

Circular Procurement in 8 Steps

Guideline for Residential and Non-Residential Construction



Circular procurement in 8 steps

CLICK TO GO TO THE STEP YOU WANT ►

There are always multiple disciplines involved in a procurement process. We have indicated for each step which discipline should at least be involved.



Internal client



Project manager



Procurement officer



Sustainability adviser



Contract manager

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Managing circular contracts

Challenging the market

We have to go all out to achieve our target of making the Netherlands 100% circular by 2050, according to the Circular Construction Economy Transition Team. This extends to the entire construction supply chain, from initial initiative and tendering phase to implementation and management. In the Implementation Programme, our focus is now on the demand side: circular commissioning practices.

As part of that, we are developing two Circular Procurement in 8 Steps guidelines. One for residential and non-residential construction and one for the civil and hydraulic engineering industry. The idea is to help clients and commissioning authorities incorporate circularity into construction projects. From formulating ambitions and getting everyone across the organisation to buy into them to putting out the right invitation to tender, organising the tendering process and the collaboration, ensuring circularity performance is guaranteed, and taking care of contract management.

Needless to say, the properties involved are always unique with their own location-specific opportunities. It always requires customisation. As a client or commissioning authority you can assess in advance where you can make the greatest circularity gains. On the one hand, the buyer's role is limited, as many of the design choices are made earlier on in the process. On the other hand, the buyer also has a key responsibility to incorporate circularity principles into the tendering procedure. Together, we represent major procurement

power, which we can harness to ensure a continuous stream of circular invitations to tender and to achieve some level of harmonisation on the demand side. This is how we challenge the market to - within several years - realise the targeted scale-up. Commissioning authorities in the public sector certainly have a task to fulfil as a launching customer.

This publication presents a wide range of fine examples: residential construction, non-residential construction, new builds and renovation projects, in the public sector or commercial property, large and small clients, and projects of all sizes. For each step, these cases will illustrate how circular procurement is already being put in practice.

The examples cover a broad array of ways in which organisations have gone down the road of circular procurement. Use them to your advantage! After all, there is no need to keep reinventing the wheel, it's okay to copy. There are plenty of possibilities, both in terms of what can be done and in terms of what is allowed. We need to come together as the construction supply chain to take important steps now and generate momentum in the demand for circular buildings. From the procurement domain, we can contribute significantly to a circular construction economy. Every step in the right direction is progress. So, take that step.

Elphi Nelissen

Chairman of the Circular Construction Economy Transition Team

'We have to go all out to be circular by 2050.'



From ambition to implementation

The Netherlands has high circular economy ambitions. We are working towards a ‘fully’ circular economy by 2050 and want to have reduced our primary material consumption by 50% by 2030. And in the Dutch Climate Agreement, we have agreed to reduce our carbon emissions by 95% by 2050, following a reduction target of 49% by 2030. These two ambitions have a major impact on construction practices in the Netherlands.

We are facing a considerable residential construction challenge: we need to have over a million extra homes built by 2030 and a significant part of our existing housing stock needs to be renovated over the coming period. This presents us with clear opportunities to take the most circular approach possible to this residential construction challenge, both for new builds and for renovations. In the non-residential construction domain, too, we face a clear renovation challenge that we will have to tackle with a circular approach. On top of that, the non-residential construction sector will also see regular new developments. For both these challenges, our aim must be to make projects as circular as possible!

The role of procurement

All of these projects will, of course, not go circular ‘just like that’... it is key for clients to clearly formulate what they want and need, so that market parties can start fulfilling these ambitions. In this respect, procurement does not seem all that exciting: it is traditionally (also in construction) primarily about

getting the best price-quality ratio, about getting the best value for money. Things only get interesting when you start harnessing your purchasing power to fire on the circular construction economy. Purchasing power is really an effective term to use in this context, as the specifications that you formulate can influence the (re)use of resources, circular design, and pave the way for technological developments. In this sense, procurement is the ultimate way to build a better world.

The more circularity requirements clients include in the specifications in the invitations to tender they submit to the market, the more advisers, building contractors, and suppliers will start to focus on circular developments. Creating this kind of demand can help accelerate the transition towards a circular construction economy.

Fortunately, numerous organisations have over the past years already shown that ‘circular procurement’ does indeed work in the context of constructi-





INTRODUCTION

on projects! In various projects, public-sector parties such as the central government, provincial authorities, local authorities, water boards, and housing corporations have gained experience with circular procurement. Companies in the private sector, too, are involved in developing demand for circular construction.

Definition of circular construction

This Guideline uses the definition of circular construction from the Circular Construction Economy Transition Agenda:

‘Circular construction means to develop, use, and reuse buildings, areas, and infrastructure without unnecessarily depleting natural resources, polluting the living environment, and damaging ecosystems. Building in a way that is economically sound and contributes to the well-being of people and animals alike. Here and there, now and later.’¹


The above definition means that, aside from the materials component, other natural resources such as energy and water must also be taken into account in circular construction projects.

Circular economy is more than technology

The transition to a circular (construction) economy is more than a technological challenge. Practical expe-

rience has shown time and time again that close collaboration between parties (including the client and contractor, as well as contracting disciplines between them) might perhaps offer the most important basis for a circular project. And a different kind of financial control is needed to realise circularity ambitions. The fact that shifts are needed in terms of technology, process, and finance is captured in the IPF model.

Reader’s guide

This Guideline is an adaptation of the previously published Circular Procurement in 8 Steps  and tailored specifically to residential and non-residential construction, i.e. which specifically outlines the action that can be taken in residential and non-residential construction. This more in-depth version is the product of interviews with various experts who have experience with circular procurement for residential and non-residential construction projects.

Step by step, this Guideline will guide you through a circular procurement process, with one or two real-life cases presented with each step. The target group is also made explicit for each step, because procuring a circular project requires a joint effort from the (internal) client, the project manager, the policy adviser (sustainability), a financial expert, the buyer, and the contract manager.

1] Circular Construction Economy Transition Agenda (2018)

Step 1. Circular procurement: why and what?

Research shows that there are as many as 114 different definitions of 'circular economy'.² Having that many definitions in circulation makes it hard to embark on a circular procurement process. After all, what exactly makes a building circular? And do you have the same idea of circularity as the potential contractors? How do you objectively establish who has submitted the most circular tender? Therefore, before you launch into the procurement process, it is important that you clearly formulate your circularity ambitions.

The importance of setting ambitions

Before you start the procurement process, it is important that you think about the ambitions for the project or your organisation. You may already have a sustainability or circularity policy in place that you can use as the basis, or perhaps your organisation has signed on to Manifestos or Green Deals. On the other hand, a (completed) project may end up bolstering an organisation's policy.

Explicitly setting ambitions makes it clear to everyone at your organisation, but also to the market, what you want to achieve with the project. This will prevent discussions during preparations for the project, as well as when assessing tenders (see step 6). After all, circular buildings come in different shapes and sizes - Allander's offices in Duiven, for example, were partly built using reused materials, Venlo's municipal office was built using many C2C-certified materials, and the temporary court building in Amsterdam is fully demountable. All these projects contribute to the circular construction economy, within the scope of each specific project. If you had to compare these three projects based on their circularity credentials, you would struggle.

By setting ambitions beforehand and clearly prioritising certain circular strategies, you provide direction and make it easier to compare the tenders you receive.

Circularity strategies

Figure 1 on the next page lists a number of circularity strategies that can help you set ambitions. Some of these strategies can be used for any project, such as 'decoupling', i.e. minimising the use of material to fulfil a functional need. Other strategies relate to choices that are context-specific and that you have to make as an organisation, such as the use of reused, bio-based, or recyclable materials. For every single project, it is key that you look at the

context of the project (again) to assess whether the ambitions are (still) relevant. Questions to ask in this assessment include the following:

- How long will the building be used?
- Will the building always serve the same purpose? If not, what possible purpose(s) might it have in the future?
- What design strategies could facilitate possible future repurposing?

Consequences of strategies for the subsequent process

In setting the ambitions, take into account that the various strategies also have consequences for how the project is handled. To illustrate this point, here are some consequences of three possible strategies:

- Using reused materials or products from the past (the recycling & upcycling column) requires a functionality-based formulation of the specifications (see step 3). After all, you do not know what reused materials will be available when the actual building work starts. The use of reused products often also pushes up labour costs, which may have an adverse effect on the overall business case. Finally, reused products often still do not come with a manufacturer's guarantee.

2] Kirchherr, J., Reike, D., Hekkert, M., 2017. 'Conceptualizing the Circular Economy: An Analysis of 114 definitions'. Resources, Conservation and Recycling, Volume 127, 221-232.

STEP 1. CIRCULAR PROCUREMENT: WHY AND WHAT?

- Using bio-based materials requires a critical approach. The fact that a material originates from a bio-based source does not automatically make it 'circular', because it may not be easy to reuse or recycle after having been processed. Besides processing, there are also other quality aspects that come into play here, such as production of bio-based materials not competing with food production, transportation of the material not producing unnecessary carbon emissions, and the growing of bio-based materials not harming the habitat of endangered species.
- Circular design strategies often depend on a project's context. A residential construction project in an urban environment, for example, may benefit from overdimensioning to be able to accommodate future repurposing of the building, while it is advisable in regions where the population is shrinking to design buildings that can be disassembled completely so that the materials can be used elsewhere.

Tips

- Set a clear ambition for the project that takes adequate account of the project's context.
- Be aware of the consequences of your ambition.
- Stick to the ambition throughout the entire procurement process. Run it by market parties (step 4) and make sure the selection and award criteria are in line with the ambition (step 6).









































	DECOUPLING	PRODUCT AND PRODUCTION DESIGN	RECYCLING AND UPCYCLING	VALUE CREATION
MATERIALS	 Reduce	 Eliminate	 Innovate	 Redesign
	 Robust	 Light materials	 Non-toxic substances	 Mono-material
COMPONENTS	 Light weight	 Multi-functional	 Standard-sizes & connections	 Adaptable
	 Long service life	 Accessible detachable connections	 Lean production	 Reuse product
SYSTEMS	 Light-weight	 Passive systems	 Modular design	 Changeable
	 Long service life	 Multiplicity	 Demountable design	 Lean production
BUILDING	 Refuse	 Multiplicity	 Adaptive design	 Integrated design
	 Passive systems	 Unbundling of systems	 Demountable design	 Design with excess
LOCATION	 Sustainable land use	 Geothermal energy	 Local production	 Removable foundations
	 Urban mining	 Phyto-remediation	 Industrial Metabolism	 Constructing a community

Figure 1 Circularity strategies (Source: Circulaire gebouwen, strategieën en praktijkvoorbeelden [Circular buildings, strategies, and practical examples], 2020).

Water Board Resources Factory

Rijn en IJssel water board

The joint Dutch water boards have created the concept of an Energy and Resources Factory to produce energy and extract resources from waste water. To channel these efforts, they defined a top 5 of resources, one of which is Kaumera, a polymer with properties that resemble those of alginate from seaweed. In the town of Zutphen, the Rijn en IJssel water board (Waterschap Rijn en IJssel (WRIJ)) will be building one of the first Kaumera production sites.

Based on the circular production of resources - Kaumera in this case - the idea is for the building that will house the system to also be aligned with the resource. While the water board has agreed on this circularity ambition internally, an exact direction for this circularity ambition has not yet been set. The precondition is, however, that it must be possible to realise the ambitions on budget.

In a joint process involving the water board's project team and an adviser, priorities were set for the material use and design of the building and the energy system. Given that the building is basically meant to tell the story of the resource (Kaumera), the priorities were set as follows:

1. From residual stream to resource. This ambition was split up into the following parts:
 - Use materials coming out of the water treatment process (for example the top 5 of resources, including Kaumera)
 - Use materials released from the water board's (property) portfolio
 - Circular design, whereby materials used can be reused in the future
2. Natural. Use natural materials, especially for the exterior
3. Energy neutrality As per the Trias Energetica.



Surhuisterveen fire station

Friesland Province security region

The Friesland Province security region faces the challenge of a constructional revamp of its 65 fire stations. Although the fire stations are largely the same type, there are also key differences among them due to the location and purpose of certain fire stations. The organisation has taken stock of the fire stations to decide on the order and intensity of the intervention.

Given the fact that the fire service is a public service, clear sustainable and circular ambitions were formulated prior to the project. These ambitions are based on the Nationwide Circular Economy Programme and the associated ambition for the construction industry to be fully circular by 2050. The ambitions are the following:

1. Energy neutrality
2. Circular, which is split up into the following priorities:
 - Demountable construction
 - Use of reused materials
 - Use of C2C or bio-based materials

In partnership with the JOUS architectural firm, they made a blueprint of a fire station, which also takes material use into account. The invitation to tender submitted to the market was, therefore, of a fairly technical nature. This prompted the security



region authorities to decide to submit a traditional invitation to tender to the market, whereby price is the leading principle.

The idea behind this was that the fire service wanted to award the contracts to local, small parties as much as possible, which do have a calculator but not a professional copywriter. Precisely because the fire service, as an organisation, depends on local volunteers,

it is important to strengthen the local economy. When inviting tenders based on ambitions, these local parties generally drop out of the race at an early stage. This led to a well-considered decision to use a traditional invitation to tender, which shifts the detailing of circularity ambitions to the initiation phase (with the JOUS architectural firm) and the implementation phase (with the winning building contractor).

The implementation phase is also when material use is discussed at construction meetings. The building contractor will be under a contractual best-effort obligation to introduce (circular) optimisations, for which the client reserves certain percentages of the total construction costs.

Contracting local parties through a private tender also brings the circular ambition to life. Instead of previous experience, it is the down-to-earthness and personal connection to the project that creates a healthy basis from which the contracted building contractors work towards realising circular ambitions.

The systematic refurbishment of a series of fire stations also makes it possible to draw on lessons learnt at the first fire station, i.e. the one in Surhuisterveen, in subsequent projects.

Step 2. Internal organisation and alignment

Step 2 is all about ensuring that the internal organisation has a clear and unequivocal idea of the project. This includes getting all stakeholders to back the ambitions set in step 1. What can be helpful for this step is to make a business case for the project, while also taking into account the costs and benefits of circular construction.

Circular procurement is multidisciplinary

Regardless of whether you work in an organisation that has building properties as its core business, making projects circular requires an approach that differs from that of traditional projects. As we will also see in subsequent steps, a collaborative approach with market parties is advisable. Such a collaborative external approach will, however, also require everyone internally to 'sing from the same hymn sheet'.

Therefore, start off by identifying the key pivotal figures in your organisation: who do you need to get on board to realise the circular ambitions? These could be figures from the following domains:

- Accommodation and/or facility services
- Asset manager
- Finance
- Strategy / sustainability
- Contract management
- Users
- Procurement

Make sure that key figures from these domains agree with and buy into the ambition from step 1 and the intended approach from steps 3 to 5. Keep them up to date and involve them regularly throughout the process, so as to maintain the level of support for the project.

Make a circular business case

Bear in mind the financial consequences of a circular project. Put together a business case beforehand, one that includes scope for long-term cost savings (TCO and TCU) and possible benefits of a successful circular project (see the case of the Venlo local authority).

The financial impact of a circular project depends on the ambition set at step 1. In the following, we will summarise a number of guidelines to go by in making a business case:

Reduced procurement needs

One aspect that is often overlooked, but that can have a positive impact on the business case, is that

the circular ambition can lead to a reduction in procurement needs. A smart design (such as decoupling), for example, can reduce material needs.

Material reuse

If the ambition is geared towards maximising the reuse of existing material, this can have an effect on the business case. On the one hand, it can push up costs due to higher design and implementation costs and the need to hedge the risks of reuse. On the other hand, there have been cases where reused materials are sold at a lower procurement price. Do bear in mind, however, that such a lower procurement price does not always apply, as the price of these products or materials also depends on the amount of labour involved in the disassembly and production process.

New circular material use

Setting the ambition to use new circular material will often - during this phase of the transition - have a cost-increasing effect. Investing in healthy materials often comes with a price tag, especially when the supplier in question has their product certified. In some cases, the as yet limited scale of production can lead to a greater price difference with non-circular alternatives. It is hoped that, in the long term, increasing demand and demand harmonisation will reduce this price difference.

Lower operating and maintenance costs

In the transition towards a circular construction economy, you will likely not focus solely on circular material use, but also have ambitions such as energy neutrality and responsible water cycles. While these ambitions may require investments, they will also bring down operating expenses (see the case of the Venlo local authority).

Aside from that, investing in high-quality materials can also bring down maintenance and replacement costs.

Residual value

The 'residual value' of building components and materials is a hot topic these days. To maximise this

residual value, it is important to design and assemble with demountability in mind. Given that a generally accepted way to determine the residual value of building components and materials is (at the time of writing this publication) still lacking, make sure that when you include this topic you either make a conservative estimate or coordinate material use yourself (as the developer), which gives you a better idea of residual value (see the case of the temporary court building in Amsterdam).

Multiple value creation

Perhaps slightly more abstract, but not unimportant, are the opportunities for multiple value creation. For some of these aspects of 'multiple value', it is more

or less accepted nowadays to capture them in a monetary euro amount, such as reduced sick leave thanks to a better interior climate. For other aspects, however, this is not yet generally accepted, such as shadow costs of the use of polluting materials. Despite still emerging developments in this area, we certainly want to encourage you to include these aspects in your business case.

Tips

- Garner support for your ambition (step 1) among key internal figures
- Make a business case featuring circular aspects and use this business case to garner and bolster support.



Impression of the exterior space of the Venlo municipal office

Venlo municipal office

Venlo local authority

In 2007, Venlo was the Netherlands' first municipality to embrace the Cradle2Cradle (C2C) philosophy. The Venlo local authority had several reasons for choosing to go down this road, including to retain highly educated professionals for the region, stimulate innovations in business, and raise the region's profile. What is striking about this case is that this ambition originally came from the regional Chamber of Commerce and ended up at the Economics department. The persons involved say that this fact may actually have been crucial for the ultimate success in the uptake of C2C: C2C was positioned as an economic means of strengthening the region.

In the planning process for the city's new municipal office, the C2C ambition was a key priority. A few months into the process, however, the credit crisis happened, forcing the city to cut its spending across the whole municipality. The new municipal office was the largest project they had in the pipeline at the time, and there were calls to scrap it. The project managers saw two possible scenarios for the project:

1. Scaling back the circularity ambitions by, for example, leaving out the green wall cladding for the front of the building, which has consequences for the integrated sustainable concept.

2. Providing proof of how investment in the circularity ambitions will in the long term produce cost savings.

In the end, they chose to work out the details of both scenarios and identify the financial consequences. For the 2nd scenario, they calculated the payback period (+/- 15 years) and the net present value of the various energy-saving and water-saving measures, such as triple gas, rainwater harvesting, solar panels, and LED lights. The business case looked at the initial investment, the possible replacement investment over a period of 40 years, and the savings over this same period.

Other 'values' such as reduced sick leave and the residual value of materials used were not taken into consideration in this business case. This was a conscious choice, because these benefits are still difficult to capture in specific terms. The net present value calculations showed that the annual water and energy savings exceeded the additional required annual investment of approx. €220,000. In specific terms, this means that the annual expense (cash flow) for the Venlo local authority would be lower than when not investing in the circularity measures. Based on these financial figures, a decision was made to maintain the ambitions in full.

By 2020, over four years after the opening of the municipal office, the expectations were amply exceeded. Where the original business case rests mainly on the energy and water savings, the healthy indoor climate and the reduced sick leave levels actually turned out to be the biggest benefit. Analysis has shown that the light, air, sound levels, and temperature in the office have all improved tremendously. On top of that, sick leave levels reduced by over 1% to 1.5%, delivering annual savings of at least €480,000 for the local authority.

Aside from that, the water and energy savings turned out to be greater than the calculations based on which the decision was made. Venlo's circularity ambition has been realised on budget (in fact, there was even money left over) and the quality delivered exceeded expectations, including in the area of health.

In this particular case, the business case was a decisive factor in boosting internal support for the project. The substantiation that the circular measures lead to a positive net present value laid a healthy basis for implementation of the project and getting everyone 'singing from the same hymn sheet'.

De Verwondering school building

PRISMA school board (Almere)

For over four decades, the PRISMA school board has been building new schools in the city of Almere. Sustainability is not a new topic for the school board, as they built their first school with a sustainability ambition as early as in 1984. For the development of a new school called De Verwondering, they again set ambitions for sustainability, wanting it to be an ecological school. The school is being built in the run-up to the 2022 Floriade Expo, making it an important and eye-catching project for the city of Almere as well.

The school board asked four architects to present their design for the school based on the ambitions. The architectural firm that was ultimately selected, ORGA Architect, detailed a number of construction concepts that invariably show the higher costs involved in the concept. A number of solutions were found in the technical domain, such as the 'open-air classroom'. The main discussion, however, was about the financial framework.

When developing schools, the local authority is the investor and the school board is responsible for operating the school. Due to this separation of roles, there is often a split incentive between the two parties, which in the planning process for De



Verwondering led to challenges with respect to the financial frameworks. However, the Almere local authority's ambitious sustainability requirements and the clear link between the school concept and the Floriade Expo showed the local officials that the building for 'De Verwondering' can contribute to Almere's overall urban concept. The social motives behind the project turned out to be sufficiently

convincing to bridge the split incentive and generate support between the school board and the local authority for realisation of the project.

The end result is the Netherlands' first fully ecological school, with clear references to nature in terms of material use, a closed water cycle, and green roofs.

Step 3. Formulating your question

Step 3 deals with the invitation to tender for the project. To what extent do you want to use the market's expertise to fulfil circular ambitions? And what does this mean for the formulation of the invitation to tender?

Functionality-oriented invitations to tender often help you get to the bottom of what you actually need, without this necessarily being linked to the solution. Obvious examples are asking for light instead of lamps or asking for a work environment instead of renting an office. By taking functionality (such as light) as the starting point, you create scope for tenderers to consider different solutions that can meet this need (such as a skylight, windows, atrium, lamps).

This way, the functionality-oriented invitation to tender also steers the thinking towards circular principles, including the prevention of material consumption. In the context of circular construction, experience has taught that you should make specifications as functionality-based as possible, but that you sometimes cannot get out of including specifications in technical terms. The basic idea is then to use technical specifications where necessary, and functionality-based specifications where possible.

Functionality-oriented invitation to tender

If you want to make the most of the market's expertise, taking a functionality-oriented approach to the invitation to tender is advisable. Needless to say, the best way to put together such a functionality-oriented invitation to tender is to have stakeholders from different domains brainstorm on how to handle the project, such as by setting up a construction team made up of representatives of the client and the contractor, or through an integrated contract. A functionality-oriented invitation to tender provides scope to create greater circular impact because it allows market parties to, for example, consider a different design that would involve less material use. In the most extreme case, the invitation to tender could even ask tenderers for an approach instead of a design, assessing not so much the design but the vision of the parties tendering for a project.

There are also downsides to functionality-based specifications: when an invitation to tender wants outline designs or even preliminary designs from different prospective contractors, for example, this may lead to higher transaction costs because the design is not made once but several times. Getting internal stakeholders on board is often also an issue, because illustrations of a building often help people get an idea of what it will be like, and such visuals are lacking with functionality-oriented specifications. The comparability of the tenders is also an issue, as these may be har-

der to compare objectively because there is no clear benchmark or baseline measurement against which you can check alternative proposals. Step 6 will go into the assessment of tenders in greater detail.

Technical invitation to tender

With a more technically oriented invitation to tender (such as based on technical specifications), many of the design and sometimes even material choices have already been made. This often aids internal support for the project, because all stakeholders 'know' exactly what will be built. In many cases, such an invitation to tender even includes a budget based on the preliminary design.

Even so, it still offers opportunities for circularity! You can, for example, ask the building contractor to propose optimisations with respect to the specifications and show how these optimisations increase circularity. These optimisations may, however, lead to additional costs. You could, therefore, consider including an additional item in the budget for 'circular measures' to pay for optimisations. Do bear in mind, however, that these will often be optimisations in the margins. When opting for technical specifications, you do already need to have a design that meets the circular construction principles that are aligned with the ambition.

The downside of technical specifications is that the design choices are often already set in stone, meaning that you are giving the market less scope to use its ex-

STEP 3. FORMULATING YOUR QUESTION

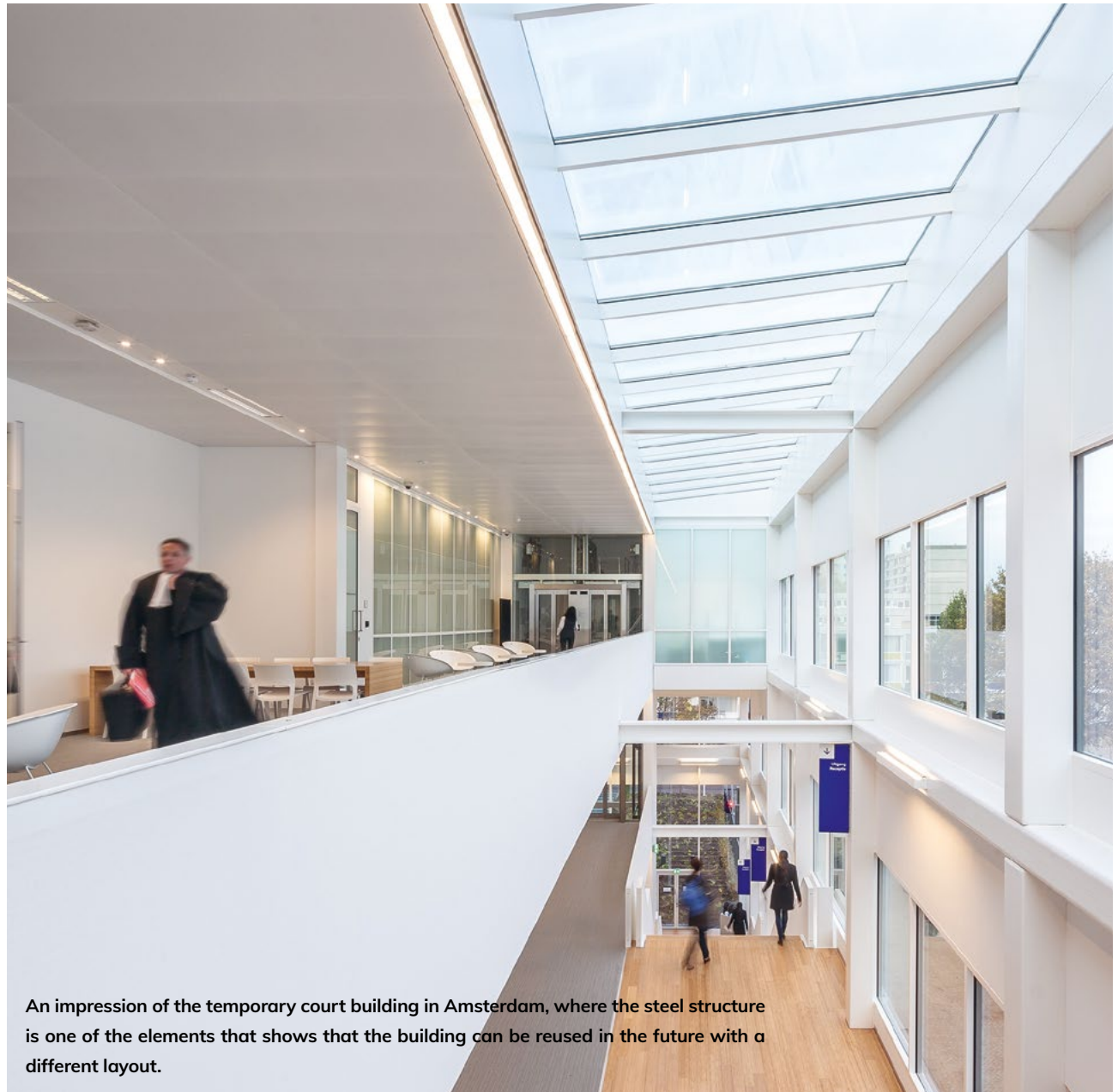
pertise. When issuing a technical invitation to tender, first make sure that you have solid circular expertise on the design team. Be aware of the fact that an invitation to tender based on technical specifications can lead to the traditional, fragmented dynamics between design and implementation disciplines about ambitions versus costs. It is quite conceivable that the circular gains you make following a technically oriented invitation to tender will be lower than those generated by a functionality-oriented invitation to tender, albeit that the transaction costs involved will be lower.

The middle course

In line with the principle of using technical specifications where necessary and functionality-oriented ones where possible, it is advisable to, for example, still have an architect work out a logistics plan for a building and to submit this logistics plan to the market. This will significantly reduce the transaction costs for market parties, because there is already a basis for the building's routing. The logistics plan can subsequently be used to further shape the invitation to tender in functional terms, and market parties can, in a consortium or otherwise, jointly consider how to best realise the circularity ambitions.

Tip

- Make an assessment of the extent to which you want the invitation to tender you issue to the market to be of a technical or functionality-oriented nature, whereby a functionality-oriented invitation to tender leaves greater leeway for market parties to propose circular design solutions.



An impression of the temporary court building in Amsterdam, where the steel structure is one of the elements that shows that the building can be reused in the future with a different layout.

Temporary court building

Dutch Government Property Management Agency

In 2014, the ‘temporary court building’ project was put out to contract through a competition-oriented dialogue. The temporary court building is intended to bridge the period between demolition of the existing court building in Amsterdam and the opening of the new court building that will be built in its place. The project needed to have an air of professionalism about it. At the same time, the Dutch government agency that commissions and manages all government-owned property (Rijksvastgoedbedrijf, or RVB) had specific circularity requirements for the project, as captured in the ambition of minimising material wastage.

They made a preliminary design for the project, including of the routing of the building. This was welcomed by the market, because it allowed interested parties to build on a complex logistics puzzle that has already been completed. Reflecting on the tendering process, it is important to have someone on the commissioning side who can make such a plan, as well as an adviser who knows when to stop planning so that market parties can use their own creativity and knowledge to help realise circularity and other ambitions.

During the selection phase, the focus was specifically on combining different disciplines from the

market (see also step 4). Through the technical competency requirements, the invitation to tender sought a consortium made up of at least an architect, a building contractor, a building physics consultant, and a maintenance provider. Out of the three candidates, two had a building contractor heading up the consortium, while the third, which ended up winning the contract, was a design-driven consortium. This may have been one of the decisive success factors for their tender, precisely because they assumed a design perspective, which allowed them to be very creative in coming up with possible solutions to technical and budget-related challenges.

The procedure (see step 5) – a competition-driven dialogue – created scope for consultations between candidates and the commissioning party. The parties first went through a selection phase, which led to three consortia being invited to the dialogue. The dialogue consisted of two individual rounds where the candidates engaged with the commissioning party and their advisers.

During the award phase, the topic of circularity was addressed through an Award Criterion that asked about ‘the degree to and way in which the design seeks to minimise material wastage given the temporary nature of the accommodation and it having

to be dismantled after having been used for approximately five years.’ In assessing the tenders, the focus was both on the environmental impact of the biggest part of the building mass, while also leaving scope for a qualitative assessment in the form of the proof and verifiability of the demounting concept. The latter assessment concept was quantified using the following rating method:

- Fully worked out plan with contract: 1.0
- Fully worked out plan without contract: 0.8
- Plausible plan: 0.6
- Plausible idea: 0.5

This semi-functionality-oriented invitation to tender made it possible for the consortium made up of the DuPrie construction and development company and Cepezed Projects (DPCP) to put together a tender that let them actually use their circular construction expertise. Aside from that, the temporary nature of the project offered scope to take a certain level of risk with respect to the actual reuse of the materials during the second use phase, which was a decisive factor for DPCP on the award criterion of ‘price’. The tender issued to the Dutch Government Property Management Agency factored in a residual value of the materials (see step 7), which also included the demounting and logistics costs involved in moving the materials elsewhere.

Step 4. Collaboration

Creating a circular economy is not something you can do on your own, and neither is building a circular building. Collaboration is needed - between the client and the contractor, but also between the various links in the (construction) supply chain. Step 4 goes into how to organise such collaboration.

The importance of collaboration

A construction project often involves conflicting interests. Clients generally want to pull off an ambitious project at the lowest possible price, while contractors sometimes have to compromise on (circular) ambitions to ensure a cost-neutral project. These interests are not easy to align. By making shared interests an explicit talking point during the procurement process and maintaining a dialogue about any individual interests that arise, you will create mutual understanding and a solid basis for a circular project.

And these same dynamics often also develop between the various disciplines in the construction supply chain. Partly due to the pressure to keep costs down, the parties involved have to split the proverbial 'pie' between them, which often leads to ambitions getting diluted. Turning these dynamics around can actually lead to a shared vision, which leads to innovative ideas that

help realise the circularity ambition while staying on budget. While you may be able to lay the foundation for collaboration during the tendering process, by using one or several of the means mentioned below, collaboration will also have to continue during the implementation phase. With this in mind, you should also think about how to achieve optimisations together after the contract has been awarded (see step 8).

With whom to collaborate

Before you start organising the collaboration, you should carefully consider with whom you want to strike up collaboration. Needless to say, this again depends on how technical or functionality-oriented your invitation to tender is:

- If you go for a more functionality-oriented invitation to tender, it is advisable to seek collaboration with a building contractor but also with parties from the design domain (such as an architect, installation adviser, structural engineer, building physics consultant). You can also ask suppliers about what is possible and not possible. They are, after all, up to date on the latest innovations in the market.³
- If you opt for a more technical focus in your invitation to tender, the design will most likely already have been set in stone. In that case, make sure you at least collaborate with the building contractor during the tendering process, but you could also collaborate with suppliers prior to the tendering process to check what is possible and not possible.

How to organise collaboration

There are various ways in which to seek collaboration: between client and contractor and between supply chain parties. In the following, we will go into the most common of these available collaboration options.

Technical competency requirements

If you want market parties to engage with each other to respond to a rather functionality-oriented invitation to tender, it is advisable to stimulate such collaboration by, for example, explicitly including experience with these disciplines in the technical competency requirements (see the cases of the temporary court building and Alliander's Duiven office).

Market consultation

Prior to publishing the invitation to tender or sending the invitation to tender to market parties, you can get market parties involved through a market consultation. A market consultation can take different forms, including:

- A plenary meeting
- Individual 1-on-1 meetings
- A written Request for Information to the market

³ Bear in mind that product and material innovations often involve intellectual property, and that you will also have to compensate parties that have invested in a development or innovation process and cannot ask them to just share all of their knowledge with any competitors.



Impression of the Biosintrum building in the municipality of Ooststellingwerf

A market consultation can serve various different purposes. You can use it to check the feasibility of your ambitions or intended procurement procedure, but you could also use it as a way to ask the market what is possible and what is not. Generally, the experience is that an 'in-person' format for a market consultation, i.e. a plenary meeting or individual 1-on-1 meetings, produces the most insights, because it allows you to ask further questions. A plenary meeting also offers the opportunity to stimulate collaboration between disciplines.

Information session

After publishing or sending an invitation to tender, you can convene an information session to explain the specifics of the invitation to tender. This is also

an opportunity to answer any initial questions. Doing this verbally can prove beneficial.

Dialogue

Throughout the procurement procedure, you can bolster collaboration by organising some form of dialogue, such as a competition-oriented dialogue, which involves scheduling dialogue sessions prior to the submission of tenders to create opportunities for both sides to ask questions about the invitation to tender and the intended tender. A Competition Procedure with a negotiation element is also an option, albeit that market parties often find it less suitable because a provisional tender has already been submitted and there is less scope to 'innovate' based on the talks.

Finally, another option is to include an interview in the procurement procedure. This interview will then effectively be supplementary to the written tender and an explanation to the proposal. It can help eliminate any lack of clarity and enable better 'assessment' of tenders.

Tips

- As a client, adopt and maintain a collaborative attitude during the procurement process.
- Actively engage with market parties to validate to what extent what you are asking for is possible and verify the feasibility of the intended procurement process. You can do this either prior to or during the tendering process.
- Incorporate input from market parties in your specifications and/or procedure.

Biosintrum building

Ooststellingwerf local authority

How the Biosintrum knowledge centre for the bio-based economy came about is an extraordinary story. The original idea stems from the intention to create a sustainable business park around the planned new EcoStyle offices. As the local authority became more closely involved in the plans for such a business park, they saw an opportunity to position sustainability and the bio-based economy in particular as an economic magnet that would draw businesses to the municipality.

In working towards a strong position in the bio-based economy, the first step was to write a policy vision document specifying an implementation programme for the bio-based economy (2016-2020). Besides building the Biosintrum knowledge centre, various projects were initiated that had to contribute to Ooststellingwerf's positioning as the number 1 knowledge hub for the bio-based economy.

During the concept phase, the idea for the Biosintrum centre shifted to that of a knowledge centre for the bio-based economy, a place where companies, governments, and educational institutions can come together. In the end, the local authority became the commissioning authority for the building.

Driven by the ambition to put Ooststellingwerf on the map as the number 1 knowledge hub for the bio-based economy, a conscious decision was made to focus on developing local knowledge on bio-based construction. Seeing as the project costs stayed below the European tendering threshold, the commissioning authority was able to invite multiple private tenders. The aim was to get as many local parties as possible involved in the project. Three local building contractors were encouraged to team up to build the Biosintrum centre. After a hesitant start, they even ended up creating a new company called Natuurlijk Bouwen B.V. The building contractors invested in developing their knowledge in the area of sustainable and bio-based construction and were ultimately awarded the contract to build the Biosintrum centre.

The exception to the 'local' rule was the architect, based on the belief that this is an essential discipline in achieving the bio-based goals, and because such knowledge was not available locally. Multiple private tenders were also invited for the architect selection process, whereby three firms were asked to submit their vision on (i) sustainability and the bio-based economy and (ii) the process. The firms were also asked to submit details of reference projects. Based on these - qualitative - award criteria, Paul de Ruiter



Architects was selected to be the architect on the construction team made up of parties from the commissioning side and the contractor side.

'Collaboration is a key prerequisite for circular construction, but sometimes it is actually good to put parties together that do not yet know each other,' says Bert Krikke, who coordinated the development of the Biosintrum centre until the start of construction. 'The different perspectives are precisely what produces innovative ideas and mindsets.'

Sports Centre

Wageningen local authority

The Wageningen local authority was very early in setting itself high circularity ambitions, requiring, for example, that all projects over €50,000 be put out to contract based on circularity. Since the intended sports centre exceeded this threshold value, the invitation to tender asked the market for tenders that fit within the circular economy.

During the project preparations, a broad range of representatives from market parties were involved in the ambition: not only architects, building contractors, and installation advisers, but also manufacturers and suppliers of materials and building elements. After all, these latter two parties have the most product knowledge. The local authority actively reached out to parties, both directly and on social media, because manufacturers and suppliers are generally not on TenderNed or other tendering platforms.

The market consultation consisted of two steps. First of all, they issued a so-called Request for Information (RFI). This RFI allowed the local authority to, in a very low-threshold manner, validate the feasibility of the various circularity requirements among market parties. This included requesting information about the use of chromed parts (chromium IV) and the prevention of formaldehyde additives in materials used. The information received in response to the RFI was used to set the specifications and criteria: if everyone was able to meet a specific aspect, it was used as a specification; if not everyone was able to, it was included as an award criterion; and if virtually no market party was able to provide that aspect, it was left out.

Secondly, a 'dynamic market exploration' was organised. The parties that responded to the RFI were invited to attend this (plenary) meeting in person. First of all, there was training on how the circularity credentials would be determined for



this project (PRP®), following which those attending were asked to assess the feasibility of the various identified specifications and opportunities from the RFI. This included an explicit question as to whom and what the parties would need to meet the circularity requirements.

This intensive market consultation ultimately produced a clear idea of what the market parties can and cannot do, enabling the local authority to submit a feasible and proportional circular schedule of requirements to the market. Although the circular schedule of requirements was used as the basis for the invitation to tender, most of the circular performance was achieved during the sustainable development and implementation phase. During this phase, the building contractor, Rotsbouw, was under a best-effort obligation to help boost circularity.

Step 5. Tendering procedure

Although the tendering procedure may feel like a formality - especially when you are under an obligation to put contracts out to tender - the procedure you choose can be decisive in realising your circularity ambitions. As detailed in step 4, collaboration between market parties is very important, and you can lay the foundation for it in the tendering procedure.

Does your organisation have a commissioning authority?

Are you, as an organisation, under an obligation to put contracts out to tender? Governments and public bodies are subject to tendering rules for contracts upwards of a certain size. As a private-sector party, you have greater freedom, because you are not bound by European or national tendering rules. The idea behind tendering rules is, however, to stimulate fair market forces. Even as a private-sector party, you could consider designing your procedure based on these tendering principles. Please note that as soon as something looks like a tendering procedure, you are under an obligation to adhere to the Dutch Public Procurement Act, even as a private-sector party.

Principles of a (circular) tendering procedure

If you are under an obligation to put contracts out to tender, you must abide by the four principles for tendering. These are of a general nature and laid down by law:⁴

- 1 Non-discrimination: you cannot distinguish between tendering parties based on nationality.
- 2 Equal treatment: all market parties that take part in the tendering procedure must be given the same information. You are also under an obligation to judge all parties in the same objective way.
- 3 Transparency: it must be clear to all market parties what is expected from them. You must provide clear reasons for the decisions you make as the client/commissioning authority.
- 4 Proportionality: the procedure itself and its contents, including the specifications and criteria, must be in proportion to the nature and scope of the contract.

In addition to the legal principles mentioned above, experience has shown that there are two additional principles that are important in getting (circular) tenders for a contract:

- 5 Collaboration: within the appropriate legal frameworks, stimulate collaboration between client and market parties and use the tendering procedure to bridge the gap that traditionally exists between both sides, such as by engaging in dialogue.

- 6 Innovation: make it possible to stimulate innovation and circular developments within the context of the tendering procedure. For the innovative component, what you need first and foremost is sufficient 'scope' in the invitation to tender for parties to be able to develop innovations (such as by making the invitation to tender one that is focused on functionality), while a dialogue is also an important means to this end.

Procedure selection

What kind of procedure you choose depends first and foremost on whether or not you are a commissioning authority, albeit that the size of the project is an important factor to make sure the procedure is in proportion to the size of the contract. The table on the next page provides a rundown of the procedures that are available to governments and public-law bodies, taking into account that these are subject to more rules.

Tip

- Make sure you choose a tendering procedure that matches the project; points to consider include proportionality, stimulating collaboration, and allowing scope for innovation.

⁴ PIANOO, 2018. What are the EU tendering principles?



Procedure	National procedure	EU procedure	Number tenderers	Transaction costs	Collaboration	Stimulating innovation	Comments
Single private tender	< €150,000		1	Low	Low	Low	
Multiple private tender	< €1.5m		3-5	Low	Low*	Low*	
Public	< €5.350m	> €5.350m	unlimited	Low	Low	Low	
Non-public	< €5.350m	> €5.350m	unlimited → 3-5	Low	Low	Low	
Competition-oriented dialogue	N/A	> €5.350m	unlimited → 3-5	High	High	High	
Competition procedure with negotiations	N/A	> €5.350m	unlimited → 3-5	High	Medium	Medium	
Innovation partnership	N/A	> €5.350m	unlimited, further selection(s)	High	High	High	Legal feasibility unclear for building

* Unless dialogue is also included

Figure 2 Summary of the main features of the various tendering procedures.

Vondeltuין redevelopment

Amsterdam local authority

When it comes to the circular economy, the Amsterdam local authority has solid ambitions. They want to be a circular city by 2050. In 2018, the local authority decided to redevelop Vondeltuין, a hospitality establishment in the city's iconic Vondelpark. Owing to the establishment's unique position in the city, the building is owned by the local authority. The new and improved Vondeltuין had to open in early 2020. The small scale of the project made it an ideal pilot project within the city's circular economy programme.

The first step in tackling this project was to formulate the ambitions for it. The city set itself aesthetic ambitions, technical ambitions, and process-related ambitions:

1. A circular development with a focus on energy, materials, and water
2. Close collaboration between market parties, client, operator of the hospitality business, and local residents
3. Vondeltuין as a contemporary architectural icon

Due to its size, the project stayed below the EU tendering threshold, allowing the city to put the contract out to multiple private tender. Based on the ambitions, the intention was to initiate a design-driven invitation to tender, whereby the



architect was to take the lead in forming a consortium.

In order to ensure a solid preselection, they held telephone interviews with fifteen architects, following which seven of them were invited to a personal introductory meeting. Based on these interviews and meetings, three architects were selected to take part in the official tendering procedure.

The architects were subsequently asked to compile a team that they believed would allow them to flesh out and implement the contract. With these parties, they entered into a low-key dialogue phase to gauge mutual expectations and approaches. The local authority, the operator of the hospitality business, and local residents all played a role in assessing the tenders, which created support for the winning consortium among all these stakeholders.

Alliander office transformation

Alliander, Duiven

In 2010, Alliander decided to centralise its operations. This meant that they needed more workplaces at their Duiven site. Given Alliander's social responsibility as a power grid operator, they wanted to handle the reaccommodation challenge in Duiven in the most sustainable way possible.

The initial idea was to build a new building on a piece of undeveloped land. However, with the sustainability ambition in mind, which had already been firmly embedded in the company's strategy, there were voices at the company questioning whether a new building would actually be the most sustainable solution. Instead of putting a 'solution' (a building with BREEAM excellent certification) out to tender, they submitted a functionality-oriented invitation to tender to the market, inviting tenders for a workspace for 1,500 workers, with a few ambitions. These ambitions were the following:

1. Circular building and construction process
2. Positive energy balance
3. Suitable and futureproof work environment
4. Embedded in the local area

These ambitions were captured in a functionality-oriented invitation to tender, with the explicit

wish that different disciplines work together to realise these ambitions. This collaboration between disciplines was facilitated in three ways:

- A market consultation was held, to which various disciplines were invited to validate the feasibility of the ambitions and the intended tendering process. During this market consultation, the various disciplines met, which ultimately also paved the way for the required consortium formation.
- In the selection guideline, the city explicitly required tenderers to form a consortium. The technical competency requirements looked for experience, which led to consortia made up of at least an architect, an (executive) installation adviser, an interior designer, a building contractor, and a maintenance provider.
- They opted for a competition-oriented dialogue (see step 5). The dialogue phase was split up into three plenary dialogue sessions attended by all the candidates to give their input on things that were in the general interest (the process), and a series of individual dialogue sessions that saw individual consortia engage with the client about their ideas for Alliander's reaccommodation needs. While the plenary dialogue sessions in particular led to some degree of uneasiness,



they still turned out to be decisive for the success of the whole process: it was precisely during these plenary sessions that the traditional boundaries within the consortia started to fade and a foundation was laid for a sense of team spirit within the consortia.

Step 6. Measuring and assessing circularity

With the invitation to tender and needs clearly defined, the required disciplines identified, and the tendering procedure selected, the next step is to design the selection and award criteria, which is step 6. Based on your selection or award framework, you select the right parties and award the contract to the party with the most circular tender. But how do you determine which party has the most circular tender? How do you deal with innovations? And what are the focus points with respect to including price as an award criterion?

Measuring versus assessing

An important difference to consider first is that between measuring and assessing. Measuring produces a quantitative outcome, which feels very objective to many. However, in the case of construction projects, the 'promised performance' is often difficult to quantify because the kind of project that has been put out to contract has often not been realised before and the performance has not yet been proven (serial residential construction concepts may be an exception to this rule).

Assessing is generally done based on a qualitative criterion, and is often hard to do objectively. Market parties have pointed out, however, that what sets them apart is actually found in the plans they submit to back up their proposal. Aside from that, you can also objectify the somewhat subjective judgements of an assessment committee by agreeing on a clear assessment process beforehand, whereby each indi-

vidual assessor first rates a tender on a specific criterion and specifies a clear rationale behind this rating, which is then followed by a 'consensus' meeting where all the ratings and rationales are discussed. What is important here is that the assessment committee agree on a score that all members can accept, instead of merely averaging the ratings given by the members, because the latter would give more weight to individual preferences (subjectivity) in the ultimate assessment.

Selection and award phase

If you opted for a procedure with preselection at step 5 (for example, non-public, competition-oriented dialogue, competition procedure, or innovation partnership), you will probably (at this stage of the transition) have a selection framework with mainly qualitative criteria. During the award phase, it is ideal to make a combination of criteria that you can measure and criteria that you will assess.

How do you measure circularity?

The key question is, of course, how to determine the level of circularity provided by a tender. At this stage of the transition, a uniform measuring method that covers all aspects of circularity is still lacking. The Transition Team is, however, working on one. It is, therefore, important to carefully consider the ambitions (step 1) you set and how to translate these to a clear measuring method. The measuring method also depends on how you formulate what you need (step 3). If your specifications are fairly technical, you could request optimisations of these specifications and have tenderers prove the circularity gains using a predefined measuring method.

Over the past years, various circularity measuring methods have been developed that can be used in tendering process. The Dutch government is using legislation to regulate buildings' environmental performance (Milieu Prestatie Gebouwen, MPG). Aside from that, indicators such as the Building Circularity Indicator (BCI), Building Circularity Performance (Circulariteits Prestatie Gebouwen, CPG) and Pre-Returnable Procurement (PRP) are further possible measuring methods. BREEAM also includes circularity aspects. The core measuring method of CB'23 deals mainly with the environmental impact of materials and quantities, origin, and scarcity of materials used. Aspects such as detachability, guaranteeing future reuse, and residual value in development.

Every measuring method has its own benefits and downsides. The MPG, for example, is well aligned with the Core Measuring Method of CB'23, but it does perhaps not take sufficient account of circular design principles. The CPG, on the other hand, does incorporate circular design principles, but it is harder with this method to include the prevention of material use. Where MPG and CPG mainly focus on environmental impact, the BCI has a stronger detachability element to it. There is as yet no perfect measuring method for circularity or circular construction. You should, therefore, make sure first and foremost that you choose a measuring method care-



fully, one that is actually aligned with the ambitions you set in step 1.

If you have formulated your specifications with functionality in mind, it is a good idea to ask for measurable circular performance (i.e. promises) in your invitation to tender, supplemented with an action plan that substantiates the promised performance. A possible method⁵ to combine quantitative and qualitative criteria is to multiply the score for (future) circular performance by the scores for the actions plans. This way, you make sure that the highest score does not go to a party that promises the best circularity performance but is unable to substantiate that it will actually deliver on these promises.

How to deal with innovation

At this stage of the transition, circular construction still requires a lot of innovation, which is why step 5 explicitly focuses on innovation as a principle for circular procurement. You can use a market consultation to check the status of innovations. At the same time, you may, as a (public-sector) client, also need some degree of certainty on the innovations. As a result, you may want to include the innovations in the award framework, whereby you ask (i) what innovations the parties want to apply and (ii) what risks and control measures the parties foresee in applying these innovations. You could even organise a separate round of talks (interviews) about this award criterion during the tendering process to discuss any risks that you anticipate. This kind of award criterion is very likely to be assessed (qualitatively).

How to assess the price

Make sure that the way in which price is included in the tender sufficiently reflects the circular ambitions. Points to consider here are the following:

- Ensure that the price assessment offers sufficient scope for total cost of ownership (TCO). The guidelines described in step 2 offer a good basis in this respect.
- Set a clear price cap for the market, and do so in time, so that you can adequately estimate whether or not the project can indeed be done at the price quoted.
- Ensure a balanced weighing of price and quality. It is generally pointless to ask tenderers to meet high circularity ambitions and then award the contract based primarily on price.

Tips

- Make sure that the selection and award framework sufficiently reflects the ambitions (step 1).
- Circularity cannot, especially for many construction projects, be captured in a figure – you should, therefore, seek to strike a balance between qualitative and quantitative assessment aspects.
- Make sure that the price assessment sufficiently reflects the circular ambitions, and do not make price too big a factor in your overall assessment. Instead, you could use a price cap.

⁵ Van Oppen., C., Croon, G., Bijl de Vroe, D., 2018, Circular Procurement in 8 Steps, Copper8.

Focus points for specifications and criteria

Formulating suitable specifications and criteria for the selection and award process is a key part of actually awarding the contract to the best party. The table below lists a number of focus points to bear in mind when formulating specifications and criteria. Some of these focus points relate specifically to circular procurement, while others are of a more generic nature but especially important when assessing based strongly on quality.

Option	Focus points
Eligibility requirements	<ul style="list-style-type: none"> • Be careful when asking for 'circular' references or credentials, because there is as yet no unequivocal definition of 'circular'. When you do ask tenderers to submit details of a reference project, make sure you specify what you mean by 'circular'. • Convene a market consultation to validate whether your specifications are realistic and will not (inadvertently) lead to too many parties dropping out of the race because they cannot meet those specifications.
Selection criteria	<ul style="list-style-type: none"> • Do not ask tenderers to just state their vision on the circular economy, but have them also substantiate their vision by, for example, including a second selection criterion relating to how their vision is reflected in their operations, preferably backed up with real and measurable results. • You could include circular reference projects as a selection criterion, so that you can verify circular competency based on past projects. Do make sure, however, that the assessment aspects are clearly defined so that you can check the reference projects against them. • Formulate clear assessment aspects based on which you can judge the quality of the tender, so that you can identify what sets tenders apart in the assessment.
Award specifications	<ul style="list-style-type: none"> • Organise a market consultation to validate whether your specifications leave sufficient room to manoeuvre for tenderers and do not (inadvertently) block a certain circular solution.
Award criteria	<ul style="list-style-type: none"> • Choose a limited number of award criteria that allow you to identify what sets tenders apart on the aspects that are important for the project. • Where possible, try to combine 'measuring' (quantitative) and 'assessing' (qualitative) the level of circularity. Seeing as construction projects often involve unique buildings, there is generally no past performance to back up quantitative promises, so it will have to be backed up by an 'action plan'. • Formulate clear assessment aspects based on which you can judge the quality of the tender, so that you can identify what sets tenders apart in the assessment.

Triodos Bank head office

Triodos Bank, Zeist

In 2015, the development of a new head office for Triodos Bank at De Reehorst estate entered the building contractor selection phase. At that point, there was already a Preliminary Design by the RAU Architecten architectural firm, among others, which reflected Triodos' sustainability ambitions: the building was to acquire an iconic status in terms of energy, water, material use, and other aspects.

After a preselection, three building contractors were shortlisted. These building contractors were sent a Schedule of Requirements with clear performance requirements that were also aligned with the targeted BREEAM Excellent certification. The building contractors were asked to formulate a vision covering four subjects:

- Vision on and experience with integrated contracts
- Collaboration with other disciplines, where specific subcontractors are introduced
- Building site management in a vulnerable area due to the location of De Reehorst estate
- Sustainability, backed up by performance guarantees and reference projects

Needless to say, the building contractors were also asked to quote a price and give a price guarantee.



The focus on different subjects and leaving it fairly open meant that the various building contractors had scope to add their own distinct touch to their tender. Thanks to this approach, the differences between the different building contractors were instantly clear to JOIN (the joint venture of Triodos and Edge that acted as the commissioning party).

The assessment of the tenders looked both at qualitative and quantitative aspects: the price and performance commitments could, as it were, be 'measured', while the vision documents on collaboration and the process were assessed on their qualitative merits.

Step 7. Securing circularity

How do you ensure that circular promises are fulfilled? There are generally two ways of doing that: financial incentives or clear contractual arrangements.

Financial incentives

One way to guarantee that circular promises made during the procurement process are actually fulfilled is by offering financial incentives. Needless to say, you do this by imposing penalties for non-compliance with performance promises or giving bonuses when performance promises are exceeded (more about this later). Another much-discussed way to guarantee circular performance is by using circular revenue models and performance-based contracts.

The theory behind circular revenue models such as lease, rental, or pay-per-use models is that suppliers remain responsible for the functioning of their product over a longer period of time, as a result of (economic) ownership. Experiments with circular revenue models are in full flow in the construction industry these days, including the leasing of building fronts and pay-per-use arrangements for lighting and lifts (vertical transport).

Practical experience and studies have shown that it is rather difficult to apply circular revenue models in the construction industry. Common barriers:

- Accession: the fact that the legal ownership of a product is transferred to the party that owns the 'greater whole' of which the part is a constituent element, i.e. the building, makes it hard for the supplier / manufacturer to retain economic ownership.
- Infeasible business case: due to a multitude of reasons it is often difficult for suppliers to supply the product at a better price than charged in a traditional purchase. Lenders struggle to make financing applications adequately reflect the gains of circular revenue models, and the transfer of ownership may affect the perceived value of a building.

Using circular revenue models is generally a joint effort by the client, building contractor, and supplier.

In procurement processes, you should also bear in mind that, if you want to apply circular revenue models, you should either get the supplier(s) for the building element actively involved in the invitation to tender (see step 4) or define the boundaries in the invitation to tender in a way that gives the building contractor or construction team scope to apply such revenue models.

Irrespective of the application of circular revenue models for building elements, you can also apply this approach at building level. For temporary building projects, for example, such as the temporary court

building in Amsterdam, you can ask the construction team to specify the residual value they would assign to the materials. This is easier to do with temporary projects, because the construction team may also be involved in the materials' second service or useful life.

Another way to extend manufacturers' responsibility is through an integrated invitation to tender that includes a maintenance component: a DB(F)M(O) contract. Assuming financial responsibility for the maintenance phase incentivises a construction team to use good-quality products to reduce maintenance needs in the long term.

Legal guarantee

A second way to guarantee compliance with circular promises from the procurement process is by making clear contractual arrangements. In your invitation to tender, you can ask tenderers to submit measurable circular promises, such as on the degree of detachability or an MPG score. These circular promises can be included in the contract as key performance indicators, for which you can agree on a penalty/bonus arrangement. If a supplier does not meet the promises, they will face a penalty. When a supplier does better than promised, they can earn a bonus. Do make sure, however, that you also include this positive incentive (i.e. the bonus) in the contract, as it will motivate suppliers to go the extra mile for you.

STEP 7. SECURING CIRCULARITY

If you manage a portfolio of buildings, you will often have multiple projects lined up for the foreseeable future. You could then consider entering into a framework agreement with a construction team or building contractor, where you will award follow-up contracts if promises from previous projects were fulfilled. The bonus they stand to earn is then a follow-up contract instead of a separate monetary reward. Such a framework agreement is likely to be most effective with repeatable concepts, such as residential properties, which may also involve a gradually increasing level of ambition. Non-residential buildings, on the other hand, depend more on context, making it harder to exceed performance from one project to the next, simply because it is hard to measure both performance levels due to the change in context.

Material passport

Another way to guarantee circularity is by asking tenderers to submit a material passport. Such a material passport provides insight into the materials, components, and parts that a building is made up of. It can also contain details of connections between materials. A material passport thus offers a basis to enable high-quality reuse in the future.

Tips

- Make sure that the performance promised in the tender is guaranteed, either through financial incentives or legal arrangements in the contracts.
- Circular revenue models are still difficult to implement in the construction industry, so be aware of the financial and practical consequences.



Pay-per-lux Schiphol airport

When it was time to replace lighting systems in one of the terminals at Amsterdam's Schiphol airport, the idea was not so much to procure new lamps, but rather to procure light, leaving it to tenderers to figure out how to provide light.

This functionality-based approach to the contract created scope for suppliers to think about ways to provide the light required in an energy-efficient way, meeting Schiphol's lighting needs with fewer actual lights, and reducing maintenance costs of the lighting in question. The contract was for light in one

terminal building, and for the area after security in particular. Due to the strict security protocols to which Schiphol is subject as an organisation, it was difficult for the supplier to also take care of maintenance of the lighting solution. This, along with the high costs involved for the supplier, was partly why a choice was made to put the new lighting out to contract based on the required functionality through Schiphol's contracted electrical engineering partner, which was ENGIE at the time. While Schiphol is required to put contracts out to tender, ENGIE is not. This created leeway in the procedure: ENGIE was

able to further shape and roll out the concept 1-on-1 with Philips (now Signify).

For a period of five years, Schiphol ended up procuring lighting as a service through the graduated contract with ENGIE and Signify. The use of LED lights produced significant energy cost savings. Aside from that, Signify had the opportunity to develop low-maintenance lights.

As the contract with ENGIE was nearing its end date, Schiphol ultimately had to purchase the lights from Signify after all after the period of five years, which had been included in the contracts as an option.



The Green House

R-Creators (Strukton, Facilicom & Ballast Nedam)

In inviting tenders for the contract to build a government office in Utrecht, called 'De Knoop', the basic idea was to enter into an integrated contract for a period of 20 years. Next to the government office, there was an empty plot of land that the agency in charge of managing government-owned properties (Rijksvastgoedbedrijf, RVB) was not planning on using for the next 15 years. Part of this contract was to give this plot of land a temporary purpose to create a more lively area.

The solution that was found was a temporary pavilion called The Green House. A consortium made up of Strukton, Facilicom, and Ballast Nedam was selected to create a hospitality facility here. The consortium's ambition grew during the development phase: they wanted to build an extremely circular pavilion based on the vision of a feasible, sustainable, and scalable business case. They also want to explore whether it would be feasible to apply circular revenue models for various parts of the pavilion, especially given the temporary nature (15 years) of the pavilion.

In working out the concept, the consortium faced the challenge of getting the business case to stack up. Depreciating a high-quality circular building over 15 years required an innovative design and



innovative business models. In the end, they succeeded in procuring short-cyclical products for the finish of the building in particular on an as-a-service basis: the furniture (Maasdam), the AV system (NFGD), the composting machine (Milieu Service Nederland), and the lighting (Trilux).

What is striking about this project is that the Consortium and Albron, the operator of the facility, did

not enter into a lease for the property. Instead, they signed a collaboration agreement for a period of 15 years, based on the idea that the realisation of circular ambitions would require the parties to keep talking to each other. While it was initially hard to get shareholders to accept such a collaboration agreement, during the implementation phase it turned out to be an important basis for further efforts towards realising the circular ambitions.

Step 8. Managing circular contracts

The procurement process is only the beginning... it lays the foundation for a circular project and awards the project to the tenderer that can pull it off in the most circular way possible. But how do you make sure that contractual arrangements are actually honoured? Step 7 covered financial incentives and contractual arrangements; Step 8 goes into the human element.

Put together a team with the right competencies

Select a contract manager with the right competencies. It helps if he or she is intrinsically motivated to make a circular contract a success and shares the long-term vision. Many circular contracts revolve around collaboration. It would then be out of place to negotiate hard in such a contract or bring matters to a head. With this in mind, you should look for someone with strong interpersonal skills.

Get the contract manager involved at an early stage

At your organisation, it may be that a buyer coordinates the procurement process and that the project is handed over to a contract manager after the contract has been awarded. Such a handover does, however,

also mean that knowledge has to be transferred. This knowledge may partly be captured in hard documentation such as the winning tender and the contract, but it is partly also related to the experience during the procurement process and the nuances discussed during the process. It is advisable to have continuity on the team at the client's end, such as by appointing a contract manager at an early stage (see also step 2).

Regular coordination and monitoring

Be aware of the fact that an innovative project requires more time from both the contractor and the client before and during the contract phase. Have regular coordination meetings to make sure you understand each other and to be able to incorporate developments into the contract. Monitor the agreements closely (especially when you have entered into a framework agreement) and also discuss the reason why certain performance may not be attained.

Focus on the human side of the relationship

The relationship between client and contractor can come under strain. This often happens during phases where budget and ambitions clash and specific choices have to be made. As soon as parties abandon the shared goal and start to lean towards their own gains, things go awry. This can be prevented only by continuing to understand each other's reactions, taking a critical look at one's own attitude, and not beg-

udging each other things. It is human nature to, in an unsafe situation, revert to self-protection and focus on one's own interests. When this happens, break through the unsafe atmosphere. Do not wait for the partner to take the initiative, but make an attempt at reconciliation yourself. And if the partner is indeed proactive and takes initiative in the general interest, feel free to reward them for it!

Evaluate the process and documentation

To strengthen learning ability and truly work from pilot to scale-up, it is important to take stock of the main lessons learnt (briefly) after completion of the tendering and implementation process. You can do this with colleagues and the contracted party or parties, but perhaps also with the party or parties that was or were not awarded the contract. What is their take on the procurement and implementation process? Were any lessons learnt about the approach, or are there standard texts or documents that need changing? This is the time to do it, so as to embed valuable lessons from the circular pilot in the organisation.

Tips

- Ensure commitment from the client's side during the implementation phase.
- Monitor the (hard) arrangements, but also consider the (soft) interpersonal relationship.
- Evaluate regularly and embed lessons learnt so that a subsequent project need not be a pilot.

Stadstuin Overtoom social housing project

Eigen Haard housing corporation, Amsterdam

In 2008, the Eigen Haard housing corporation found itself on the verge of a demolition and new construction project that was to produce approximately 400 new homes in Amsterdam's Overtoomse Veld/Middengebied Zuid area. The intention of the recently adopted innovation programme, which had sustainability as its leading theme, was to set up experiments that allow the organisation to learn by doing.

Both the Dutch government and the City of Amsterdam have ambitions for climate neutrality that are focused mainly on the energy side of the challenge. At the Eigen Haard housing corporation, however, the question they asked was how climate-neutral a demolition/new build project actually is. While the demolition part could not actively be called into question, the material side of the job was targeted through the following ambitions:

1. Climate-neutral demolition, building, and use
 - Reduction of carbon emissions from the demolition and building process
 - 90% reuse of recovered material in the new buildings
 - Reduction of carbon emissions during the operational phase
2. A set of visible liveability measures
3. Cost neutrality over the entire operational period

4. Lower operating costs for residents
5. Repeatability of the approach
6. Good collaboration between parties

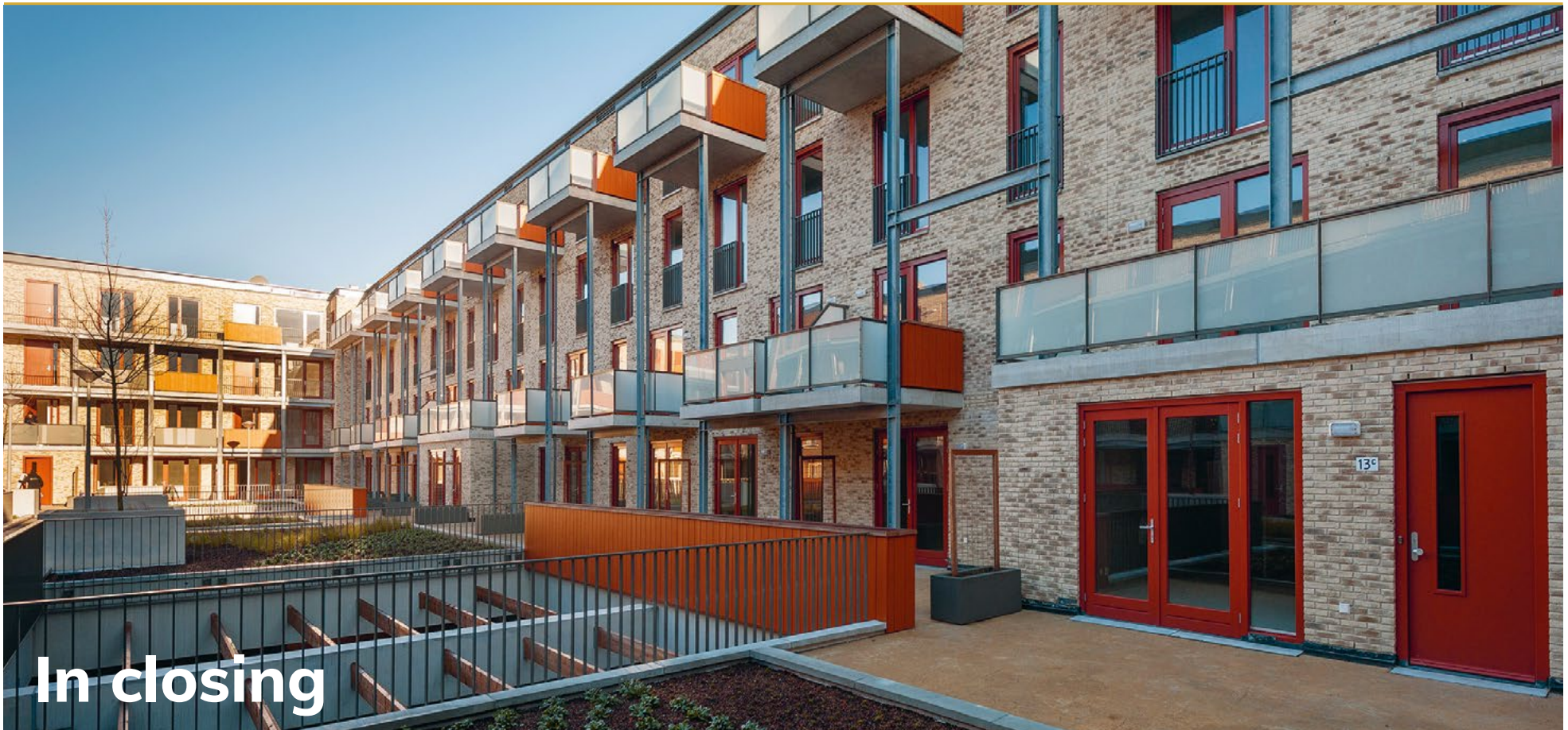
The invitation to tender was geared towards realisation of the above ambitions, explicitly requesting a consortium (see step 4) made up at least of an architect, a demolition company, and a building contractor. In the end, the Co-Green consortium made up of KOW, Oranje B.V., and Era Contour won the contract. The project was split up into three phases, with a possible fourth phase add on if the client is particularly happy with the collaboration with the consortium.

After the preliminary award, the preconditions for the collaboration were fleshed out further. The parties jointly captured the above ambitions in key performance indicators (KPIs), for which all parties, i.e. Eigen Haard as the commissioning party and KOW, Oranje, and Era as the contractors, were equally responsible. After that, each of the parties basically bought a 'share' in the project result, in proportion to the work they did on the project. The project result could go up or down, whereby it was essential that all parties kept talking to each other about how to increase the project result.

All parties continued to have a stake in the project's success, which was both the sustainability performance (KPIs) and the project result. A so-called 'dynamic revenue model' was developed for the project. In it, the project result was paid out in proportion to the achievement of the KPIs. If 80% of the KPIs were achieved, 80% of the project result would be paid out. The remaining 20% would then be invested in the KPIs on which the performance was the poorest.

The phased approach of the project enabled the partners to learn from each phase, and to apply these lessons learnt in subsequent phases. During the evaluation, it turned out that they had to invest heavily in the collaboration during the first two phases, but that all the partners had recovered these investments after the third phase. Given that the three phases were completed to everyone's satisfaction, the parties agreed to add a fourth phase to the project, which led to a positive financial end result for all partners.

The key success factors ultimately turned out not to be of a technical nature, but rather of an organisational nature. While the dynamic revenue model helped guarantee the ambitions for the project, the individuals and not the organisations were instrumental for the ultimate success of the project itself.



In closing

This Guideline provides a concise summary of the lessons of various experts in the area of circular procurement and tendering for construction projects. Each and every one of these organisations and advisers showed the courage to 'do things differently' from how they used to do them. Thanks to these organisations' ambition and perseverance, the Netherlands is a whole host of circular construction projects richer.

Every single one of these projects focused explicitly on what is possible, instead of looking at what is not possible. Circular procurement is often said to be held back by legal obstructions or barriers. The cases in this Guideline, however, show otherwise, namely that the barriers are actually fairly limited. Provided that things

are properly substantiated and the parties have the right attitude, the possibilities are great, also within the bounds of procurement law.

The main lesson to emerge from all of these projects is: just do it! After all, the best way to learn is by gaining actual real-life experience and finding out for yourself what is possible and what is not. Our call to you is, therefore, to go do it, become an expert yourself and share the knowledge you acquire along the way. Together we will make the circular economy a reality, and procurement is an important means of doing that!

Cécile van Oppen & Sybren Bosch

About this publication

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