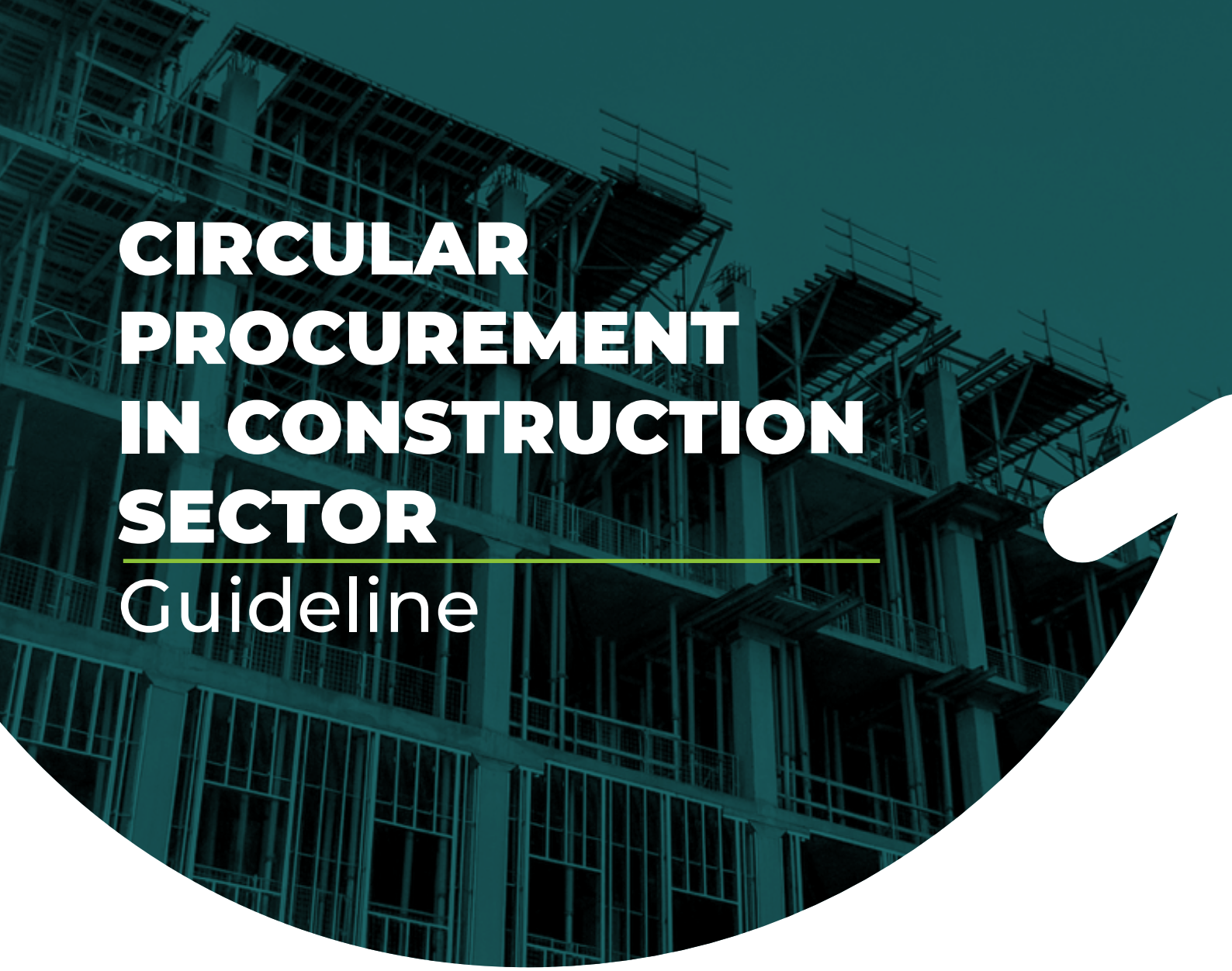


CIRCULAR PROCUREMENT IN CONSTRUCTION SECTOR

Guideline

Authors:
Hubert Bukowski
Karolina Niedziółka
Marianna Rytlewska
Agnieszka Sznyk

CirCon4Climate

November 2023

CirCon4Climate

This publication has been developed as one of the activities
of CirCon4Climate project.
This project is part of the European Climate Initiative (EUKI) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

Supported by:

Federal Ministry
for Economic Affairs
and Climate Action

European
Climate Initiative
EUKI

on the basis of a decision
by the German Bundestag

Title:	Circular procurement guideline
Subtitle:	
Version:	1.0
Date:	20 November 2023
Authors:	Hubert Bukowski, Karolina Niedzióka, Marianna Rytlewska, Agnieszka Sznyk
Contact Person:	Hubert Bukowski h.bukowski@innowo.org +48 694 360 890
Institution:	Institute of Innovation and Responsible Development, Tyniecka 38 | 02-621 Warsaw, Poland | www.innowo.org

Table of contents

1. Introduction

The procurement is by and large an underrated step in the process of building or infrastructural construction. The relative lack of interest in the structure of the procurement process takes place despite the fact that it is at this stage that key decisions concerning the building strategy and operation along its whole lifecycle are taken. Standard building projects use the same basic, linear approaches and technologies that render greater involvement in the procurement process unnecessary. However, if circularity is to be implemented in the construction process the importance of procurement becomes paramount.

This guideline aims at helping the procurement teams along their journey of implementing circularity in their particular projects. It also may be helpful to architects, investors, general contractors who have to be consulted from day one of the procurement process. Informing them about the steps along the way, as well as the benefits that could be attained, is therefore crucial. The report contains specific tools and suggestions for carrying out a circular public procurement. Therefore, it is addressed also to municipalities, public entities and local governments.

The guideline is organized according to consecutive steps that need to be taken in the circular procurement process. However, as circularity is a relatively novel concept and the circular transition is by and large a learning-by-doing approach, the procurement process is not linear itself. There are loops that feed information into previous steps to hopefully attain the best solution possible. To this end cooperation is also invaluable. Information from our suppliers, technological partners, future users and the market, generally speaking, can tremendously influence our decisions. Below you will find an overview of the procurement process phases, together with loops that suggest a room for reconsidering previous decisions should be made.

The guideline is supplemented with best practices that are aimed to inspire the readers. Current legislation, upcoming regulations and legal framework that is relevant for circular construction is also mentioned [16]. Every section is concluded with a checklist that helps a particular steps were appropriately implemented.

The guideline includes references to other guidelines developed in the CirCon4Climate project. These guidelines can considerably support investors, architects, procurers etc. in various processes of the construction, that should be considered right from the start – during procurement.

2. Defining reasons, needs and requirements

2.1. Understanding the overall goals and outcomes

The first step to implement circularity into the construction procurement process is to identify particular organization's needs. However, differently from the standard procurement process, the procurer should delve much deeper into the preparation for this process [29].

Some questions need to be posed even before the decision to carry out the construction project. Specifically, the actual need for a construction should be investigated. Instead of asking for e.g. an office building to be constructed, the question should be 'what is actually needed?'. Does the organization require more office space for a growing staff? Are there any external changes to the organization that influence the needs, e.g. pandemics and the need for remote work? Is a new building necessary or are there alternatives, e.g. refurbishment of an old building, renting office space? Does this require a purchase of a product, or can it be provided as a service? These and other questions should be given appropriate thought to be in line with the spirit on circular economy.

The answers to those questions should focus directly on the function a potential construction might provide, instead for ordering a specific building or infrastructural item. This way the ordering party needs could be satisfied more efficiently, while using less resources and reducing the environmental impacts of the project [53]. In some cases, the best solution may be to buy nothing at all. For example, share resources with other entities might be possible.

At this point in time, it is necessary to also delve deeply into the possible circular strategies the project might want to pursue ***(see Circular Building Strategies)***. Different types of objectives require different circular strategies which are difficult to compare between each other, also in terms of what is a more circular solution. Therefore, it is important to set the goals clearly, ask the right questions and communicate the needs during procurement with regards to these goals.

Quick tips

START SIMPLE AND SCALE GRADUALLY

Bringing circularity in procurement practices cannot happen overnight. Iterative processes supporting a learning-by-doing approach tend to be more successful. This is particularly relevant if and when the market has not reached a sufficient maturity level to offer comprehensive circular solutions.

Checklist

- Know the goals and outcomes you are aiming to procure in terms of its function.
- Check if using or adapting available resources is enough to meet these goals (internal reuse or repurpose opportunities).
- Check if external existing resources are available and if they are enough to meet your goals.
- Check for external changes to the organization, prospects and trends that may influence your goals and expected outcomes in near future.
- Attempt to decide on circular building strategies you are willing to pursue in your project ***(see Circular Building Strategies Guideline)***.

2.2. Assessing your actual needs and their potential for realization

A crucial step in the procurement process is the assessment of the actual needs, previously identified goals and outcomes as well as potential ecological, social and environmental impacts and project's implementation options [15]. This assessment, based typically on desk research but also initial contact with experts, may reveal alternative ways of attaining identified objectives.

All of the information necessary to assess the economic, social and environmental impact of the project or its potential implemenatability might not be available at hand. Therefore, it is recommended to gain at least some insight using systemic analysis. Gaining consensus regarding the scope of needs and their potential realization can help procurers to make environmentally-conscious decisions at later stages in the procurement process.

The assessment of the objective may result in specifying the goals in understandable or implementable terms. For example, if the objective is to modernize or retrofit a building to meet new energy standards the procurer might set up a prior agreement regarding the acceptable indoor temperature of a building throughout the year (e.g. 20-25C). This can help to implement higher energy-efficiency standards and therefore financial savings. Additionally, all of the parties involved can easily grasp the overall goals and at the same time monitor the basic parameters.

Quick tips

START WITH EASY WINS

The development and implementation of circular procurement processes can start by identifying and targeting "easy wins" in the organization such as materials or components retaining value after the end of the use life, or products or components where product life-cycle can be extended. The expected and immediate impacts of circularity on these products can then further encourage organizations to scale up their efforts in embedding circularity throughout their processes.

Best practice

KOLDING MUNICIPALITY, DENMARK CIRCULAR TENDER FOR A REUSED OFFICE BUILDING [43]

The procurement process started from charting the employees' tasks in an everyday workweek to get an overview of the current space needs that the new building should meet in the future. The important working relations between teams using network analysis were examined to gauge which teams should be co-located and where informal meeting space was required. The analysis confirmed a requirement for about 400m² of office space. The budget was limited to 350,000 EUR while the goal was to have high reused materials content.

An open dialogue with the suppliers asking them what sort of building they could deliver to fit the budget took place. Buildings in Denmark constructed using modular methods fitted the brief as these can be disassembled and rebuilt at a different location, providing a significant leap towards the goal of most of the materials being reused for construction.

Checklist

- Analyse and optimize supply chain structure to address your circular economy needs.
- Investigate if there are products and services on the market that can satisfy your circular needs.
- Get to know what due diligence you need to conduct on circular economy products and services.
- Analyse the circular construction requirements (e.g. timeframe, consultancy, higher staff engagement).
- Basing on these considerations prepare for the possible pre-procurement consultation ***(see section 3.1)***.

2.3. Achievable circularity

Buildings and infrastructures are highly complex systems, consisting of numerous component parts, which all influence the overall performance of the structure. Circular procurement approaches typically aim to address both the overall impact of a building, and the environmental characteristics of individual components. To gain an integrated view, the use of a dedicated environmental assessment tool can be very useful. However, if no such tool is available or there is no desire to use such tool the procurer should focus on the most significant aspects of the construction with the specific aim of real-world realization of these objectives. The selection of the focus aspects for circularity should be based on the outcomes and goals defined earlier [19].

Some of the areas of focus for achievable circularity might be:

- energy consumption during operations,
- local material use,
- the quality of the air inside the building,
- water consumption,
- impacts on traffic or land use,
- waste generation during the construction works.

Quick tips

PERFECT CIRCULARITY IS NEVER ATAINABLE

It is recommended not to look for the perfect circular solution. It is better to choose an option that has a high chance of success but a lower degree of circularity, than risking failing with a very complex, completely circular solution.

Best practice

CONSTRUCTION AND TEMPORARY OCCUPATION OF A CIRCULAR HUB AND MAKERSPACE, LEUVEN,BELGIUM [1]

The project had a temporary nature which enabled the potential use of innovative circular concepts and technologies. It aimed for a maximum reuse of materials and building elements, avoiding virgin materials and opting for a flexible design as well as limited maintenance and operating costs.

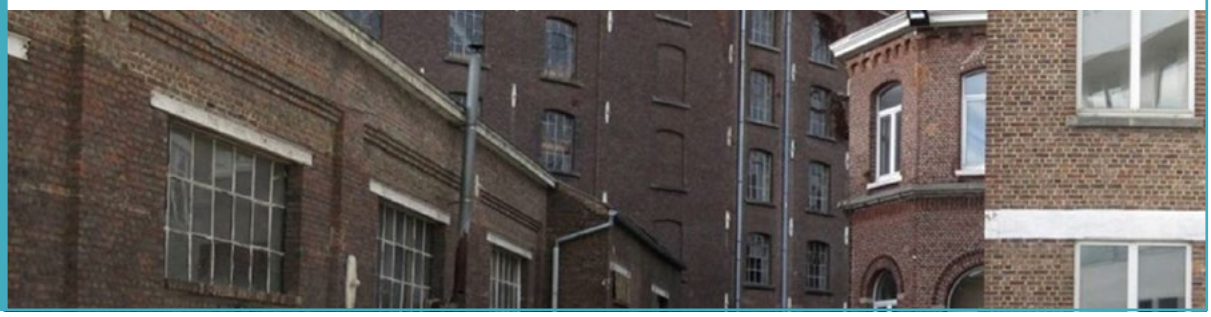
The tender included a note explaining the circular criteria as well as a note on cost-saving measures and the business case. The potential suppliers were asked to explain their choice and use of materials.

The Makerspace was opened in late 2020. Bearing in mind phased renovation, circular construction methods, budget constraints and the heritage status of the buildings, the design team was to focus on enhancing visibility of the building. This led to i.a. a circular

Best practice

facade that can be transformed into a greenhouse, and a modular scaffolding marking the entrance to inspire occupants as well as passers-by. Temporary walls were installed with a buyback guarantee from the supplier.

The project is an example confirming that the market might not always be ready to provide the assumed products or services. For instance, the subcontractor responsible for HVAC (Heating, Ventilation and Air-Conditioning) was unable to provide the renting solution mentioned in the tender, because it was not economically viable.



Checklist

- Choose what aspects of the procured construction would you like to focus on, you may like to go back to the circular strategies previously chosen once again ***(see Circular Building Strategies).***
- Consider choosing a non-ownership based sourcing options.
- Try to prepare a draft of the circular economy criteria to be embedded in your requirements.
- Consider choosing a payment arrangement that enables circularity, such as monthly payment or pay-per-use.
- Identify present capability of the supply market to meet or exceed your sourcing needs and circular requirements.
- Consider if your need could be met by readily available products and services.
- Consider new technologies, alternative goods or services and new business models, existing supplier capabilities, available reverse logistics structures.

2.4. Internal buy-in

As the focus in circular procurement lies in the outcomes not the products, internal engagement is needed. To this end collaboration is indispensable. The purchasers should engage their staff in sharing feedback on their needs and the already considered goals, outcomes and the implementation of circularity concepts. Identification of the key company players (rather than staff in general) that may be needed on board for the project in order to realise it as effectively as possible is also crucial.

It is recommended to convince staff to adopt a circular procurement strategy by presenting your case for circular concept implementation [3]. The arguments may include:

- Compliance with legislation.
- Alignment with the organisation's current goals e.g. sustainability, limiting carbon footprint [58].
- Looking at Total Cost of Ownership (TCO) rather than the purchasing price, therefore exhibiting the cost-effectiveness of the approach.
- Demonstrating the feasibility and effectiveness by using examples[1].
- Impact on organisation's reputation.

1. E.g. using those available at https://procuraplus.org/

The purchaser should make sure to communicate the procurement process internally to create and upholding a support base. To this aim a regular dialogue with stakeholders and colleagues should be maintained. Raising awareness by inviting external experts to talk about best practices and circularity concepts should be also considered.

At this moment the procurer should consider drafting a business case as an additional mean of gaining support from company's staff and management.

Quick tips

COMMUNICATE, SHARE AND ACCESS LESSONS LEARNED

It is recommended to build on lessons learned by frontrunners. Many collaborative platforms provide an environment to access and share success stories and best practices of procurement practitioners from around the world. Using those practices may help in activating the staff and building its awareness.

Checklist

- Consider who needs to be involved in the conversations at the strategic and operational levels.
- Set a timeframe and channels for two-way internal communication.
- Agree internally how to manage and assess a potential circular solution on strategic level.
- Consider inviting experts to share their knowledge.
- Consider drafting a short business case to provide further arguments for the project.

2.5. Customization

Different building and infrastructure product groups require different approaches. For the procurement of construction of relatively shorter functional lifecycle, e.g. temporary buildings, it is important to assure the reuse of construction elements, while long term infrastructure projects should assure high quality retained through time and how the supplier plans to guarantee circular use. These are examples that confirm that circular economic model implementation may require relatively more customization than the standard approach. This in turn affects the circular procurement process.

Therefore, the procurer should prepare for the possibility of a tailor-made approach that might be necessary. This requires longer timeframes, less stringent specification characterization, longer consultations with the market and the possibility of using e.g. innovative partnership approach.

At this point in time a confirmation or reconsiderations of needs might take place. For instance, this may concern going back to the assessment of achievable circularity ***(point 2.2)*** and deciding if the need is still worth pursuing despite not being readily available on the market or allowing suppliers to challenge the specification criteria if they can see opportunities to improve circularity ***(see section 3.4.2)***.

Checklist

- Prepare your team and the management for the higher procurement process needs in case of customization.
- Consider running a short assessment of customization possibilities available on the market in the areas you are most interested in.
- For the final time you might want to confirm or reconsider if previously identified needs are still worth pursuing.

2.6. Risk and opportunities

Identifying risks from the start of the procurement process would enable a better answer when an unwanted event takes place. The types of risk that could be considered include the regulatory risk, social considerations [10] and internal organizational issues. However, opportunities should be considered as well. This concerns innovations in particular, that are hard to predict, but nevertheless should be encouraged.

All these considerations should stem right from the start when considering the goals of your organization. The potential effects identified when checking for external changes to the organization, prospects and trends that may influence its goals and expected outcomes in near future, should be considered once again. If they pose a considerable threat to the project or a notable opportunity, they may influence the whole procurement process.

Quick tips

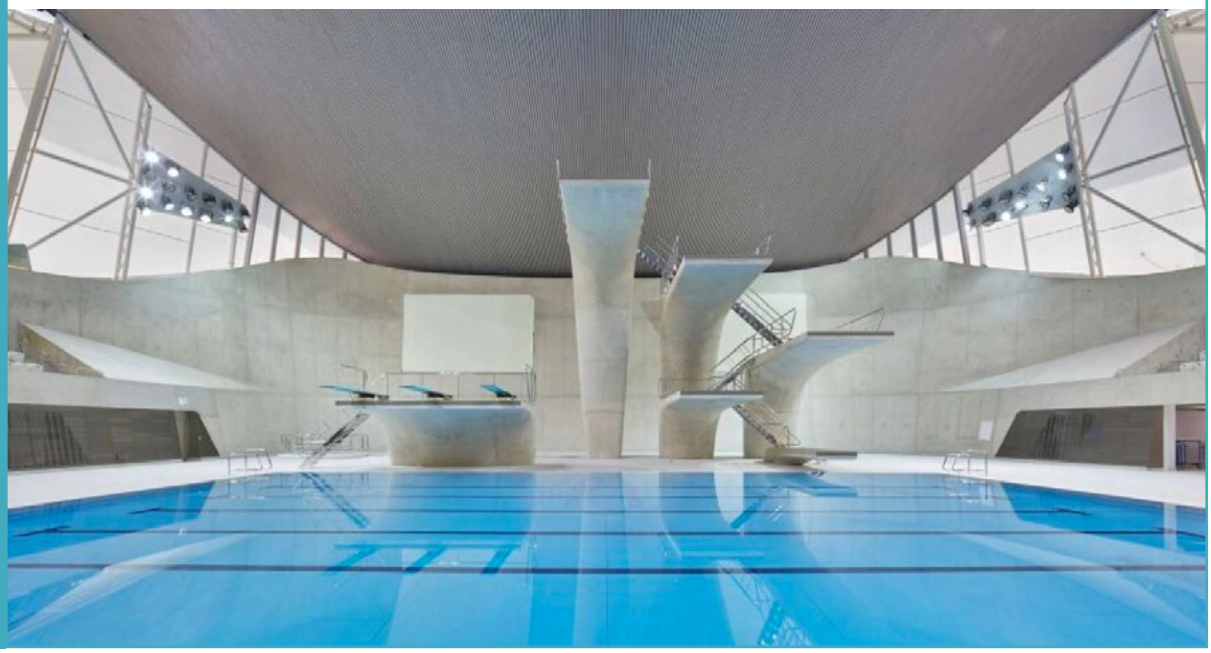
RUN A HOTSPOT ANALYSIS

Environmental and social hotspots in the organization can be identified by coupling information of procurement needs with data on materials, emissions-intensive production processes or products, waste generation and management along the products' lifecycles. Procurement efforts may focus on these hotspots, as action in making them more sustainable will be linked to highest return in terms of social, environmental and economic benefits, and provide further encouragement for the circular procurement process.

Best practice

SUSTAINABLE CONCRETE FOR LONDON OLYMPICS [39]

Concrete has a high environmental impact and improving its sustainability was a key focus for the Olympic Delivery Authority (ODA) in preparation for the 2012 London Olympics. Security of concrete supply was identified early on as a major risk to the London 2012 construction programme due to local traffic congestion, batching plant breakdown and availability of raw materials. To mitigate this risk and maximise the opportunities for achieving sustainability credentials, the ODA procured a single concrete supplier to provide concrete to all projects on the Park through the installation of a new concrete batching plant within the Park. The pre-qualification questionnaire and Invitation to Tender (ITT) used a balanced score-card approach to evaluate tenders, and tender questions were worded to encourage the supply chain to identify opportunities within the marketplace and to deliver innovative solutions to meet the Park's sustainability requirements.



Checklist

- Investigate the external changes to the organization, prospects and trends that may influence your goals and expected outcomes and consider if they are significant.
- Consider all the relevant aspects in your considerations, e.g.:
  - technical aspects;
  - compliance culture;
  - sourcing locations;
  - supply chain capability/capacity;
  - the need to develop an after-market.
- Adapt your procurement process to the risks and opportunities identified. This may include changing the budget, timeframe, staff engagement and may require approval from the management.

3. Specification and award criteria selection

3.1. Pre-procurement consultations

Pre-procurement engagement refers to any interaction with suppliers ahead of the issuing of an invitation to tender, invitation to quote, or request for proposal [42]. This may take form of dialogues with suppliers or market scoping events. Pre-procurement consultations might be used to improve contract specifications and realise cost-saving or innovation opportunities [46]. Their aim is to gather feedback on a planned upcoming procurement, notably discovering solutions which meet that need defined earlier. The considerations carried out earlier ***(see section 2.2)*** might be very useful in this regard.

Pre-procurement engagement is often under-utilised or neglected [48]. This is due to fear of contravening regulations and hindering fairness, transparency and openness. Yet, current legislation allows for and encourages pre-procurement consultations[2], which might be vital for accessing, otherwise inaccessible, market knowledge [54].

Engaging in a dialogue with the market can take different forms:

- A procuring organisation can compile a list of questions it wants to get answers to, publish them on their website.
- A joint meeting and debate with suppliers, where all suppliers are invited.
- One-to-one meetings with suppliers, especially when some trade secrets might be discussed.

It is possible to utilise several approaches and organise follow-up consultations to develop one procurement case [4]. Moreover, an informal dialogue not related to any specific competition is also a great way to gain knowledge on the market.

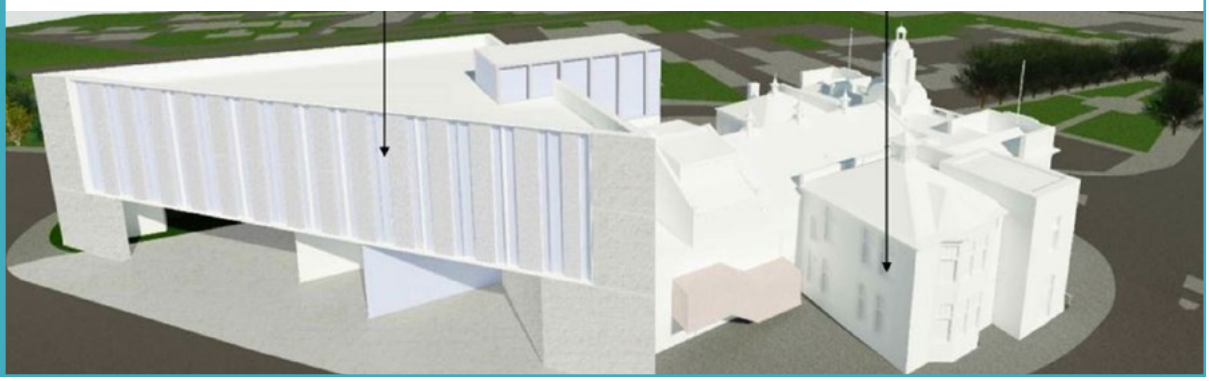
Best practice

PLANNED PREVENTATIVE AND REACTIVE MAINTENANCE SERVICE FOR PUBLIC BUILDINGS IN ABERDEENSHIRE, SCOTLAND [33]

Aberdeenshire Council wanted to assure proper and circular planned preventative and reactive maintenance service across entire portfolio of operations and non-operational building and land assets. A series of pre-procurement strategy workshops were held with the architectural design and procurement teams. These workshops were designed to raise awareness of the circular economy, and the benefits that it could bring to the project.

Market Engagement workshops were also held with the supply chain, including framework contractors and furniture and interior suppliers. The aim of these workshops has been to articulate the council's aspirations to the marketplace and explore what might be possible to deliver the development in line with circular economy principles.

The £30m, 5 years contract was awarded to FES FM, which states that it is the first Building Services and Facilities Management company in the world to achieve both the UN Climate Neutral Now Initiative participation and the Carbon Neutral International Standard.



2. https://digital-strategy.ec.europa.eu/en/policies/pre-commercial-procurement

Legislation (public procurement)

EU Law: The possibility of using pre-procurement consultation in private tenders is obvious. However, in many circumstances, pre-procurement option is being neglected in the public sector as it is being perceived as posing great risk to legality of the whole procurement process. Pre-procurement is legal and even encouraged in the whole EU (art. 40 and 41 2014/24/UE directive). The only condition that should be met is that pre-procurement consultation must not limit competitiveness of the procurement.

Polish legislation: Prior to initiating the procurement procedure, the contracting authority may conduct preliminary market consultations in order to prepare the procedure and inform contractors of its plans and requirements for the contract. Information on the intention to conduct preliminary market consultations and on their subject matter shall be published by the contracting authority on its website (Article 84 of the Public Procurement Law). Entities with which the contracting authority conducts preliminary market consultations may apply for the award of the contract. The contracting authority shall include information on the preliminary market consultation in the contract notice [17] [37].

Preliminary market consultations are conducted before the initiation of a public procurement procedure. The purpose of the initial market consultation is to obtain knowledge to the extent necessary to prepare a description of the subject matter of the contract, the specification of the terms of the contract or the definition of the terms of the contract, provided that such advice does not result in a restriction of competition.

Checklist

- Prepare appropriate timeframe for pre-procurement consultations.
- Decide on the areas you are trying to gain market insight in. They may correspond to your goals and needs. However, there is an option for gaining general knowledge of the market.
- Decide on the type of pre-procurement consultations.
- Communicate internally the possibility of consultations influencing the procurement process, e.g. improving contract specifications and realising cost-saving or innovation opportunities.

3.2. Choosing a circular title

Choosing a circular title for the contract makes it easier for tenderers to quickly identify what is wanted. It conveys the message that the environmental performance of the product or service will be an important part of the contract. Using an environmental title sends out a message not only to potential suppliers, but also to the local community and other contracting authorities.

Best practice

CIRCLE HOUSE PROJECT IN LISBJERG, DENMARK [21]

Lejerbo – a nonprofit social housing association that rents out residences all over Denmark wanted to develop a housing project consisting of a range of building systems that can be assembled, disassembled and reassembled into other buildings while keeping their economic and aesthetic values intact.

In addition to serving as housing, the project aimed to be a scalable demonstration project that can give the building industry new knowledge about circular construction. The chosen name for the project – The Circle House coveys these aspirations as well as the objective of 90% of the materials being used for the buildings being available for reuse without losing significant value.

Best practice

THE 2226 BUILDING IN LUSTENAU, AUSTRIA [18]

As the name of the implies, the 2226 building is meant to keep temperatures at a constant 22 to 26°C. This quick cue lets anyone see the main objective behind the project in an instant. At the same time, the inclusion of goal in the building's name underlines its importance.

The promise of keeping the temperature relatively constant is delivered with basic building physics: solid walls and ceilings that serve as insulating and storage masses; a balanced interplay of façade and window surfaces, proportions, materials and light. The building is heated with the warmth generated by the people in its rooms, its technical equipment and lighting. Another key component is the building control system, which intelligently monitors indoor and outdoor conditions and regulates the temperature accordingly via sensor-controlled ventilation panels.

Another stand-out feature of this concept is its excellent return on value and reduced construction costs, energy efficiency and life cycle costs. Maintenance and operating costs are kept extremely low.

Checklist

- Basing on your needs, objectives and circular aspects you would like to focus on propose a set of titles that quickly convey your ideas to the suppliers.
- Decide on the title of the procurement procedure internally, possibly with the engagement of all interested stakeholders. The procurement title might be the same as the final project's name. However, it is never required to decide on project's final name at this stage.

3.3. Deciding on the procedure type

Choice of procedure can influence the outcome of the procurement process and is strictly connected with market engagement [34]. The selection of a procedure depends, among other factors, on the value of the contract, the number of potential suppliers in the market and whether or not the procurer wishes to explicitly encourage collaboration between value chain partners. The types of procedures that fit in the circular procurement process the best are:

- Innovation Partnership,
- Competitive dialogue.

Innovation partnership encourages the development of modern technologies or solutions. As part of the procedure, in response to a public notice, the contracting authority invites economic operators admitted to participate in the procedure to submit preliminary tenders. Then the procurer negotiates with potential suppliers and invites them to submit offers for the development (and later sale) of an innovation, i.e. new or significantly improved product, service or process, including the production process or construction [25].

Competitive dialogue is used if there are objective difficulties in describing the subject of the contract and determining its value. After publication of the notice, the subject matter of the contract shall be clarified with the economic operators and those economic operators shall then be invited to submit tenders.

Best practice

N61 ROAD CONSTRUCTION, NETHERLANDS [38]

The N61 is the first tender in which SIA (Sustainable Infrastructure Approach) was applied. The main difference with previous tenders is the use of two new tools: the CO_2 performance ladder and the DuboCalc method. This means that a tenderer is financially incentivised to reduce its CO_2 emissions, create a sustainable design and use the most sustainable materials available.

The contracting party's requirements contained a reference design with environmental quality standards expressed as environmental-cost indicator (ECI) value and a green design with a lower value. The lower the ECI value, the lower the environmental impact and the higher the award advantage. In addition, the contractor can get a hefty fine if he fails to achieve the agreed ECI value. In a two-year construction period, the N61 can help reduce the overall CO_2 emission by seven kilotons.

Legislation (public procurement)

Polish legislation: In accordance with the Act of 11 September 2019 – Public Procurement Law (PPL) – contracts concluded by public administration in Poland are awarded taking into account criteria based on the principle of best value for money and using one of the following modes:

Tender procedures with a value equal to or above the EU thresholds:

1) Open tender
2) Restricted tender
3) Negotiation with announcement
4) Competitive dialogue
5) Innovation Partnerships

Legislation (public procurement)

6) Negotiations without announcement

7) Single-source order

Tender procedures below the EU thresholds:

1) Basic mode

The basic procedure may take one of three variants of Article 275 of the PPL:

- Non-negotiation
- Negotiable handling
- Dealing with mandatory negotiations

Checklist

- Once again investigate the characteristics and limitations of your project, as well as objectives and goals to match the type of procedure to best suit your needs.
- In case innovation partnership or competitive dialogue (or similar options in case of private tenders) was not chosen, reconsider the chosen procurement form or make room for circular aspects to be implemented in your procurement process.

3.4. Technical specifications and criteria

3.4.1. Standards

Some of the available standards, supporting tools and frameworks can be implemented in the context of a circular procurement project. They facilitate the sustainable use of resources and energy at the same time supporting consumers, workers and the environment [26].

Standards have a major role in influencing the design of construction and accompanying processes. They may concern environmental characteristics such as material use, durability or consumption of energy or water. References to technical standards including such environmental characteristics can be made directly in the specification, helping to define the subject matter in a clear way.

Examples of standards that may be used in a circular procurement process are:

- ISO standards for Environmental Management Systems in Construction (ISO 14001);
- ISO 19650 standard on information management using building information modelling (BIM);
- Sustainability in buildings and civil engineering works. Design for disassembly and adaptability (ISO 20887);
- Whole-building LCA (EN15978);
- Level(s) – open source tool for measuring carbon, materials, water, health, comfort and climate change impacts throughout a building's full life cycle[3];
- Reversible Building Design protocol[4];

3. https://environment.ec.europa.eu/topics/circular-economy/levels_en

4. https://www.bamb2020.eu/wp-content/uploads/2018/12/Reversible-Building-Design-guidelines--and-protocol.pdf

Best practice

THE LIGHTHOUSE WOODEN APARTMENT BUILDING IN JOENSUU, FINLAND [31]

The Lighthouse uses European Commission's Level(s) reporting framework to demonstrate carbon emission reductions during construction as well as carbon storage through the lifecycle of the building.

The project used automated Level(s) indicator calculations from Building Information Modelling (BIM) and carbon emission information from Environmental Product Declarations (EPDs). Resource efficiency calculations used mass of building materials based on the bill of materials. As wood was the main construction material the project life cycle embodied carbon balance shows that the carbon stored in the building offsets 88% of all greenhouse gases emitted during the construction. Additionally, the wood elements required 50 truck deliveries compared with estimated 270 deliveries that would have been required in case of a concrete construction.

Legislation (public procurement)

Energy Efficiency Directive (EED) on public procurement

The Art. 7(3) refers to the contract design phase and creates an obligation on the Member States to "ensure that contracting authorities and contracting entities assess the feasibility of concluding long-term energy performance contracts that provide long-term energy savings when procuring service contracts with significant energy content". The first phrase in the proposed Art. 7(5) refers directly to the EU green public procurement criteria. It provides that "5. Member States may require that contracting authorities and contracting entities take into account, where appropriate, wider sustainability, social, environmental and circular economy aspects in procurement practices with a view to achieving the Union's decarbonisation and zero pollution objectives. Where appropriate, and in accordance with the requirements laid down in Annex IV, Member States shall require contracting authorities and contracting entities to take into account Union green public procurement criteria".

Checklist

- Investigate if attending you goals and needs would be facilitated by the use of available standards.
- Match the most fitting standard to your requirements (e.g. limiting carbon emission may make use of Level(s), while temporary building may utilize Reversible Building Design).
- Check if using the chosen standard defines your requirements clearly.
- Make sure if the chosen standard influences the optimal selection of a contracting party instead of limiting competitiveness.

3.4.2. Performance / function requirements

Contracting authorities can apply specifications based on performance or functional requirements. A performance-based or functional specification describes the desired results and outputs, e.g. in terms of quality, quantity, and reliability [14]. It also includes how they will be measured, possibly in line with the project's Key Performance Indicators ***(see section 5.2)***.

The performance/function specification is a recommended option when applying circularity in the procurement process. It does not explicitly prescribe the inputs or work method, so the tenderer is free to propose the most appropriate solution. This type of procurements fit perfectly in the innovation partnership and competitive dialogue forms ***(see section 3.3)***.

A performance-based approach usually allows more scope for innovation and in some cases will challenge the market into developing new technical solutions [47]. The ordering party may ask the tenderer to indicate how the desired result will be achieved and how they will meet the level of quality specified in the procurement documents. When setting performance-based specifications, the procurer should think carefully about how to assess and compare tenders in a fair and transparent way.

Best practice

CLOSED LOOP TOWN HALL CONSTRUCTION BRUMMEN, NETHERLANDS [12]

Brummen city council knew it required more room for the next 20 years. However, its capacity needs beyond this time were uncertain. As such, instead of taking a traditional approach to building works procurement, the city decided to adopt a more flexible, circular approach which would see them 'lease' a new building under a 20-year service contract. The building was designed in a way which allowed it to be disassembled and components returned to suppliers, including structural beams, cladding, and partitions and so on.

Legislation (public procurement)

Upcoming requirements for buildings' energy efficiency in the EU

Energy Performance of Buildings Directive currently proposes that:

- all new publicly owned, occupied or operated buildings must be Zero Emission Buildings from 1 January 2026;
- all other new buildings must be zero-emission by 1 January 2028. All existing buildings must be zero-emission by 2050.

Building energy rating („BER") certificates - provide a method of assessing building energy performance. More generally they are referred to as energy performance certificates (EPCs) across Europe. One important provision of the EPB Recast Directive relates to the harmonisation of the scale of assessment of building energy performance across the EU. It is proposed that all buildings will be assigned a rating between G and A, with G representing the lowest rating in terms of energy performance and A representing buildings which meet the definition of a Zero-Emission Building in the EPB Recast Directive.

Regarding BER Certificates it is proposed that:

- as of 1 January 2027 all publicly owned and commercial buildings must obtain at least a class E rating and by 1 January 2030 a class D rating;
- for private residential buildings, the EPC requirements are class E by 2030 and class D by 2033;
- all buildings must reach class A by 2050.

Checklist

- Define your circular economy criteria for performance/function that are measurable, objective, transparent and verifiable.
- Investigate if buying only the performance/function (product as a service) instead of the ownership of product is feasible in your procurement process.
- When you communicate the performance/function you want to achieve to your suppliers, consider how to allow for fair competition.
- You may need to pay special attention to SMEs and the development of their capacity to respond to such criteria.
- Pay attention to how far up the supply chain it is necessary to go for adequate fulfilment.
- Allow suppliers to challenge the criteria if they can see opportunities to improve circularity.
- Consider purchasing options that increase the overall value of the construction in its entire lifecycle (e.g. supplier can provide repair, reuse, rental, recommence, and remanufacturing options at scale).

3.4.3. Product and material requirements

By applying circular economy principles to a construction project, you can keep existing materials in use and retain their value, thus avoiding waste, stimulate market innovation for less resource-intensive materials, and ultimately reduce the embedded carbon of construction materials and lessen the environmental impact of raw material demand [52]. ***Please see Circular Construction Material guideline for more information***.

The procurer can insist that the purchased product should be made from a specific material or contain a certain percentage of recycled or reused content [30]. Requirements regarding the restriction of dangerous substances in the product can also be implemented. To ensure

that the principle of non-discrimination is respected, such restrictions should be based on an objective risk assessment.

At this point in time product and material requirements can be but do not have to be precise. For example, maximising the use of recycled content can become an award criteria instead of a straightforward requirement [12]. However, the procurer should make sure that the circular focus areas are monitored later in the procurement process ***(see section 5.2)***.

A performance-based approach usually allows more scope for innovation and in some cases will challenge the market into developing new technical solutions [47]. The ordering party may ask the tenderer to indicate how the desired result will be achieved and how they will meet the level of quality specified in the procurement documents. When setting performance-based specifications, the procurer should think carefully about how to assess and compare tenders in a fair and transparent way.

Best practice

RECYCLED CONCRETE REUSE IN BERLIN, GERMANY [8]

In 2013, the City-State of Berlin launched a pilot project with the aim of encouraging greater reuse of recycled concrete in building construction. A total volume of around 5,400m³ of certified 'circular economy' recycled concrete was used in the construction of a slurry wall and building shell of the new life science laboratory building at the Humboldt University. In comparison with concrete made from primary aggregates, the recycled concrete alternative saved 880m² of virgin gravel, 66% of the energy required for production and transport, and 7% of the associated CO_2 emissions.

Legislation (public procurement)

Construction Products Regulation (CPR) lays down harmonised conditions for the marketing of construction products. As it is now, the CPR does not set product requirements, and the Member States are responsible for the safety, environmental and energy requirements applicable to buildings and civil engineering works ***(see Dangerous Construction Materials guideline)***. Instead, it mainly sets harmonised rules on how to express their performance in relation to their essential characteristics (e.g. reaction to fire, thermal conductivity or sound insulation) and provides harmonised rules on the CE marking of these products. A new proposal made in 2022 but not yet implemented envisions:

- requirements for greener and safer construction products;
- improved digital product information for citizens, businesses and others;
- easier delivery of harmonised standards on the performance of construction products;
- Rules to facilitate innovative business models such as 3D printing.

Checklist

- Consider materials and items that are designed, created and manufactured to be durable, repaired or refurbished, so it aligns with a business model that keeps it at its highest value possible.
- Consider purchases where there is a system in place to collect and return these items for reuse, repurpose, refurbishment, remanufacturing or recycling, thus making sure they don't end up as waste.
- Consider items that use packaging made from reusable, recyclable or compostable materials.
- Consider purchasing items that are free from dangerous chemicals, and thus respect the health of ecosystems.
- Consider purchasing items made from recycled content or use inputs from renewable feedstocks, proven to be environmentally beneficial, or, where relevant, are sourced from regenerative sources.

3.4.4. Production and construction process requirements

Requirements regarding production or provision processes and methods for supply, service and works contracts can also be inscribed into technical specifications. It is not allowed however to insist upon a production process which is proprietary or otherwise only available to one supplier – or to suppliers in one country or region – unless such a reference is justified by the exceptional circumstances of the contract and is accompanied by the words 'or equivalent' [13].

There are numerous types of production or construction process that may be required [32]. This concerns i.a.:

- local sourcing of materials;
- logistic and transportation requirements in terms of carbon emissions;
- reuse of scrap materials onsite;
- application of modular elements;
- requirement of certain efficiency of machinery used;
- overall construction process carbon emissions requirements.

Best practice

SEESTADT DEVELOPMENT, VIENNA, AUSTRIA [6]

In Vienna, local material reuse was taken to the most literal sense: Thanks to coordination and aligned ambitions in the early planning phases of the Seestadt Development, 1 million tonnes of excavated earth and aggregates sourced, cleaned and crushed on the site were used in the construction of 3,000 new housing units. Such mobile machines save 90% of CO_2 emissions compared to using an aggregate processing plant 25 km away due to avoiding heavy-duty diesel transport.

Legislation (public procurement)

In the latest Corporate Sustainability Reporting Directive (CSRD) milestone, the European Commission published its final Delegated Act for the European Sustainability Reporting Standards (ESRS) that have implications for procurement and supply chain:

- Organizations will be required to disclose information on their supply chains, including environmental and social risks and impacts.
- Procurement departaments will need to align their sourcing strategies with sustainability objectives and collaborate with suppliers to ensure adherence to environmental and social standards.
- Mandatory Scope 3 Emission Reporting (Double materiality) requires firms to assess whether each disclosure requirement is material based on a double materiality assessment that covers both an organization's environmental and financial impacts. This includes aspects such as; greenhouse gas emissions, energy efficiency, environmental footprint results. CSRD requires Scope 3 reporting, depending on company size, with a gradual rollout between 2024 and 2028.

With some exceptions, the CSRD applies to all large listed and unlisted companies that meet at least two of the following criteria:

- Balance sheet total of more than €20m
- Net turnover of more than €40m
- Average number of employees during the financial year of more than 250

Compliance with the new reporting regulations will be phased in over time, dependent on the profile of the organisation:

- January 2024: companies already subject to the Non-Financial Reporting Directive (reporting in 2025 on 2024 data)
- January 2025: large companies not currently subject to the Non-Financial Reporting Directive (reporting in 2026 on 2025 data)
- January 2026: listed SMEs and other undertakings (reporting in 2027 on 2026 data)
- January 2028: non-EU companies with significant undertakings in the EU (reporting in 2029 on 2028 data)

It is worth noting that some SMEs have been granted three additional years to achieve compliance with the CSRD and may opt out until 2028.

Checklist

- Consider purchasing goods that are manufactured, distributed, sorted and recycled using renewable energy.
- Consider services and products that, through their production, maximise resource efficiency (water, energy, material use etc.).
- Consider local sourcing of materials and elements.
- Investigate if scrap material reuse is possible.
- Try to implement pre-demolition audits if relevant (appropriate process for sorting and logistics may follow).

3.4.5. Considering variants

Variants are means of introducing greater flexibility in the specification, which may result in a more environmentally-friendly solution being proposed by bidders. The variants allow potential suppliers to submit an alternative solution which meets certain minimum requirements, but may not meet the full specification. Therefore, it is crucial to clearly distinguish mandatory minimal technical requirements in the specification [27].

Both variant and non-variant bids are then evaluated against the same set of award criteria to identify the most economically advantageous tender. This can be a useful approach in case the costs or other impacts of an alternative product or service are unknown, e.g. the effect of introducing higher insulation standards on the completion date. Tenderers can also be allowed to submit more than one bid: a standard and a variant solution. At all times variants must be linked to the subject-matter of the contract.

Checklist

- Consider if allowing variants would increase the flexibility and scope of circular solutions that may be applied in your project.
- Distinguish mandatory minimal technical requirements these variants have to meet in your description.
- Decide if allowing variants would inform you about the unknown impacts of alternative approaches, and is this information relevant for you.
- Consider allowing more than one bid.

3.5. Commitment options

Contract clauses may include the required commitments which have been made as part of the procurement process [35]. The standard option is to provide specific requirements, e.g. a guarantee period of 5 years. Another way of doing this is to provide a set of contract conditions covering environmental aspects of the construction after its completion and allow tenderers to propose specific levels of performance for each condition. The following requirements could be included:

- a minimum guarantee period;
- continuous monitoring of product circularity during the contract period;
- transparent communication proving that the product does not contain e.g. dangerous substances;
- confirmation of the suppliers' transparency regarding the materials used to create the product (Bill of Materials);
- committing the supplier to taking back construction materials or elements at the end-of-life of the construction and possibly agree on a price or calculation method with your supplier and add the buyback terms to the contract.

The requested requirements must be feasible. The feasibility can be determined in the market consultation phase ***(see section 4.2)***.

Checklist

- Evaluate if using a commitment option would be beneficial in your procurement process.
- Investigate what types of commitment are of your interest.
- Decide on the characteristics of your commitment options (e.g. guarantee period, length of circularity monitoring).
- Determine if the commitment options should be specific or rather include the voice of the suppliers.

3.6. Award criteria

Award criteria are used to assess and score the offers that are compliant with the technical specifications. Unlike the pass/fail nature of technical specifications, award criteria allow to progressively reward better performance [28].

When deciding on the award criteria[5] many factors need to be taken into account. Price should in no circumstances be the only criterion if circularity concept is to be applied. One option, taken from the public procurement regulations but also applicable in the private procurement processes, is the implementation of the Most Economically Advantageous Tender (MEAT)[6]. The 'alternative' criteria which can be used in a MEAT assessment include [59]:

- quality;
- price or cost using a cost-effectiveness approach;
- technical merit;
- aesthetic and functional characteristics;
- accessibility;
- social characteristics;
- environmental characteristics;
- innovative characteristics;
- after-sales service and technical assistance;
- delivery conditions such as date, process and period.

It is important, that the award criteria reflect circular ambitions of the project. They may include circularity indicators ***(see section 5.1)*** Aligning with generally accepted measurement methods for your ambitions is recommended. Choosing a measurement method that only one or a few suppliers adhere to should be avoided, as this will give them an unfair competitive advantage.

In some cases, the investment costs might be higher than usual, however the long-term costs (TCO/TCU) may well be lower. Suppliers are often keen to provide circular products but the way in which is included in tenders makes it difficult for the suppliers to compete with less circular alternatives. The procurer has to understand this dynamic, and prepare the award criteria for circular measures and technologies. In such cases, asking for the price of the products, but also the accompanying services is recommended. For reasons such as this, developing a business case in advance to test it with potential suppliers via a market consultation, can be beneficial, primarily in order to establish request a price that fits procurer's circular ambitions.

Once the award criteria are established, they need to be allocated weights. The weights should reflect the project priorities. Otherwise, it might be the case that supplier proposing a lower price and mediocre quality can perform better to a supplier that scores relatively higher on the qualitative criteria but might not compete as well on the price aspect. This is not recommended as the procurer might end up with a winning offer that is not circular at all. In order to make sure overspending on circularity will not take place, an upper limit can be included in the tender.

---

5. In case of public procurement processes rules in the European Union require that public contracting authorities must publish all tender evaluation criteria and its weights in advance. The same approach is recommended for private procurement processes.

6. MEAT was introduced through the Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement (see section 5.1).

Procurer should make sure that the criteria are unambiguous, to ensure comparability of offers. A combination of quantitatively and qualitatively assessment might be used. Evaluating and assessing a contract can make use of multi-criteria decision analysis, e.g. the Weighted Sum Approach (WSA) and the Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS)[40].

Best practice

MAISON DES CANAUX RENOVATION, PARIS, FRANCE [41]

In March 2020, the City of Paris signed a design-build contract for the renovation of the Maison des Canaux with the objective of circular economy implementation. circular. The requirements were limiting virgin materials use as well as limiting energy and water use by:

- proposing removable modular arrangements (e.g. partitions adaptable to the different uses of the room on the ground floor),
- installing renewable energy, heating and collecting rainwater.
- Source 100% materials from re-use, bio-sources or with at least 15% recycled materials content, primarily from Paris and Ile de France;
- Aim for zero recoverable landfill waste.

In effect 96% of materials were recovered and 50% reduction in energy consumption followed.

Legislation (public procurement)

Green Public Procurement Criteria for Office Building Design, Construction and Management [59]

European Commission issued a document that presents voluntary criteria for construction sector to use in public procurements[7]. It addresses the procurement process for office buildings, including their design, site preparation, construction, servicing and ongoing management. Major renovations of office buildings are also addressed within the scope of the criteria. The criteria address the main hotspots along the whole life cycle of a building, road, etc. from materials production (including raw materials extraction and transportation), to construction, use (fuel consumption during the road service life due to the pavement-vehicle interaction), maintenance (and operation) and end-of-life.

The most significant environmental impacts are related to greenhouse gas emissions from fuel consumption during the use of the construction or infrastructural item as well as resource use to manufacture construction materials. Other environmental areas of interest, such as water, habitat preservation and noise emissions reductions are also addressed [5].

7. Dodd N; Garbarino E; De Oliveira Gama Caldas M. Green Public Procurement Criteria for Office Building Design, Construction and Management. Procurement practice guidance document. EUR 28006. Luxembourg (Luxembourg): Publications Office of the European Union; 2016. JRC102383 (N, E, & ., 2016)

Checklist

- Make sure the means by which you evaluate the offers also reflects your circular ambitions.
- Provide guidance on the aspects that need to be included and make sure your questions are unambiguous.
- Choose criteria other than just price and allocate at least 20% weight to those criteria.
- Consider limiting the overall budget of the products to fit your financial abilities but also to accommodate circular ambitions.
- Make sure to not only ask for a product, but also the accompanying services.
- Focus on long term costs, possibly using life-cycle costing.
- If possible, consider a business case, conduct trade-off and sensitivity simulations in order to understand different scenarios and the circular economy value vs. the up-front monetary cost.
- Decide on price-quality ratio that determines the circular impact you can achieve.
- Try to combine the total cost of ownership and circular economy related value in one analysis to maximise value.

4. Engaging the market

4.1. Longlisting suppliers

The previously enumerated preparation to the procurement, specifically those in section 3.1, can result in the identification of suppliers that could be the most relevant in the consecutive stages of the process. Longlisting those suppliers could help the consecutive actions in the circular procurement process.

The identification of suppliers can also be based on previous experiences and procurement processes. It can be supplemented with a market search among their competition and companies interested in sustainability. A desk research on circular companies (e.g. members of national circular hotspots) as well as suppliers active in best practice cases, also those enumerated in this guideline may also be helpful.

Best practice

DEMONSTRATION BOX FOR CIRCULAR CONSTRUCTION WITHIN DE POTTERIJ, MECHELEN, BELGIUM [23]

The circular construction demonstration box was constructed inside the 'De Potterij' building to showcase circular construction alternatives to local citizens. The box was constructed by the circular principle of maximising reusability. All the products are easily detachable. The lifetime of the box is flexible, while ultimately materials the box is made of will be returned to the suppliers who can give them a second life.

The construction and materials were not procured through a classical procedure. A market exploration and dialogue were conducted to identify relevant parties. The 15 suppliers engaged in the pilot, offered the use of their circular products in exchange for the exposure that the project would give them, and circular construction as a whole.

Checklist

- The market research you've already done can be harnessed to recognize companies that could be entered on the long list.
- Make use of your experience with previous tenders and procurement processes to identify sustainable suppliers.
- Carry out a desk research on circular companies to identify additional entries on the long list.

4.2. Market engagement and consultations

Circular procurement often requires a shift from the procedure and requirements being set solely by the procurer, to a process where actions are decided following exchanges between potential suppliers and procurers [24]. This is an opportunity to communicate needs, collect information on goods and services available, and test the viability of idea being implemented. In case of innovative partnership procurement form being used, the contracting party and the supplier can search for an innovation which fulfils principles of the circular economy.

Market engagement allows for the exploration and promotion of new business concepts, technologies, business models, materials, new models of provision and payment. The market engagement can specifically take the form of market consultations that can be conducted in a number of ways:

- a request for Information (RFI), in which suppliers are consulted in writing;
- one-on-one meetings with potential suppliers; and /or,
- a plenary market consultation attended by several suppliers and/or representatives from different parts of the value chain.

Market engagement can provide the procurer with important information about solutions that are readily available, potential bidders, interest from the market, suppliers willing to engage in an innovation or growth trajectory, insight in the supply chain and the suppliers' potential impact on circularity, feedback on the requirements, market trends, potential alternative circular business models that might be suitable, potential risks and issues involved [11].

The outcomes of the market engagement should be fed into previous considerations (points 2.3, 3.3, 3.4, 3.5). As the tender specifications will be more realistic through market engagement, the chances of receiving qualitative, suitable bids will be much larger.

Best practice

THAMES TIDEWAY TUNNEL, LONDON, GREAT BRITAIN [51]

The Tunnel is a 25 km sewage and rainwater discharge tunnel running under the River Thames. The contractors were given flexibility in their design briefs to adapt the design driven by the team's ambition to challenge specifications and reduce materials and waste. This spurred innovation which identified numerous saving opportunities. Appointing contractors early in the design process allowed for the material selection and quantification of carbon benefits to be realised, captured and shared.

Checklist

- Analyse the required capabilities your supplier must have to fulfil your purchasing needs with the circular economy criteria.
- In case the capabilities are not present yet, make sure to discuss how suppliers plan on building these in line with your requirements.
- Get to know what parts of the supply chain the supplier can cover and what parts of potential upstream activities they have influence over in terms of circular economy requirements.
- Help suppliers develop new circular economy capabilities by providing feedback, choosing the right procurement form, etc.

4.3. Briefings on circular economy

Suppliers' knowledge of circular economy is often lower than what the ordering party assumes. Briefings on circular economy and the concept's applications in the project can help to avoid these kinds of misunderstandings [7]. All suppliers that are longlisted or participate in a procurement process should be offered a briefing possibly in a form of discussion between the ordering party and the interested supplier. The meetings should clarify the overall circular ambitions of the project as well as the concept itself [49].

Best practice

'T CENTRUM BUILDING, WESTERLO, BELGIUM [9]

The procurement process used a two-step competitive dialogue procedure. Because of the circular ambitions and the wish to do things differently, it was important from the outset to get the right parties around the table with a similar, circular mindset. In 2019, masterclasses were organised with well-known speakers to discuss circular procurement. During these masterclasses, the plans for 't Centrum were highlighted. These masterclasses attracted considerable interest and enabled participants to team up and start cooperating.

A brief vision document was written, containing four ambitions:

- future-proof sustainability in terms of closing economic cycles;
- future-proof sustainability in terms of the ability to respond to changing spatial and functional needs;
- responsible sustainability in the form of a building with a healthy and comfortable environment;
- using a building to set an example for the construction sector.

The requirement was to design, build, maintain and ensure energy for 20 years for a fixed budget. The tenderers could receive extra points for the use of circular business models. A relatively low investment budget and high operational budget was established to encourage this.

Over 50 different companies participated in the procurement process for this pioneering construction project. The successful offer proposed a well-thought-out design, prefabrication and dry connections. They resulted in an extremely short building time of 11 months. Compared to concrete and steel constructions similar in size, this building saves 108% on CO_2 emissions over a span of 20 years (overall net capture of CO_2) due to the use of natural building elements such as wood.

Checklist

- Make sure the suppliers have a good understanding of circular economy principles (they articulate them and demonstrate their understanding properly through their activities and offerings, have a sustainability officer, circular economy strategy, etc.); otherwise suggest briefings on circular economy.
- Conduct the supplier briefings, setting out the requirements and communicating circular economy opportunities.
- Communicate and confirm the selection criteria and objectives during these briefings.
- Ensure the suppliers fully understand the commercial and circular economy expectations.

4.4. Buyers, suppliers and supply chain relationship development

Collaboration between value chain partners usually does not happen spontaneously. Therefore, a genuine contact with the potential suppliers, rather than conducting a procedure entirely on paper or on screen should be pursued. This is to facilitate two types of collaboration: collaboration between the buyer and supplier and collaboration between different value chain partners [50]. Collaboration between the buyer and supplier is best facilitated through a conversation within the tendering process. Plenary market consultations are also possible.

The selection of the form of the procedure is also relevant in this aspect e.g. a competitive dialogue or an innovation partnership may be beneficial ***(see section 3.3)***. The division of the procedure into a selection phase and an award phase can also be beneficial.

The procurer might also envision a “dialogue phase”. It is advisable to set up time for the tenderer to facilitate discussion amongst the value chain partners. This can allow the traditional, competitive relationships to transition to collaborative relationships. The collaboration between supply chain partners can also be facilitated by including technical competence requirements linked to reference projects.

Best practice

SYDNEY METRO NORTHWEST, AUSTRALIA [2]

A contractual requirement for Sydney Metro Northwest’s contractors was to source 100 per cent of all timber products used from either re-used, post-consumer, recycled or ethically certified timber were practicable.

Securing the right tree species with the necessary colour, texture and durability was complicated to source from sustainably managed forests locally. Because of the lead time required for cutting, moulding and dressing the timber, the contractor took an innovative approach of securing the timber directly from the forest owner. Timber procurement was also presented as a priority item to tendering subcontractors, and early engagement with the installation and manufacturing contractors ensured the remaining timber could be sourced effectively. The success of this procurement was due to a collaborative approach between the contractor’s sustainability team and procurement team.

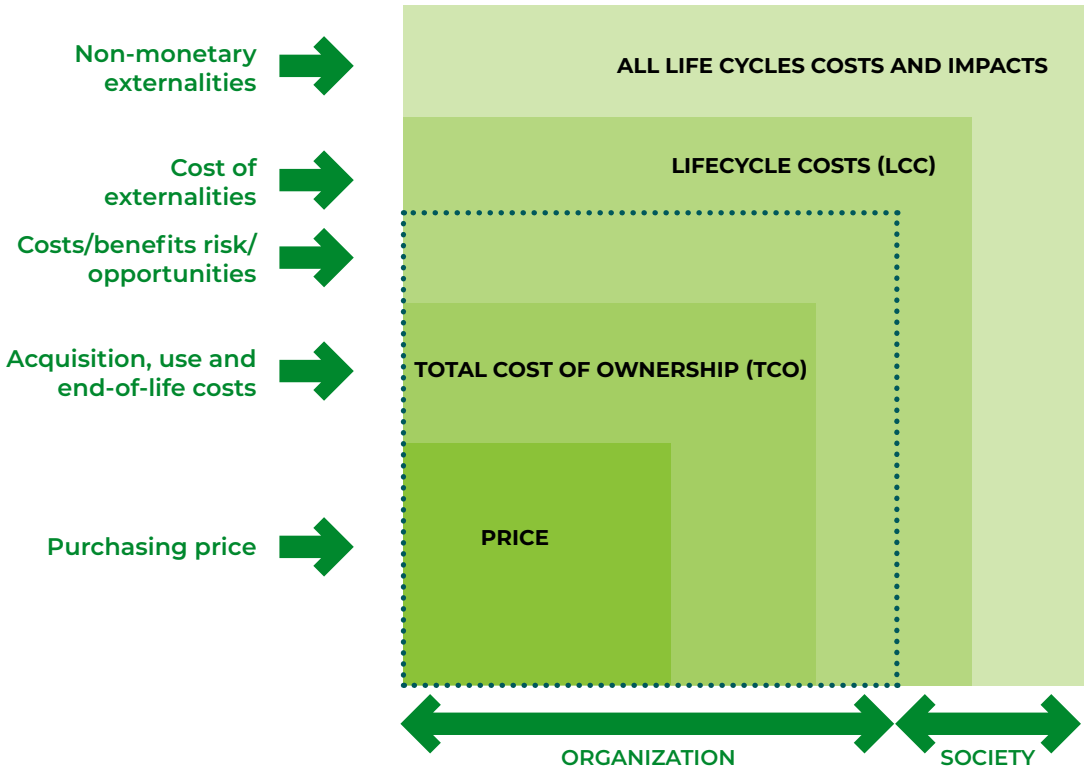
Checklist

- Get to know where the suppliers themselves have an opportunity to influence circularity.
- Propose forms of cooperation among economic operators that can be useful in reducing waste and encouraging recycling and reuse of contract items or waste materials produced.
- Encourage the creation of temporary associations in which there is cooperation between those who produce a good or provide a service and those who are to be in charge of disposal or encourage the second use of waste.
- Consider dividing the procedure into a selection phase and an award phase, or adding “dialogue phase” to facilitate value-chain cooperation.
- Conduct supplier site visits or other verification activities if necessary to see the circular economy elements of a supply chain if possible.

5. Evaluating and awarding a contract

5.1. Assessment and circularity measurement

Before the selection of the supplier and awarding a contract the procurer will have to measure and assess the previously chosen award criteria for each of the offers using the previously decided methods. Circularity measurement can be applicable as a part of the award criteria. These measurements may be based on different premises and scopes. It is best to maximize the bounds of circularity assessment, including costs in the whole life cycle as well as all externalities (see graph below).



Source: ISO201400 Sustainable Procurement Guideline (2017).

If and when measuring circularity, the procurer will examine the product or the offer based on a number of circularity criteria established earlier. When measuring circularity only quantifiable indicators that can be validated based on available and robust data can be used. Following this line of reasoning, circularity measures can only assess the level of circularity of a product that it has at the time of measurement. It is not possible to determine the level of circularity in the future, during the use phase or at the end of the lifecycle.

Selection criteria are embedded to guarantee the competence of the contractor. However, it's not always easy for circular providers, often SMEs and start-ups, to present experience, certificates and references [22]. Therefore, the procurer can ask for a description of the provider's technical equipment, the measures taken to safeguard quality or their study and research possibilities, as well as an indication of supply chain management systems and the tracking systems that the provider can apply when executing the contract. Verification of such claims can involve performing checks on the information, interviewing the vendor, or verifying documentation.

Best practice

SUSTAINABLE RECONSTRUCTION OF THE MOTORWAY A6, NETHERLANDS [45],[20]

The contract for widening a 13km stretch of road used a MEAT procedure, which assigned costs to environmental impacts, and then awarded the contract to the lowest corrected total price. Environmental impacts were calculated using two tools: the CO2e Performance Ladder (which adjusted total price according to estimated emissions) and DuboCalc (a life-cycle analysis tool calculating the sustainability of proposed materials). The winning bid proposed smart construction solutions which reduced material transportation, smart use of asphalt to reduce overall requirement and the use of recycled materials. It was both competitively priced and offered significant environmental savings compared to the baseline. Total savings of 52,800 tonnes of CO2e or 15,048 tonnes of oil equivalent have been estimated over the lifetime of the infrastructure.

Legislation (public procurement)

Level(s)

The European Commission, in collaboration with a number of building professionals, has developed a tool to assess and report on sustainability aspects throughout the lifetime of buildings. The tool is called Level(s). The objective is to provide a common language on sustainability and circularity for buildings targeting the mainstream market. It should be an easy entry point to sustainability assessment, which includes the building projects which currently consider such an assessment as being too complex.

Level(s) will increase knowledge across the market and will gradually allow standard building projects to improve building performance in a cost-efficient way and enable comparability, exchange of good practice and benchmarking. The outputs are meant to be used in different initiatives for circular buildings, such as green public procurement, building passport concepts and market initiatives.

Life-cycle costing

Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC Text with EEA relevance state that: “To identify the most economically advantageous tender, the contract award decision should not be based on non-cost criteria only. Qualitative criteria should therefore be accompanied by a cost criterion that could, at the choice of the contracting authority, be either the price or a cost-effectiveness approach such as life-cycle costing. However, the award criteria should not affect the application of national provisions determining the remuneration of certain services or setting out fixed prices for certain supplies. Common methodologies should be developed at Union level for the calculation of life-cycle costs for specific categories of supplies or services. Where such common methodologies are developed, their use should be made compulsory.

Legislation (public procurement)

As for the time being there is no common Life-cycle costing (LCC) calculation method proposed. It is still optional, but if there is a common EU methodology, the life-cycle costing becomes mandatory.

LCC in construction consists of several key elements:

- Conduct a structured cost analysis that clearly identifies which cost sources most influence your overall costs.
- With major expenditure sources clear, it is possible to identify priority areas for improvement in the baseline design.
- Comparison of the benefits and impacts of the design alternatives to find the best solution for the project.

How to get maximum value from your life cycle costing analysis

- Conduct the LCC early. The LCC is most effective when implemented in the early project phases before major decisions have been made.
- Engage the whole team. Particularly when creating alternatives to ensure the full potential of the project is captured.
- Repeat the LCC throughout the project. LCC should be regarded as an ongoing process and calculations should be repeated several times as the project progresses through its stages and kept up-to-date to ensure accuracy and high-quality analysis.

Combine LCC with LCA to ensure that you are making the best cost-and carbon-saving decisions for your project.

Checklist

- Clearly measure all of earlier specified award criteria.
- Conduct a multi-criteria decision analysis.
- Focus on circularity measurement aspects that are tangible and calculable, as well as answer your circular needs.
- Consider conducting a Life-cycle costing (LCC) assessment.

5.2. Deciding on Key Performance Indicators

Key performance indicators will help you monitor the execution of the project's objectives. It is best to think of them before signing the contract with the supplier so that each party knows the requirements and goals the project is trying to achieve [35].

Each organization will choose different metrics based on what is important or material to their business and their industry. Environmental sustainability metrics are the main area for tracking circular procurement in most organizations. Environmental metrics cover a wide range of activities impacting climate, waste, and energy use [6]. Such KPIs include e.g.:

- CO_2 emissions
- Energy consumption in kWh
- Water usage in metric tons
- Waste reduction in cubic meters
- Plastic reduction in metric tons
- Material efficiency in material input per unit of service (MIPS)
- Noise pollution in decibels
- Compliance with chemical safety requirements
- Compliance with environmental standards
- Number of suppliers audited against environmental standards

These indicators may take different forms, e.g.:

- Minimum [xx] % of non-hazardous construction or demolition waste generated by the project and diverted from landfill, by [volume] [tonnage]
- Minimum [xx] % of material value derived from recycled and re-used content in new construction
- Maximum [xx] [volume] [tonnes] [per value] of non-hazardous construction waste generated by the project.

KPIs or other forms of monitoring compliance with environmental commitments should take into account the time and resources which will be needed to apply these in practice. It may be better to include a smaller number of such indicators which can be meaningfully enforced if it is unrealistic to monitor a long list of commitments. KPIs should always go beyond basic compliance with environmental law or other obligations which a contractor would have to meet anyway.

Best practice

RAG FOUNDATION BUILDING [44]

In line with the C2C principles, the new RAG Foundation administration building was constructed from regional and fully recyclable materials. For instance, the ribbon windows consist of a frame construction made of C2C-certified aluminum profiles and glass. Carpet tiles with particulate-binding properties and oak parquet flooring were used in the building as C2C-certified floor coverings, in addition to a C2C-certified glass partition wall system. Sustainable production and use of energy are provided by a geothermal system and a solar pergola integrated into the roof. Additionally, the green roof promotes biodiversity and compensates for the ground area used up for the construction of the building.

Checklist

- Choose KPIs that match your goals and objectives.
- Decide on specific, measurable indicators and limit their number to clarify what you are after and to diminish the monitoring burden.

5.3. Selection and contract awarding

Evaluation of tenders is realized by the evaluation committee, it must proceed exactly according to the established evaluation criteria. Evaluation and assessment must be carried out in accordance with the principles of transparency and non-discrimination of tenderers. The evaluation committee, may consider that the tender of one of the tenderers is abnormally low and may exclude the tenderer.

Subsequently, you will want to organize a consensus discussion during which the individual assessors discuss their individual findings and determine the eventual score per question per supplier. The team discussion allows for the different perspectives to be discussed, allowing 'plural subjectivity' to arise, which results in a more objective judgement [57].

Checklist

- Carry out the evaluation in accordance with the principles of transparency and non-discrimination.
- Allow the possibility to discuss differences among individual assessors in the evaluation committee if criteria consists of qualitative aspects.

6. Contract management

6.1. Monitoring execution by appointing a contract manager

To effectively monitor agreements during the execution of the contract, it is vital to have clear knowledge of the background and the reasoning behind these agreements. For this reason, the contract manager should preferably be aware of the context involved in all of the agreements.

The procurer should ensure to appoint a contract manager with the necessary skills. It is also useful if this manager shares the organization's long-term vision and is intrinsically motivated to achieve a successful circular contract. Collaboration is a key aspect of many circular contracts, so it is not advisable to negotiate forcefully. For this reason, it is best to seek a person with strong interpersonal skills.

Procurement officers or other instigators of circular processes should remain involved during the contract management phase. Internal clients or project managers who were not involved in the tendering process may have a greater tendency to revert into old habits. For example, they may be tempted to drive down costs or put pressure on people without keeping the original ambitions in mind. The roles of procurement officer and contract manager can be assigned to a single person, although the organization should ensure that this person has enough time available to perform both roles.

Checklist

- Select a contract manager with strong interpersonal skills and knowledge and involvement in circular concepts.

6.2. Monitoring execution by appointing a contract manager

Some suppliers adhere to a standard project strategy and are less adept at dealing with the finer details of e.g. the maintenance phase. Suppliers typically possess only one of these two skill sets, because the other is not part of their core business. During execution, the procurer should therefore examine whether the supplier pays enough attention to who will manage the project and how. This can be also assured within the contract.

After the contract comes into force, it is possible that other issues may come to light that could not be taken into account during the formulation of the agreements. Within long-term contracts specifically, one can anticipate unexpected circumstances to arise. The procurer should make sure to evaluate the agreements on a regular basis and amend them according to the latest insights. No one should be obliged to comply with unrealistic agreements, or agreements that have not proven their relevance yet ***(see section 2.5)***.

Best practice

SOCIAL HOUSING NEIGHBOURHOOD RENOVATION, ANTWERP, BELGIUM [56]

The traditional tender for the Vinkenhof district renovation was awarded on the basis of price, but also on the basis of the circular design. The circular approach was agreed in mutual consultation. In the circular design that won the tender, skirting boards were used all the way around for the engineering, and the floor was only broken out and replaced locally. Additionally, conservatories were made from old joinery. The original roof tiles were reused.

Best practice

Checklist

- Anticipate unexpected circumstances to arise.
- Examine whether the supplier pays enough attention to who will manage the project and how.
- Make sure to evaluate the agreements on a regular basis and amend them according to the latest insights.

6.3. Ensuring common understanding

The performance criteria are dependent not only on the common understating with the supplier but also on the awareness and behaviour within the procurer's own organization. During the contract period, circular contract management not only depends on the supplier's desired behaviour, but also on the internal cooperation, e.g. with the technicians Therefore, communicating the possibilities of the contract within the organization can be crucial for a success of the project. Involving staff who has knowledge of the products or processes is recommended. Ideally, it is the supplier's responsibility. The procurer should be aware that innovative projects require extra time and effort on part of the buyer and the supplier. This additional time is needed prior to and during the contract period. The procurer should show understanding for each other's responses. If the supplier is indeed proactive and takes initiative in both parties' interests, then it would be sensible to reward this in some way.

Checklist

- Actively and timely communicate the possibilities of the contract within your own organization or request it from your supplier.
- Show understanding for the suppliers actions, especially if they are connected to innovation and novel technological applications.
- Try to be precise on the aspects you are most interested in ***(see section 5.2)***.

6.4. Performance review

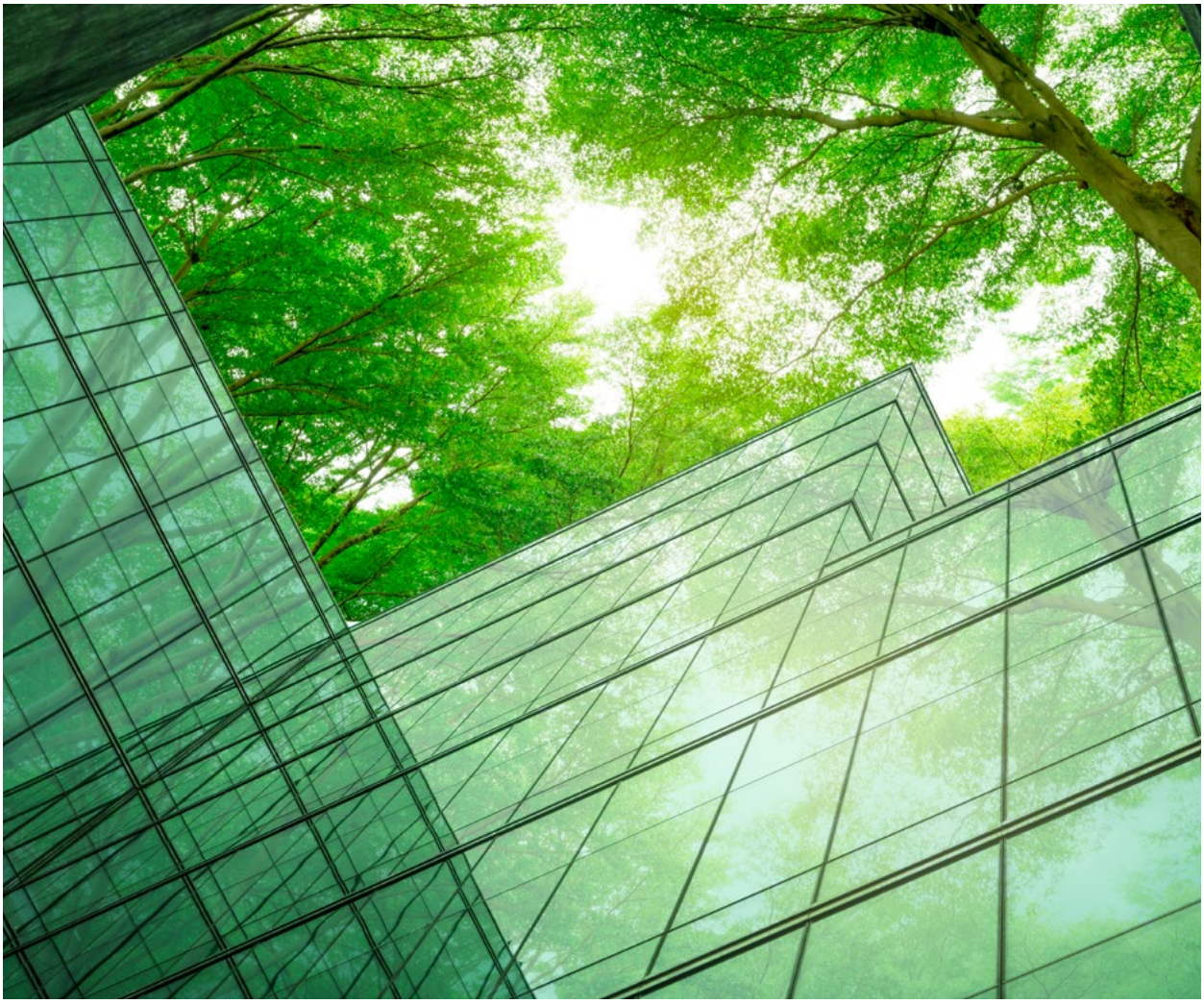
To ensure effective contract management, the procurer should conduct evaluations together with the supplier to keep a close eye on the KPIs and maintain regular communication regarding this issue. Regular reports based on the project's key focus areas and ambitions are expected. Regular consultation to ensure common understating and new developments are also recommended.

Answer questions that not only help the current project but may also aid future ones is suggested. These may include questions such as:

- What parts of the procurement were successful and which ones failed and why?
- Were the original circular ambitions for the procured goods or service met?
- Was the contract and its obligations, including the circular specifications, clearly stated with the supplier?
- Was the used set of (circular) criteria fit for purpose?
- Where the circular aspects of the contract honoured?
- Where there any penalties for not delivering on the specific criteria?
- Where any of the non-circular traits of the product or service of lower quality than in a linear procurement?
- How can we include these learnings in upcoming procurements, also for other product groups?
- How can we further support and encourage circular procurement in our organisation?
- How do we inform management of the progress? How was the supplier relationship influenced?

Checklist

- Create an open communication stream with your supplier to periodically evaluate how well they fulfil your circular economy needs.
- Make sure the performance review provides insights on your future circular projects.



7. Bibliography

[1] Lien , N., & Couwenberghe, J. (n.d.). Construction and temporary occupation of a circular hub and Makerspace | City of Leuven, BE. Interreg North Sea Region ProCirc, European Union.

[2] (2019). Retrieved from Sydney Metro Northwest: https://nrt.com.au/metro-northwest/

[3] ACTION SUSTAINABILITY. (2019). The journey towards strategic sustainable procurement. Benchmarking of 40 organisations assessed on their alignment with ISO 20400:2017—Sustainable Procurement—Guidance.

[4] Alhola, K., Salmenperä, K., Rydin, S.-O., & Busch, N. (2017). Circular Public Procurement in the Nordic Countries. Nordic Council of Ministers.

[5] Andhov M. , Caranta R., Janssen W.A., & Martin-Ortega O. (2022). SHAPING SUSTAINABLE PUBLIC PROCUREMENT LAWS IN THE EUROPEAN UNION.

[6] Aspern Smart City Research GmbH & Co KG. (2017). Aspern Smart City Research. Energy research shaping the future of energy.

[7] Benachio, G. L., Freitas, M. d., & Tavares, S. F. (2020). Circular economy in the construction industry: A systematic literature review. Journal of cleaner production, 121046.

[8] Berger, C. (2015). Beton mit recycelter Gesteinskörnung. https://www.springerprofessional.de/baustoffe/beton-mit-recycelter-gesteinskoernung/6558126, Springer Professional. Retrieved from Beton mit recycelter Gesteinskörnung

[9] Binderholz GmbH. (2022). REFERENCE ,t Centrum office building, Westerlo | Belgium. Retrieved from Binderholz GmbH: https://www.binderholz.com/en-us/mass-timber-solutions/t-centrum-office-building-westerlo-belgium/

[10] Brzychcy, M. (2022). Stosowanie klauzul społecznych i środowiskowych jako wyraz realizacji zrównoważonych zamówień publicznych. SWPS Uniwersytet Humanistyczno-społeczny w Warszawie.

[11] CIPRON. (2016). Circular Procurement.

[12] Cristescu, C., Honfi, D., Sandberg, K., & Sandin, Y. (2021). Design for deconstruction and reuse of timber structures -state of the art review. 10.23699/bh1w-zn97.

[13] EIT Climate-KIC Circular Cities project. (2019). The challenges and potential of circular procurements in public construction projects. Helsinki: EIT Climate-KIC Circular Cities project. European Union.

[14] Ellen MacArthur Foundation. (2020). Circular economy procurement framework.

[15] European Commission. (2017). Public Procurement for a Circular Economy. Good practice and guidance. European Union.

[16] Fabbri, M., Glicker, J., Schmatzberger, S., & Roscini, A. (2020). A GUIDEBOOK TO EUROPEAN BUILDING POLICY KEY LEGISLATION AND INITIATIVES. The Buildings Performance Institute Europe (BPIE).

[17] Filipek, M. (2019). ZIELONE ZAMÓWIENIA W ORZECZNICTWIE KRAJOWEJ IZBY ODWOŁAWCZEJ. Biuletyn Stowarzyszenia Absolwentów i Przyjaciół Wydziału Prawa Katolickiego Uniwersytetu Lubelskiego, pp. t. XIV, 16 (1) 2019, s. 17-30. https://doi.org/10.32084/sawp.2019.14.1-2.

[18] Baumschlager Eberle Architekten GmbH (2023, November). Retrieved from https://www.2226.eu

[19] Government of South Australia. (2021). Green Procurement Guideline. Procurement Services SA.

[20] GPP In practice. (2018). Sustainable reconstruction of the A6 motorway in the Netherlands. European Commission.

[21] GXN. (2018). Circle House — Denmark's first circular housing project. KLS PurePrint. Retrieved from http://grafisk.3xn.dk/files/permanent/CircleHouseBookENG.pdf, Retrieved from Building Social Ecology: https://www.buildingsocialecology.org/projects/circle-house-lisbjerg/

[22] (2017). Harnessing Procurement to Deliver Circular Economy Benefits. Rijkswaterstaat in the Netherlands as part of the EU LIFE+ REBus.

[23] Hoff, L. v. (2022). Building a case for circular construction. Interreg North Sea Region ProCirc.

[24] Hossain, M. U., Ng, S. T., Antwi-Afari, P., & Amor, B. (2020). Circular economy and the construction industry: Existing trends, challenges and prospective framework for sustainable construction. Renewable and Sustainable Energy Reviews, 109948.

[25] Interreg Baltic Sea Region. (2020). Recommendations to national policy-makers on CircularPP. European Union.

[26] Interreg North Sea Region ProCirc. (2020). FACTSHEET. CIRCULAR PROCUREMENT GUIDE.

[27] INTERREG NORTH SEA REGION, PROCIRC. (2022). CIRCULAR PROCUREMENT TRANSFORMATION GUIDANCE.

[28] Jones, M. (2022). Circular Procurement – getting started. CityLoops.

[29] Jones, P., & Comfort, D. (2018). The construction industry and the circular economy. International Journal of Management Cases, 4-15.

[30] Kaitlyn, D. (2021). Circular procurement as an enabling tool for secondary material markets. #EU Circular Talks. ICLEI Europe.

[31] Lighthouse Joensuu. (2020). Wood Design & Building, http://www.wooddesignandbuilding.com/lighthouse-joensuu/.

[32] LITHUANIAN INNOVATION CENTRE (LIC), under Interreg Europe programme project Smart Circular Procurement "CircPro" co-financed by the European Regional Development Fund. (2020). Regional guidebook on circular procurement.

[33] Matheson, C., & Evans, J. (n.d.). Aberdeenshire New Build & Refurb. Interreg North Sea Region ProCirc.

[34] McLennan, A. (2020). Circular Procurement for Beginners. ICLEI.

[35] Miedzinski, M., & Diaz Lopez, F. (n.d.). Can public procurement in cities support circular economy and sustainability transition? Innovation for Sustainable Development Network.

[36] Mohamed, J. (2021). The Circular Procurement Tool- Summary. Procurement method to stimulate circular facade systems in mid-rise residential buildings in the Netherlands. Delft University of Technology, Faculty of Civil Engineering and Geosciences.

[37] Motowidlak, U. (2016). ZIELONE ZAMÓWIENIA PUBLICZNE JAKO INSTRUMENT WSPARCIA ZRÓWNOWAŻONEGO ROZWOJU TRANSPORTU. Uniwersytet Szczeciński. Wydział Nauk Ekonomicznych i Zarządzania.

[38] MVO Nederland and Pianoo. (2014). Sustainable Procurement: Government and Private Sector Experts Share Their Experiences with Sustainable Procurement.

[39] Nasvik, J. (2012). Green Concrete for the London Olympics. The Olympic Delivery Authority orders up Sustainability. Concrete Construction.

[40] Oppen, C., & Bosch, S. (2020). Circular Procurement in 8 Steps. Guideline for Residential and Non-Residential Construction. Copper8.

[41] Paris, V. d. (2022). Une réhabilitation innovante, circulaire et solidaire de la maison des Canaux.

[42] PIANOo, the Dutch Public Procurement Expertise Centre. (n.d.). Sustainable public procurement – This is how it's done!

[43] ProCirc Interreg Project. (2023). Retrieved from Circular tender for reused office building: https://northsearegion.eu/procirc/pilot-projects/circular-tender-for-reused-office-building/

[44] RAG Stiftung. (2023, November). Retrieved from https://www.rag-stiftung.de/

[45] Rebel Group. (2020). First energy-neutral highway to be finished year early. Retrieved from Rebel Group: https://rebelgroup.com/en/projects/first-energy-neutral-highway-to-be-finished-year-early/

[46] Rendal, H., & Henriksen-Sharp, S. (2022). Innovation in circular public procurement process; understanding the drivers and barriers to early market dialogue. Nord University.

[47] Sandberg C., Don G., & van Herk S. (2023). How to procure circular Lessons from 30 pilot procurements. Barcelona: Bax & Company.

[48] Sorokina, M. (2022). Preliminary market consultations as a way to involve businesses in circular public procurement. Interreg Europe programme project Smart Circular Procurement (CircPro).

[49] Sprakel, M. (. (2022). Circular procurement in a project setting in the construction sector. Enschede: University of Twente, Faculty of Behavioural, Management and Social Sciences.

[50] Sustainable Global Resources Ltd (Mervyn Jones), Rijkswaterstaat (Jeroen van Aplhen) & PHI Factory (Geerke Hooijmeijer-Versteeg). (2017). REBus Construction. Lessons report. REBus.

[51] Thames Water. (2016). Thames Tideway Tunnel. Retrieved from Thames Water: https://www.thameswater.co.uk/about-us/investing-in-our-region/thames-tideway-tunnel

[52] Tulonen, L., Karjalainen, M., & Ilgin, H. (2021). Tall Wooden Residential Buildings in Finland: What Are the Key Factors for Design and Implementation? In Engineered Wood Products for Construction (p. https://www.researchgate.net/publication/353504092_Tall_Wooden_Residential_Buildings_in_Finland_What_Are_the_Key_Factors_for_Design_and_Implementation).

[53] United Nations Environment Programme. (2018). Building Circularity into our economies through sustainable procurement. United Nations Environment Programme.

[54] Urząd Zamówień Publicznych. (2017). Dobre praktyki w zakresie zrównoważonych zamówień publicznych. Warszawa.

[55] Urząd Zamówień Publicznych. (2017). Krajowy Plan Działań w zakresie zrównoważonych zamówień publicznych na lata 2017-2020.

[56] Van Der Flaas, J., & Kempen, Z. (2021). Social housing neighbourhood renovation. Interreg North Sea Region ProCirc.

[57] Vanacore, E., Boyer, R., & Williander, M. (2020). CIRCULAR PUBLIC PROCUREMENT TOOLBOX. Managerial guidelines for circular procurement practitioners. RISE Research Institutes of Sweden AB.

[58] WRAP Cymru. (2022). Low Carbon & Resource Efficient Construction Procurement. Model procurement wording for public and private sector clients and contractors. WRAP (The Waste and Resources Action Programme) Cymru.

[59] Dodd N; Garbarino E; De Oliveira Gama Caldas M. Green Public Procurement Criteria for Office Building Design, Construction and Management. Procurement practice guidance document . EUR 28006. Luxembourg (Luxembourg): Publications Office of the European Union; 2016. JRC102383

CirCon4Climate

Consortium members:

UNIVERSITY CENTRE FOR ENERGY EFFICIENT BUILDINGS CTU IN PRAGUE

ITI

Leibniz-Institut für ökologische Raumentwicklung

INNOWO

ZAG ZAVOD ZA GRADBENIŠTVO SLOVENIJE SLOVENIAN NATIONAL BUILDING AND CIVIL ENGINEERING INSTITUTE

Supported by:

Federal Ministry for Economic Affairs and Climate Action

European Climate Initiative EUKI

on the basis of a decision by the German Bundestag

https://www.euki.de/en/