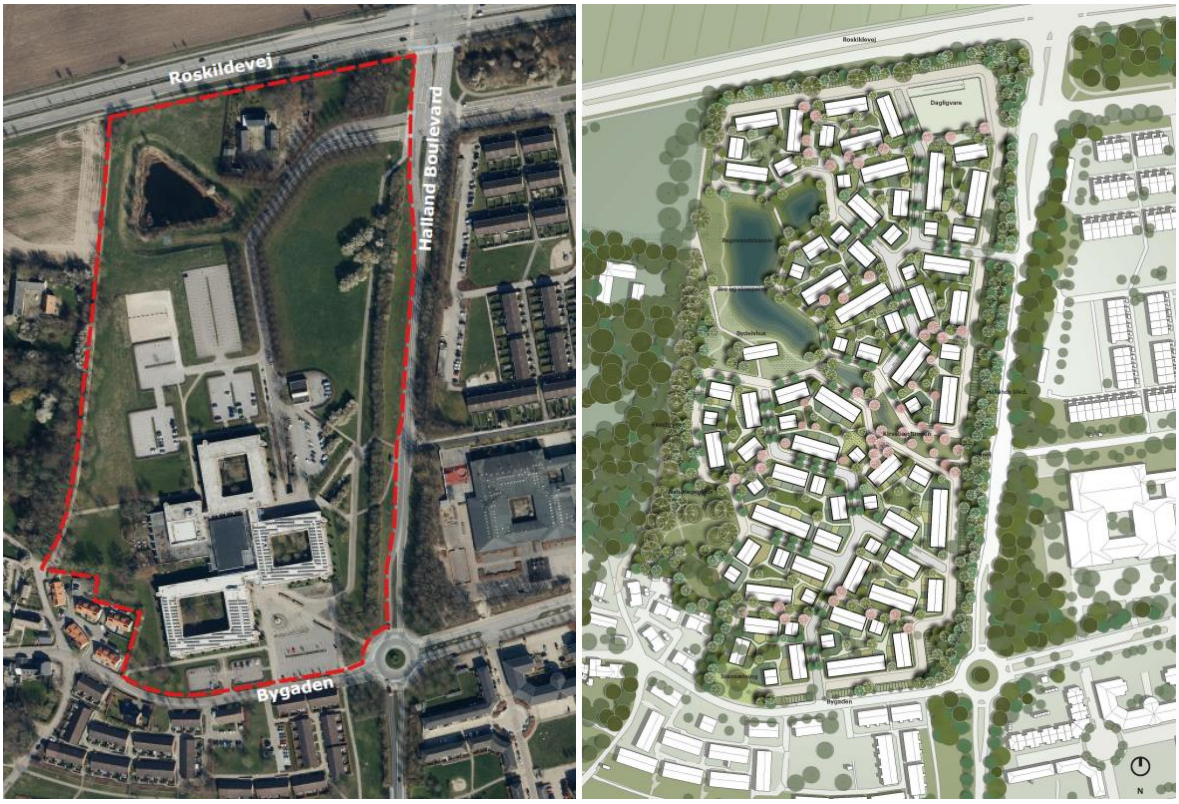
Pre-purchase development agreement

Danish procurement law allows private companies to participate in the planning of the development of urban areas under special circumstances. Hoping to secure such an agreement, in 2017 (pre-CityLoops) the municipality outlined the parameters of an agreement for developers to consider. IKANO approached the municipality hoping to make a pre-purchase development agreement with the urban development department based on this outline. An agreement was signed in 2020, and this allowed IKANO to influence how the property would be developed after the sale of the grounds. The city hall had to be sold on the open market, but the pre-purchase development agreement ensured that IKANO had the advantage of the opportunity to re-bid with a new price if another developer outbid IKANO. Particulars of the agreement were finalized before CityLoops and needed to be respected. This limited somewhat the scope of influence CityLoops could have as nothing could be changed in the project without IKANOs agreement.

Urban development plan

IKANO made a proposal for urban development of the area (including maps, sketches, materials, infrastructure, parking etc.) which constituted the basis for a formal urban development plan which was prepared by the urban planners in the municipality. The draft urban development plan for the area was in public hearing, after which the final development plan was rectified by the City Council. The final urban development plan is public: Lokalplan 2.05.3

The CityLoops project managers in cooperation with the development department initiated a close dialogue with IKANO about sustainable and circular initiatives in this phase. IKANO showed a great interest in circular and sustainable initiatives.



Existing city hall and map from the urban development plan showing the suggested locations of buildings, roads, green areas, parking etc.

Procurement: Tendering material for sale of grounds

The tendering material was prepared in 2020 and 2021 and finalized in early 2022. The urban development department in collaboration with the legal department were in charge of preparing the tendering material. The CityLoops project managers contributed sustainability and circularity criteria to the tender.

Formulation of circularity criteria

Circular requirements were formulated over the course of extensive dialogue with IKANO and the urban development department, and finally with help from consultant Niels Trap from TRE who has extensive experience with circular requirements in tendering. The criteria were limited by a combination of what legally can be required in public tendering (according to the Danish municipal power of attorney and fair competition), by political mandate to prioritize earnings from the sale over sustainability, as well as by the pre-purchase development agreement, which had to be complied with. It was not possible to make any major divergences from the agreement, as IKANO had the right to refuse any extra criteria that was not outlined in the agreement. The fact that this agreement was finalized pre-CityLoops

meant that it did not necessarily favor circular initiatives. Luckily, IKANO was open to most sustainability initiatives since sustainability is an important part of IKANO's company policy. Specific sustainability criteria were used where possible in the tendering materials under the limitations of the development plan. For instance, the initial urban development plan left no room for keeping some of the building as it is and reconstructing it into residential buildings.

The environmental department listed several other sustainability criteria (beyond CityLoops) as visions or intentions e.g., biodiversity in urban green areas, solar panels on the roofs, and excess heat from the grocery store to be rerouted to the district heating system. If IKANO did not win the bid for purchasing the property, the municipality's focus on sustainability would thus still be evident based on these criteria.

Circularity criteria in tender

The included requirements for demolition and recycling were (translated from Danish):

"*Høje-Taastrup municipality participates in the EU-supported Horizon2020 project CityLoops, and the demolition of the old city hall is included as a demonstration project within circular construction. The goal is that as much building material as possible must be recycled/reused, and as much soil as possible must be kept on site. The municipality therefore requires that demolition of the existing city hall abides by selective demolition and circular criteria upon selling the existing city hall:*

- *The buyer is obligated to abide by the requirements in appendix X when demolishing the parts of existing buildings which will not be used in conjunction with the development of the grounds. Appendix X describes requirements and documentation requirements in relation to:*
    - *Resource mapping/ pre-demolition screening – based on the identification of resources and the preparation of a resource mapping report, selective demolition is carried out ensuring that min. 80 percent by weight of the uncontaminated materials from the demolition of the city hall must be reused, recycled or recovered.*
    - *Requirements for reuse and recycling of materials in connection with the construction of a new communal building in the area.*
    - *Requirements for sustainable soil management including preparing an estimate of soil flux in conjunction with the development."*

Selected relevant sections of Appendix X: Criteria for demolition of Høje-Taastrup city hall and subsequent development of the area" are listed here (translated from Danish):

Requirements for reuse and recycling of material in the construction of the communal building:

"The community building must be constructed as much as possible with recycled materials. At least 5 percent by weight of the total new construction or 10 different types of building components/materials. The recycled components/materials can be either from the demolition of the city hall or from other suppliers.

At least 30 percent by weight of material used for the parking areas, paths and spaces around the new community building must be reused, recycled, or recovered material."

Requirements for sustainable soil management:

"The developer must prepare a plan for soil balance and estimation of soil flux for the development of the area. In conjunction with this, the developer must assess possibilities for limiting the amount of soil that is handled or removed from the area, for example based on knowledge of existing soil types in the area via geotechnical drilling as well as specific knowledge of future construction sites in the area.

The developer must assess the possibility of alternative foundation methods for buildings or roads/paths/parking areas such as lime stabilization to reduce the amount of soil that must be handled.

To support the sustainable soil management in the area CO2 calculations must be carried out using the CityLoops CO2 calculator."

Change of project

Due to market conditions as a result of increasing prices and discrepancies with the utilities company about a rainwater pond, IKANO has temporarily paused the development of the area.

IKANO is considering changing the whole project into transforming the existing buildings into housing instead of demolishing them. However, this will require a new urban plan, and therefore postpone the project significantly.

The CityLoops project managers have drafted a revised version of the circular criteria which come into effect if IKANO goes forward with the plan to leave the majority of existing structures standing. The updated criteria specify that structures do not need to be demolished, but the components that are still demolished or stripped still need to be demolished selectively with maximum direct recycling. It also specifies that structures that remain standing will be counted as 100% recycled.

At the time of publishing, the details of the project have not been finalized. The exact degree to which the building will be transformed rather than demolished has yet to be determined, as it will be based on the intersection of constantly changing market factors and the project budget.

Adaptive reuse vs demolition

Upon measuring the avoided CO2-emissions that would result from leaving the city hall building standing and converting it to housing rather than demolishing, it becomes very clear that this trumps all other circular initiatives that are based on recycling demolition waste by several orders of magnitude. A conservative estimate results in 2000 tons of CO2-savings (in

comparison, recycling concrete for the foundation of the new city hall resulted in 6.6 tons of CO2-savings). In addition, a rough estimate reveals a potential savings of more than 20.000 tons of raw materials.

This must therefore be emphasized as a first priority – both to others planning on doing circular building projects and internally within the municipality: If you can avoid demolishing and instead maintain and renovate the buildings you have, that is what you should do. Part of the reason the initiative to demolish the old city hall and build a new one even started was that the old city hall had not been well-maintained. This meant that the cumulative damage to the building due to things like leaky roofs made potential renovation seem like an insurmountable task. If you maintain the buildings you have, use them to their fullest potential, and renovate if you need them for another use, this will give the greatest natural resource and CO2-savings rather than building a new building (even if it is made of recycled materials).

Reflections on collaboration

The pre-purchase development agreement resulted in a very fruitful collaboration with the possible developer – with a practical and targeted vision of how the area could be developed. Pre-purchase development agreements are in general quite common in Denmark.

At an early stage, while the details of the pre-purchase development agreement were still being outlined (pre-CityLoops), one of the future CityLoops project managers, working in the environmental department, approached the urban development department to discuss the opportunities for including sustainability criteria when selling the old city hall. At the time, economic interests and perceived costs of sustainability initiatives dissuaded the urban development department from integrating any specific sustainability initiatives into the material. The pre-purchase development agreement was thus entered without specific sustainability criteria, but rather a recognition of intent towards sustainability. In the years since, there has been a change in focus such that sustainability has been a higher priority. When the idea of implementing circularity was brought up again in conjunction with more detailed planning of the tendering material for selling the grounds of the old city hall, the idea was embraced. The CityLoops project manager offered help formulating the criteria for the tendering material, and furthermore offered assistance from an experienced consultant. The collaboration and understanding between the urban development department, the urban planning department and the CityLoops project managers in the environmental department was a great advantage. The collaboration helped break down barriers between possible municipal silos.

While focus within the organization has shifted towards a higher prioritization and focus on sustainability, it is still largely left to chance on a case-by-case basis whether or not the people involved consider it or are given specific mandate to prioritize it. In order to ensure that circularity criteria are implemented in future similar cases/projects, a more structured approach must be established. This would involve, among other things, a requirement that

sustainability is considered at specific checkpoints in a project. This approach will be suggested in the future citywide sustainability strategy and action plan which the CityLoops project managers in the environmental department are in charge of, in cooperation with the internal sustainability group.

Lessons learned

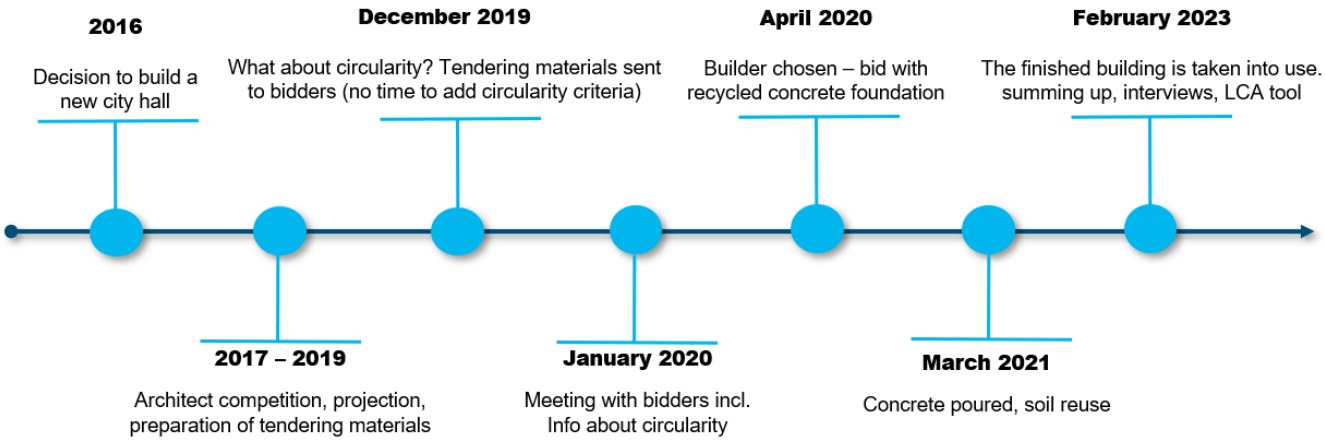
The process described above led to the following lessons learned:

- The CO2 and raw material savings from adaptive reuse of a building instead of demolishing it and constructing a new building far exceeds the potential savings from recycling building materials or other circular initiatives and should therefore be prioritized in future projects.
- The collaboration and understanding between the urban development department, the urban planners and the CityLoops project managers in the environmental department was a great advantage. The collaboration helped break down barriers between possible municipal silos.
- A fruitful pre-purchase collaboration is a great support in identifying possible circular actions. Future pre-purchase development agreements should include sustainability and circularity criteria, rather than leaving this for later in the process when the development partner can potentially refuse such initiatives or when previous agreements which are financially or legally difficult to modify can present barriers to circular initiatives.
- It is possible to successfully implement circularity criteria in the tendering of a building for demolition.
- A structured approach is required if sustainability criteria in the sale of municipal property is to become standard practice. Such an approach would involve sustainability being considered at specific checkpoints in a project. This approach will be suggested in the upcoming municipal sustainability strategy and action plan.
- IKANO has provided the feedback that the selective demolition tool developed through CityLoops is too long and heavy to read. The Danish standards for demolition already include a high degree of sorting, so for the consulting engineers reading the demolition guide it seemed merely to be a description of standard practice.

Construction of the new city hall

In 2016 it was decided that Høje-Taastrup would build a new city hall due to the need for extensive renovations in the existing city hall. The new city hall would be located in the planned urban development area Høje Taastrup C (HTC) as a way of kickstarting its development. At the same time, a part of the Taastrupgård neighborhood was earmarked to be demolished. The CityLoops project managers saw the opportunity to use material from the demolition in the construction of the new city hall. Therefore, the focus of this demonstration action was to recycle material from the demolition of Taastrupgård into the construction of the new city hall.

Timeline for demonstration action 2: New city hall



Planning and decision-making process

The municipal department of properties and internal service (CEIS) was in charge of the construction of the new city hall.

The architectural design competition took place in 2018. The winning design was chosen at the end of 2018. It was decided by the steering group that the city hall would aim for DGNB Gold certification.

There was no obligatory procedure at that time that would lead a dialogue to take place between the properties department and the environmental department regarding the project or the tendering process and as such the environmental department did not have any influence over the decision-making process. In 2018 there was however a short meeting between the properties department, the manager of the environmental department and the climate department where environmental issues were discussed. There was however no formal structure or mandate upon which various environmental initiatives could be considered and the meeting therefore did not result in any concrete changes to the project. There were no further collaborations between these departments at that stage of planning.

Soon, the plan to DGNB-certify was discarded due to economic considerations. In response to this decision, the CityLoops project managers as well as others in the environmental department and the internal sustainability group maximized pressure on the steering group of the new city hall. In mid-2019, the steering group returned to the initial plan in favor of DGNB certification. The environmental department was at the time not informed about the considerations that led to opting for DGNB certification in the end but have since been told that it was a result of the pressure put on the steering group.

The decision to go ahead with DGNB certification opened the door to new initiatives being considered in the city hall project. Selected employees (among others, one of the CityLoops project managers; the head of the environmental department; and the climate department) were invited in autumn 2019 to brainstorm about how potential initiatives could be implemented to obtain additional DGNB points. The CityLoops demonstration manager pointed out that the municipality had access to concrete from Taastrupgård (see section 3.2 above), which could be used as recycled aggregate. This opened the door for dialogue, and the project manager from the properties department was open to hear about the possibility of using recycled materials.

The decision to go through with DGNB certification came relatively soon before the tendering material was to be published, so there was very little time to integrate potential changes into the material. Just a few days before the material was published, the CityLoops demonstration manager was invited to a steering group meeting to pitch the idea of integrating recycled materials, specifically recycled concrete, into the construction. The initiative was welcomed by the steering group, on the condition that it would not be more expensive. Due to the timing, no specific criteria or requirements were added to the tendering material regarding recycled materials. Instead, information was added about Høje-Taastrups involvement in CityLoops and intention to promote circular economy.

Procurement: Tendering process for construction of new city hall

At the very last moment circular suggestions/options (but no requirements) were added to the tendering material. They were as follows (translated from Danish):

"Høje-Taastrup Municipality is involved in the project CityLoops, which is a Horizon 2020 project, with the aim of promoting circular economy within construction projects. The project must contribute to future-proofing the construction market to be able to meet the increasing demand for recycled materials in buildings.

In connection with the construction of the city hall, the municipality requests that reusable/recyclable materials are used wherever possible. We have a particular focus on the use of recycled concrete since we have access to a large amount of concrete waste from a local demolition, Taastrupgård (up to approx. 25,000 tons).

The concrete has been tested to assess the recycling potential. It is determined to be well suited for use as aggregate in new concrete or in new tiles.

Approximately 2000 tons of concrete are set aside for use as aggregate in tiles in the new neighborhood Høje-Taastrup C. The same type of recycled tile may be used on the city hall grounds.

In addition, the floor in the atrium of the city hall could also be made of concrete with recycled aggregates from the local demolition project. Recycled concrete may also be used for elements such as benches etc. on outdoor areas.

If the contractor sees opportunities for the inclusion of additional recycled elements such as panels of recycled wood, the municipality can, if necessary, help the contractor to identify a local source for these materials.

The municipality's involvement in the CityLoops project means that we, among other things, can contribute by offering access to advice regarding any special measures when using recycled concrete, preparation of the concrete recipe for recycled concrete, coordination assistance in connection with securing access to the concrete from the demolition, etc. The concrete will be stored within approx. 10 km from the construction site and as a rule are stored in pieces of up to 50 cm"

At a meeting in the beginning of January 2020, the 5 pre-qualified bidding contractors were informed that initiatives including recycled materials would be positively considered in conjunction with other bidding criteria, and that the municipality had access to concrete from the demolition in Taastrupgård. However, at the same time, the tendering material contained stipulations that could potentially block the use of recycled materials: namely, that well-tested materials should be used.

The contractor that ended up having the winning bid had investigated the possibility of using the recycled concrete in their construction and ended up proposing using recycled concrete in the foundation of the new city hall as a part of their offer.

Lessons learned

The key lesson learned is that successful recycling of concrete and use of 100% recycled stone aggregates in new concrete for the foundation of the new city hall was possible. This was achieved despite the fact that it was not specified in the initial tendering materials, but rather added as a possibility during the dialogue process with bidders.

Project planning

Early incorporation of sustainable initiatives into the project planning process is favorable, but this demonstration action showed that it is never too late. A last-minute, minor addition to the tendering material opened the possibility for using recycled concrete and emphasized the focus on sustainability, and this change was pivotal for incentivizing the contractors to consider recycled materials.

CITYLOOPS

CityLoops is an EU-funded project focusing on construction and demolition waste (CDW), including soil, and bio-waste, where seven European cities are piloting solutions to be more circular.

Høje-Taastrup and Roskilde (Denmark), Mikkeli (Finland), Apeldoorn (the Netherlands), Bodø (Norway), Porto (Portugal) and Seville (Spain) are the seven cities implementing a series of demonstration actions on CDW and soil, and bio-waste, and developing and testing over 30 new tools and processes.

Alongside these, a sector-wide circularity assessment and an urban circularity assessment are to be carried out in each of the cities. The former, to optimise the demonstration activities, whereas the latter to enable cities to effectively integrate circularity into planning and decision making. Another two key aspects of CityLoops are stakeholder engagement and circular procurement.

CityLoops started in October 2019 and will run until September 2023.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 821033.