Circular Economy and Public Procurement

Gate2Growth

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Foreword

During the EU funded InvestCEC[1] project 2 calls for entrepreneurs were launched in 2023/2024, with the intention to attract business cases representing circular economy solutions. The invited cases should have the potential to become interesting investment opportunities or be of relevance for the municipal or regional public sector. Close to 60 business cases were received representing both "traditional linear" and clear "circular" nature. The examination of the received applications and a subsequent constructive interaction with many of the entrepreneurs allowed for a unique comparison of "circular" business cases with "linear" business cases. It also identified special challenges for both types of business cases highlighted by one of the entrepreneurs, Kathrina Rieger from Consular GmbH:

*"… **it was extremely valuable to see our practical experiences reflected in theoretical models** — particularly regarding **how the growth of circular business models can be constrained by other actors within the ecosystem**. This helped us to better articulate and address a challenge we have been facing for some time. "*

The close interaction with the public sector partner[2] in same EU project also provided a unique insight into challenges connected to public procurement, which has a direct implication for uptake of innovative solutions in the public sector in Europe. Public procurement also surfaced as a special barrier for many of the business cases interacting with the public sector. It also, during the last part of the InvestCEC project, turned out to become the focus of high-level political discussions[3] about Europe's competitiveness following the Draghi report[4].

Some of the conclusions from the analysis of the many business cases are summarized in this document which is **structured in the following way.**

The first part (page 5 – 21) provides a short introduction to circular economy and the nature of "Public Procurement" and how traditional public procurement processes and associated formalities pose potential barriers for the quick uptake of emerging circular economy solutions by the public sector.

The second part (page 22-34) introduces the special risks and challenges connected to circular economy and funding. It also includes ideas for potential solutions to overcome identified barriers based on discussions with entrepreneurs and representatives from public sector and regulatory bodies.

The two annexes cover a summary of European Parliament September 2025 resolution and an explanation of the funding of a VC fund.

Gate2Growth, November 2025

[1] InvestCEC project 2023-2025 number **101082131**
[2] Klagenfurt Stadtwerke and Klagenfurt Municipality, Austria
[3] European Parliament resolution of 9 September 2025 on public procurement (2024/2103(INI))
[4] Draghi report on EU competitiveness, September 2024

1. Circular economy and Public Procurement

The background and structure of the document

Although "Circular economy" in today's discussion is presented as something new, **it is not new or primarily driven by environmental/climate concern**. Many of the early "Circular economy" cases were driven by other motives. Already back in 1922 the major Danish breweries became interested in "bottle recycling" and agreed on a common type of beer bottles. This created a Denmark wide standard beer bottle deposit and "circular economy" recycling system, which allowed the breweries to save money on the part of their product, on which they did not compete. Crews on Danish sailing yachts stopped dropping empty beer cans overboard and people stopped leaving them on the streets more than 40 years ago, not because of any new concern for the environment. The changed behavior was caused by a paid deposit not only for a beer bottle but now also a beer /soft drink can. You got your money back when bottles and cans were returned to the shops – **so "money talks"!** Later all retailers became legally forced to honor the countrywide return & deposit system.

The original driving force behind the Danish, now 50-year-old, Kalundborg Symbiosis[5] was also not climate or resource conservation concerns. The driving force was simple practical business needs from the local industries and a strong interest in cost reduction and in securing stable and reliable supplies. Early in the process the local industries decided to secure the involvement of the municipality of Kalundborg and its public works

These two cases are now old and well-established good examples of Danish circular economy and "waste valorization". However, today many new and highly interesting circular economy businesses are being developed primarily based on a concern for climate and for resource conservation. Most also have an intention to make a business.

Many of the newer circular economy business cases therefor differ significantly from the "old" circular systems, which had a focus on "money savings". They are often based on "environmental concerns and/or reaction to climate change" with an emphasis on resource recovery, product life extension, and waste reduction. This shift, however, requires an extended understanding of how value chains are interconnected and how businesses work collaboratively to close material loops and avoid resource leakage.

The success of individual circular economy projects or business cases are also highly dependent on regional and local factors, including the maturity of recycling infrastructure, the presence of effective public–private partnerships, and the level of citizen engagement. For this reason, viable circular economy business models must be context-sensitive, reflecting the geographical, socio-economic, and regulatory environments in which they operate. Key aspects such as material durability, product reparability and recyclability, and the availability of policy incentives for resource efficiency are all crucial in designing viable circular initiatives.

Many of these "circular" cases are facing substantial challenges to get funded and some, which rely on collaboration with the public sector, find additional barriers connected to public procurement.

[5] See page 32 for a fuller description

The many circular business cases which were analyzed as part of the EU-project varied enormously; from recycling and valorization of waste hair from hair-beauty salons, to recycling and valorization of different types of waste plastics, textiles, wood, and building material. Other cases had a focus on recycling bottles and cans in countries without a deposit system or converting different types of biomasses to energy. Others had a focus on urban mobility. The common denominator for almost all the cases was "a thin or fragile supply chain", with respect to upstream supply and/or a limited number of relevant downstream customers.

How public procurement came into focus

One of the objectives of the EU-project was also to demonstrate how close cooperation between the public sector, innovative SME's and the private financial sector could enhance growth and funding for innovative circular economy business cases. Stadtwerke Klagenfurt's (Austria) partner role as the public sector representative highlighted early in the project that public procurement also poses a substantial barrier for public-sector teams, when they are formulating "call for tender" text. Hence, although public procurement was not identified as a special challenge or risk when designing the scope of the EU project, it surfaced as a problem "all by itself". Nearly 30% of all public spending in the EU is subject to public procurement requirements and procedures. This problem and also opportunity was mentioned as a relevant instrument to address EU's lagging competitiveness in the conclusions from the Draghi Report[6].

Behind the requirements and procedures connected to public procurement has always been a political well-founded interest in securing both a "level playing field" for suppliers to the public sector and a "best price" for products and services. However, these requirements and procedures became identified as barriers not only for the SME's, but also for the public sector's cooperation with early-stage SME's and for the uptake of innovative solutions. It is obvious that an emerging solution can by nature not compete on a solely "best price" criteria.

Figure 2 The public procurement barrier

It therefore turned out that barriers connected public procurement became apparent during both two "calls for entrepreneurs". As close to half of the business cases could be charaterized as circular economy cases and the rest more or less "linear, it allowed for a look at both types of business cases from a general business perspective. It showed, contrary to much common belief, that the individual "circular" business cases at "face value" did not differ significantly from the "non-circular" cases. Although there were technological and business scope differences, they all displayed the same profile of standard early-stage tech business cases, when measured across tech challenges, TRL-level, market potential, IP potential, management issues or funding requirements and expected growth potential.

Many of the identified "circular" solutions were designed to address public-sector challenges, and the business cases would benefit significantly from close cooperation with public entities. Consequently, public procurement quickly came into focus in discussions with many of the entrepreneurs.

[6] Draghi report on EU competitiveness, September 2024

However, before addressing the special challenges connected to public procurement, it is relevant also to identify some main differences between traditional or linear economy business cases and circular economy business cases.

In an over simplified way, the difference can be illustrated as shown in Figure 2.

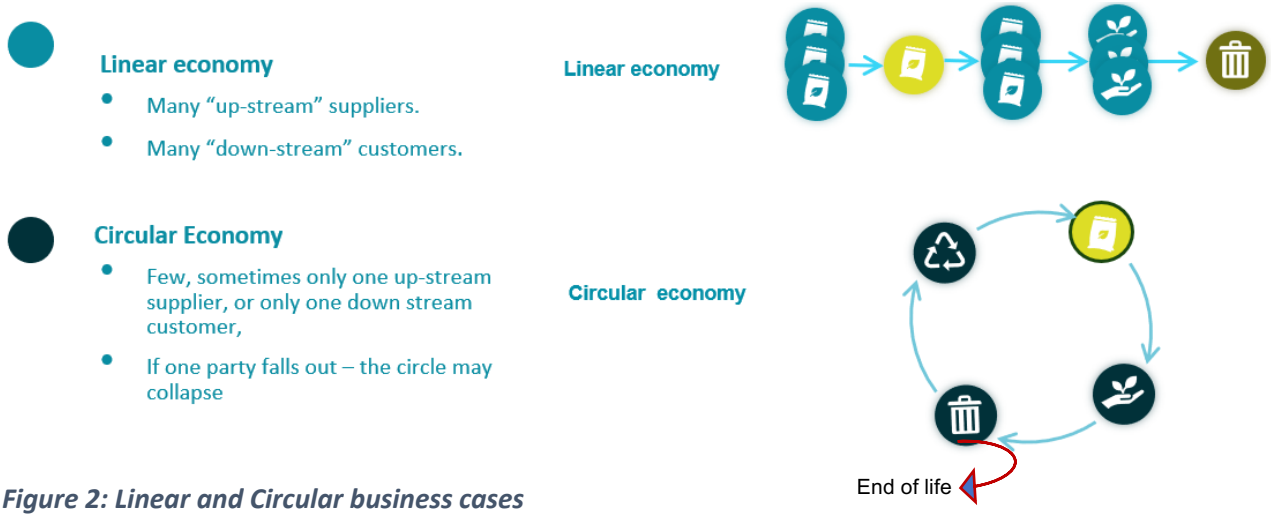


Figure 2: Linear and Circular business cases

Although "Linear" and "Circular" economy business cases may be similar from a strict business point of view, they are often different on one aspect: ***supply chain interdependency***. This is connected to the underlying "thickness" of the supply/value chain. In the current 2025 business environment many of the "circular" solutions/business cases can still be characterized as "infant industry" type cases. Many are therefore facing similar type of challenges which were facing young renewable energy business cases 10-15 years back.

Figure 3: Potential collapse of the" circle" if one party fails

For a young "circular economy" business case it is characteristic that there are no or very few substitutes with respect to both "up-stream supply" and "down-stream customers". A "fall out" of a supplier or a customer can therefore easily lead to a collapse of the "circle".

In many "circular" economies business cases, the type of supply from "up-stream" suppliers often has a low unit value compared to transport cost. The consequence is that it is difficult to find alternative suppliers within reach if a critical supplier stops delivering. In business terminology = supply risk. Due to the nature of most re-cycled solutions/products there is also often a similar high dependency on a few, right type of "down-stream" customers. In business terminology = revenue risk.

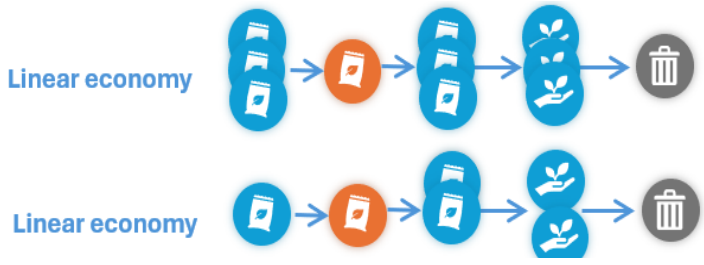


Figure 4 Linear supply chain is more robust than the similar "circular" supply chain.

For "linear" business cases there will normally be many substitutable "up-stream" suppliers and similar many substitutable "down-stream" customers. If an "upstream" supplier or "down-stream" customer in a traditional "linear" business case stops

delivering or goes out of business, it may influence the cost or the revenue picture, but the underlying business case remains the same. This is contrary to the "circle" case, which in similar situations might collapse entirely.

Therefore, when we analyzed the business cases from the two "call for entrepreneurs" and compared the "circular" business cases with the "linear" business cases, the latter did not have the same risk of a "collapse" in in case of a loss of a few suppliers or customers. The limited data from the call for entrepreneurs does not provide statistical evidence for this conclusion. However, when compared to many of the other early-stage business cases which Gate2Growth has been analyzing and advising during the last 20 years, the special "circular" challenges stand out.

However, when examining alone the upside potential of the "circular" business cases, they did not offer a stronger business case upside than the "linear" ones. Ideally a better "up-side" potential could have counteracted the special "circular" risk.

Figure 5. EverGreen block Suez Chanal in 2021

Interdependency risk can also hit "linear" business cases. In 2021 the EVERGREEN container ship (figure 5) put a new spotlight on how vulnerable also today's international "linear" industrial businesses potentially are, if a significant supply line becomes interrupted.

The big difference, compared to "circular" economy cases, is that interruptions like this is more frequent for "circular" economy cases than for "linear" business cases, simply because of the many available substitutes. In recent years, dependency on CRM (Critical Raw Materials) from one major supplier (e.g. China) represent an interdependency risk for "linear" international business cases as well.

For many of the business cases examined in the "call for entrepreneur" process, the "public procurement" process quickly became identified as a special risk representing a significant barrier for the uptake of new or emerging solutions for both the "linear" and "circular" business cases.

For established companies, public procurement is generally not considered as a major obstacle. However, for SMEs with new or emerging solutions and technologies, where full-scale adoption is crucial and often achieved through collaboration with the public sector, public procurement requirements pose a significant barrier.

Early discussions with the public partner[7] in the EU-project made it clear that public procurement is not only a challenge for SMEs, but it is also perceived by the public sector as a barrier to the adoption of innovative solutions.

This observation is well in line with the observations behind the European Parliament resolution of 9th September 2025 on Public Procurement [8]. The European Commission has also addressed public procurement issues in a January 2025 report[9] which is a guide to contracting authorities on how to use procurement as a tool for innovation. The report explains the challenges connected to innovation procurement, pre-commercial

[7] Stadtwerke Klagenfurt and Municipality of Klagenfurt, Austria
[8] European Parliament resolution of 9 September 2025 on public procurement (2024/2103(INI))
[9] Public Procurement procedures and instruments in support of innovation (Jan 2025)

procurement, functional specifications, and how to choose procedures that allow novel solutions. These actions are clear signals that the European Commission now has a strong focus on modernization of the current procurement practice: shifting from specifying goods purely by brand or model to performance/functional specifications; engaging with markets early; enabling SMEs/start-ups.

To act on the identified challenges connected to the current public procurement processes[10], the resolution by the European Parliament proposes a simplification of the application rules, shortening of current excessively lengthy procedures and streamlining the focus of public procurement goals. It was highlighted in the official resolution text that future public procurement calls should also promote the development of critical and nascent industries in key sectors and better align it with commercial practices to ensure maximum flexibility. The resolution also points to the important potential for innovation and improved competitiveness, if part of public procurement call was used in a different way. When considering that public procurement governs an enormous part (25-30 %)[11] of the EU countries' total public spending, it is evident, if a larger part of this public spending is fueled to critical and nascent industries in key sectors, it could have a significant impact on European innovation and competitiveness. It could also support the development of new innovative public/private partnerships.

Figure 6 Public Procurement need to open a door for innovation

The problems and challenges identified in the European Parliament's Resolution are fully in line with the barriers identified during the discussion with the many entrepreneurs responding to the call for entrepreneurs. In the field of circular economy, current public procurement procedures and rules also turned out to create obstacles for public sector parties to play a crucial role in de-risking many circular economy business cases.

The resolution by the European parliament addresses several other important general "procedural issues" aiming at streamlining the public procurement process. Addressing these barriers will be of particular importance to circular economy and innovation.

Among these issues are:

- The move away from awarding contracts to be based solely on the lowest price. Encourage awards based on the best price-quality ratio and promote systematic integration of social and sustainability criteria in public procurement procedures.
- Streamline administrative processes to ease burdens and refine selection criteria while ensuring fair access for all bidders. Use sourcing practices prior to the design of calls for tender, simplify the selection criteria and modify requirements that disproportionately hinder newly established companies.

[10] Public procurement challenges e.g. EIB Guide to Procurement (March 2025) and EIB Annual Report on Procurement Complaints 2024

[11] Danish Competition and Consumer Authority (Konkurrence- og Forbrugerstyrelsen, 2023), European Commission, Single Market Scoreboard (2024), OECD Government at a glance, 2023

- Train contracting authorities to provide adequate clarification of the use of non-price-related criteria. Enhancing support mechanisms for very small entities, SMEs, start-ups, and social economy actors to enable them to effectively compete in public tenders.
- Increase flexibility in public-public and public-private partnerships and consider exempting cooperation between public authorities, for the purpose of efficient task fulfilment, from the scope of the procurement directives.

2. Public procurement/Public contracts

Public contracts are awarded via a "public procurement" process by users of public funds and entities operating in specific, non-competitive conditions (for example energy, water, public transport, postal services), for the purchase of services, supplies or civil engineering works. In general for such entities all medium and higher value contracts must be awarded through competitive procedures (tenders). There are exclusions and exceptions, such as: purchasing real estate, cases of extreme urgency or situations where there is only one possible supplier

The standard way of awarding contracts is through competitive tendering. Within competitive tendering there are different types of public procurement procedures, some of which are listed below. They all require very detailed description of objective and award criteria.

Open procedure in which anyone may submit a full tender. This procedure is used most frequently.

Restricted procedure. For this procedure anyone may ask to participate in a restricted procedure, but only those who are pre-selected may submit tenders.

Competitive negotiated procedure. For this procedure anyone may ask to participate, but only those who are pre-selected will be invited to submit initial tenders and to negotiate. The procuring entities can only use this procedure when negotiations are necessary due to the specific or complicated nature of the purchase. However, procuring entities in the defense and security, water, energy, transport and postal services sectors may use it as a standard procedure.

Competitive dialogue can be used by a contracting authority with the aim of proposing a method of addressing a need defined by the contracting authority.

Innovation partnership is a procedure that may be used when there is a need to purchase a good or service that is still unavailable on the market. A selected number of companies may participate in the process.

Design contest is used to obtain an idea for a design.

These later more "open" procedures are potentially relevant for securing more uptake of innovative solutions. Some of these innovative solutions which represents a diversion or break from conventional well proven solutions would never stand a chance to be chosen under the under more frequently used "closed" standard procedures.

Additional tendering techniques may also be used, where depending on the circumstances and needs, a contracting authority may sign a framework agreement with one or several companies for recurring purchases and authorize the use of the electronic dynamic purchasing system for making recurring purchases to get the best offer. The final choice of the winner will be made through an electronic auction.

As a general rule, tenders for public contracts that fall under EU rules must be published in the online version of Supplement to the Official Journal of the European Union - the Tenders Electronic Daily (TED) portal. Public authorities may also choose to publish notices on the TED portal when a contract is of lower value. In the TED portal the basic information for tenders is available in all official EU languages.

All public procurement procedures in the EU are carried out based on national rules. For higher value contracts, these rules are based on general EU public procurement rules. The value limits (thresholds) that mark when EU rules are used, depend on the subject of the purchase, and who is making the purchase. These thresholds are revised regularly and the amounts adjusted slightly.

Currently (2024) the main limits are:

- EUR 143.000 for most types of services and supplies
- EUR 5.530.000 for construction contracts

The detailed public procurement thresholds or limits needs may vary from EU country to EU country. Therefore, national rules need to be checked to get a full picture of the public tender landscape. For lower value tenders, only national public procurement rules apply, but EU's general principles of transparency and equal treatment need to be respected.

It is not obvious to many SME's that all companies, organizations or institutions established in the EU, have the right to compete for a public tender in any EU country without discrimination and use supporting documents (certificates, diplomas, etc.) issued by its country of registration. Companies, organizations or institutions established in the EU also have equal access to all information regarding tenders, regardless of the EU country in which it is established.

Of course, there are also grounds for excluding a company, organization, or institution from participating in a tender—such as lack of trustworthiness, failure to pay taxes or social security contributions, bankruptcy, or grave professional misconduct.

Tenders are normally evaluated by awarding points based on pre-published criteria, with each category worth a certain amount; for example, the price offered may be worth 40%, technical characteristics 50% and environmental impact 10%. The evaluation of tenders may only begin after the deadline for submission has expired.

Companies, organizations or institutions having submitted a tender will be informed as soon as possible as to whether it has won the contract or not. If the tender has not been selected, the entity having submitted the tender is entitled to an explanation of why the tender was rejected. If the non-successful tenderer identify that they have been discriminated against, or irregularities in the procedure are identified, then a request for a review of the procedure or a complaint can be filed.

All these formal procedures secure a "level playing field" for all potential suppliers of solutions to users of public funds and entities operating in specific, non-competitive conditions. However, it also puts constraints on the execution of the public procurement process. According to the feedback from many SME's, it also creates barriers for the uptake of innovative solutions.

3. Introduction to the "public procurement" challenges

To integrate innovative solutions supplied by young SME's in the "public procurement process" was by many of the entrepreneurs identified as a major problem both for the uptake of and for the integration of new and innovative solutions.

Applying the entire "public procurement process" for circular economy solutions raises specific challenges. It is best illustrated when comparing the challenges for a SME with a "circular economy" solution with the challenges facing a SME offering a traditional "linear economy" solution based on a traditional "linear supply chain".

In the "linear" supply chain case there are typically many "upstream" suppliers and many down-stream "customers". Therefore, the business case is not severely impacted if an "upstream" supplier or a "down-stream" customer vanishes – as it can easily be replaced.

Figure 7 Linear business case

For the typical younger "circular economy" business case the supply chain is often "thinner" and each party in the "circle" is dependent on the performance of the other parties in the circle. In practice the entire "circle" is therefore exposed to both a "technology" risk and a "business/financial" risk. The eventual default (technical or financial) by one party in the "circle" may lead to the collapse of the entire "circle".

The reason is, that the parties in the "circle" often consists of young SME's, each with its individual technology and funding risk. In these cases, it becomes challenging for a public entity to formulate a public procurement process, if it must consider the special risks associated to the interdependencies between the parties in the "circle" and their individual technical, market and funding risks.

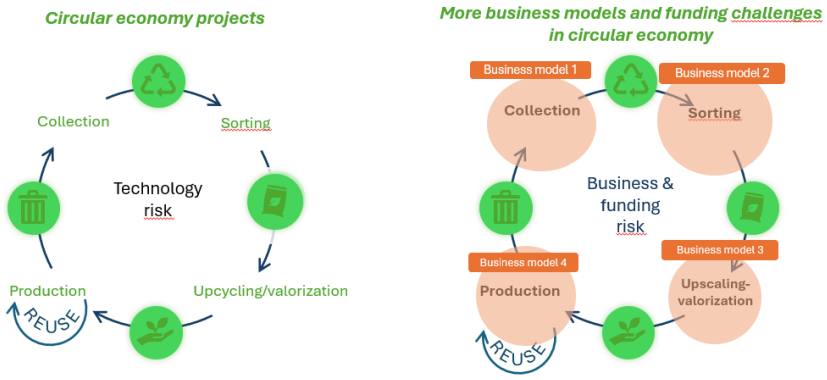
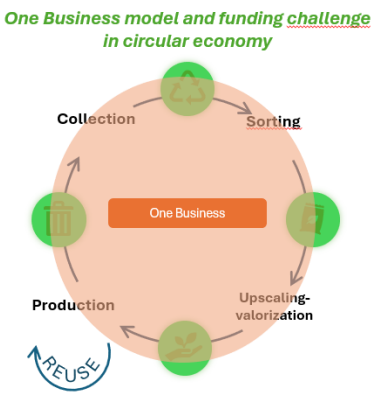


Figure 8 Circular business cases & funding risk

It is much easier for a public entity to handle the public procurement, if the entire circular solution is provided by one legal unit. If many parties are involved in the "circle", a solution could be to form a legal "joint venture"[12]. If this is done, it will become simpler to:

- formulate the requirements to be met by the tender,
- analyze if the presented solution in practice will function as requested,
- make the needed analysis of the financial capacity of the company behind the tender to implement the solution.



Figur 9 One unit solution

The technical risks may be the same, but the likelihood that the circle falls apart because of malperformance of one party in the circle is reduced. It also becomes easier to make the needed "financial capacity" analysis of the tenderer and reach a contract award decision, which is not likely to become contested.

Irrespective of the special challenges connected to a circular economy "call for tenders", also the text formulation in any standard public procurement calls is recognized as a difficult barrier to overcome for young small and medium-sized enterprises (SMEs). Many SME's are simply not familiar with public procurement processes. For "circular" cases the SME's often also do not recognize, or are willing to recognize and address, the real or perceived interdependence problems connected to emerging "circular economy" challenge. Other problems are simply caused by the structural, procedural, and financial barriers embedded in the public procurement process.

When dealing with circular economy "call for tenders", the standard requirements for public procurement are also a challenge for the individual issuing public entities. It requires special skills and efforts to formulate the description of the "needs" in a circular economy context. The standard procedures used by several public entities also normally do not invite young SME's to present their innovative or "out of the box thinking" solutions. And it is often difficult issuing normal performance guarantees for an individual SME in the "circle", because of the dependency of the other parties in the circle.

Combined, these elements are barriers not only for the integration of innovative solutions in general, but also for engaging SME's and the public sector in implementing circular economic solutions. It also needs to be taken into consideration that the businesses behind a large part of circular economy solutions are still "infant industries". They operate in a very fragmented market and rely on new technologies and innovative business models.

[12] A Joint Venture (JV) is a business arrangement where two or more parties pool resources for a specific project, while a Special Purpose Vehicle (SPV) is a subsidiary created by a single entity to isolate financial risk for a specific purpose. The main difference is that a JV involves cooperation between multiple parties with shared responsibilities, whereas an SPV is a legal structure used by one company to isolate a particular project, often as a risk-management tool. A joint venture can use an SPV as its legal structure, but a standalone SPV does not involve the collaboration and shared risk of a JV.

Therefore, it is relevant to closely follow how parts of the European Parliament resolution will be implemented, and how a modernization of Public Procurement processes can become better suited for innovative solutions delivered by young SME's.

As a starting point for a modernization process it could be relevant to review the general minimum thresholds for contracts needing a public procurement process as stated in the **EU Public Procurement Directives**. Contracts below the formal EU thresholds are often subject to national rules to secure transparency and adherence to the competition principles of the EU Treaty. Little is therefore achieved if they still apply. The EU Commission encourages purchase decisions for even smaller contracts to be competitive and transparent to ensure fair market access. Public entities therefore often, even when not formally needed, apply the full "public procurement" process as a safeguard against criticism.

The complex and bureaucratic problem facing young SME's, when responding to the "public procurement" processes, is rightfully often quoted as a major problem. But a public "call entity", which wants to formulate innovative "success or impact criteria" as the basis for the call text, is also facing a challenge. In many cases part of the "call text" is by tradition primarily formulated to avoid the risks that a final awarded contract becomes challenged by non-selected bidders. To counteract all these concerns the call for tender and the associated evaluation criteria often ends up in formulations unnecessarily difficult to read and understand for non-specialists.

Many innovative solutions are "first time" solutions, which per definition does not have a solid track record. This also increases the real and the perceived risk for the public unit, if it chooses an "innovative but unproven" solution. For many public decision makers "risks" and "failure" may have a much more negative impact (e.g. on carrier pattern), than the potential positive e.g. climate impact caused by an "over fulfillment" by an innovative circular solution. Hence "why run the risk" with an unproven innovation, compared to a safe choice of a well proven "state of the art" solution?

In theory it should not be a problem for a public institution to "take a risk" by choosing an innovative solution, if the decision is taken after a thorough and competent evaluation. However, in practice many institutions will still refrain from making such decisions and taking such risk, in fear of the political reaction to a "failure". Still many public institutions are governed by a "no failure" culture, which, if wrongly implemented, may be a barrier for integrating the private sector innovation and risk acceptance culture. Such "no-failure culture" is doomed to have a spill-over impact on formulating calls for tender. If the Space industry had been governed by a "no failure" culture, mankind would never have set its feet on the Moon!

In the OECD 2025 report on Public Procurement[13] the need to revise current principles guiding procurement is also highlighted. The reason is that the environment in which the public sector operates is rapidly evolving, and even well-established guidance is becoming less fit for purpose, given emerging complexities and rapidly emerging technologies. E.g. when formulating a purchase decision involving drone technology for boarder control, a standard public procurement request with a focus on many years performance documentation is not well fitted to support innovation and get new functionality.

[13] OECD Report on implementation of the IÒECD Recommendation on Public Procurement, 2025

In this context, the message from the European Parliament resolution sends a clear message, while it also addresses some of the major issues listed in the Draghi report. It recommends that a significant part of next year's large public procurement spending should be allocated to support innovative solutions. Although public procurement is increasingly being asked to deliver on sustainability, innovation, social goals, resilience (e.g., supply-chain shocks) —the internal processes, staffing, skills and systems available, are often still built for "traditional buying procedures".

However, even without waiting for larger political initiatives on the EU level, there are already "procurement" examples from the "public sector" which are designed for fostering "innovation". Among these is the use of "design contest" e.g. "Architectural Competition", which is often used prior to decisions on major public buildings or structures. The objective behind this process is generating "new solutions" and allowing "out-of-the box" thinking. "Competitive dialogue", "innovation partnerships" procedures can also be used to foster uptake of innovation.

This type of tailored "procurement processes" for innovative solutions can already now be used when public entities are searching for innovative solutions, including circular economy solutions. Executed in a transparent way it could still secure adherence to the "neutrality" and "arms-length" principle.

However, a key barrier to rapid implementation may be for long time still be connected to the limited in-house experience and resources in many public offices to formulate open calls, combined with the frequently cited political pressure to "avoid any risk."

4. Concerns connected to public procurement

SME's concerns connected to Public Procurement

On the side of SME's, there are many barriers, which prohibit or make it difficult for young SME's to participate in public procurement processes. They often find, for good reasons, the current tendering process complex. It is lengthy and has detailed documentation requirements that are difficult to fulfill and navigate. SME's also have difficulties in living up to the stringent eligibility criteria and compliance requirements. Certification demands can also deter young SMEs from applying.

In practice, many young SMEs also lack the internal expertise or resources to handle the complexities of the public procurement process. Preparing the response to a public procurement tender can be costly, and young SMEs may not have the financial resources to absorb these costs. Standard requirements for performance bonds or guarantees may often exceed the financial capacity of young SMEs. Many public contracts also have delayed payment schedules which favor larger financially strong companies but are putting strain on the cash flow of young SME's.

On the "information side", and despite extensive use of social media, young SMEs often lack the relevant networks to identify and become updated on available public procurement opportunities. Access to detailed procurement plans and priorities is also often skewed toward larger firms with better connections or more resources.

Traditional pre-qualification processes may simply exclude the young SME with the most innovative solutions. Contrary to the intention behind public procurement, the process also limits competition from "newcomers" and risk leading to a small pool of suppliers being invited to respond to the Tender.

There is also often a certain "customer preference" bias. Government institutions, regional/local governments and large public entities often have preferences to award contracts with larger firms with solid balance sheets to avoid financial risk. Formulation in calls for tenders aiming at multi partner consortium and large, consolidated contracts may exclude young SMEs, as they lack the capacity to fulfill extensive guarantee requirements and eventual joint liability clauses. In some technology and market segments, young SMEs may face discrimination due to favoritism toward established suppliers. The lack of transparency in procurement processes can also disproportionately affect SMEs, which do not have the same lobbying power as larger companies.

Young SMEs may also struggle to compete, if public procurement rules emphasize prior experience including extensive track record documentation. Often, and by nature, innovative solutions seldom have extensive track records.

A special problem is caused by organizational laziness by many SME's. Many argue that there is a lack of trade organization/government support to help identify, understand or prepare for public procurement opportunities. However, with a bit of search and active involvement from the side of

SME's, there are a host of public or semipublic organizations, also on the EU level[14], to provide support and guidance. Therefor young SMEs also often miss out on opportunities to collaborate with larger firms or other SMEs to bid for contracts collectively, simply because of their own limited active network reach.

Public entity concerns connected to Public Procurement for innovative solutions

Public entities are also facing administrative, legal and technical challenges with respect to public procurement processes, if they aim to attract innovative solutions and encourage young SME to submit offers.

The processes around public procurement is still heavily regulated, with strict laws and guidelines that must be followed. This can make the process lengthy and cumbersome. Across the EU there are differences in local, regional, and national regulations, which complicate cross-border or joint procurement efforts. This may also limit the realistic number of qualified respondents to a call.

When the purpose of a procurement tender is to attract new innovative solutions, formulation of call criteria may be influenced by limited insight into new technological trends. Many public entities are so focused on the "day to day" operation, that they lack the capacity to acquire insights into new technology/innovative solutions, new market trends or potential new suppliers. Combined, this may have a restrictive influence on the formulation of the tender requirements and contract award criteria.

Traditional pre-qualification processes are often used, with "for invitation only" clauses to make "life easier" for the public entity, when offers are to be evaluated and scored. However, the process may also limit competition and may risk leading to a small pool of suppliers being invited to respond to the Tender.

Some of the procuring entities may lack expertise in drafting tenders designed to attract innovative solutions, especially for complex needs or specialized goods and services. This may lead to the exclusion of new or emerging innovative solutions, if the suppliers of new technology are primarily young SME's with limited track record.

When it comes to the special sustainability and circular economy challenges, many staff members with responsibility for public procurement may not yet be trained in how new or modern procurement practices could fit with these special challenges, in particular challenges connected to circular economy and the special risks associated.

Public entities are also often operating in a highly political environment, which can lead to a substantial aversion to risk. This includes fear of "Non-Compliance" when it comes to contract award, combined with fear of audits, legal challenges, or accusations of favoritism. This again can lead to opting for safe,

[14] E.g. European Enterprise network (EEN) and similar national support organizations, also connected to universities.

well-proven processes and less interest in testing innovative procurement methods. Excessive focus on minimizing both procedural and impact related risks can also result in overly rigid requirements that exclude innovative but still capable suppliers.

Public procurement processes related to circular economy involve substantial uncertainty with respect to formulation of the technical and performance requirements. It is also difficult to address the circular interdependency risk which influences most of these type of solutions. This can either lead to vague or unsuitable tender formulations or overly prescriptive tenders with narrow and very precise requirements definition. This may limit respondents' flexibility, discourage innovative solutions, or exclude qualified bidders.

Almost all public procurement calls are influenced by budget caps, that may constrain the scope of the procurement but may also indirectly exclude innovative "first of its time" solutions. This is one of the reasons that formulations in call for tender often favor tried-and-tested solutions over innovative approaches, due to perceived risks. Strict documentation and performance criteria also reduce the risk of lengthy post contract award legal contests initiated by tenderers not chosen – However, the stricter requirement for documentation and performance – the less room is left to innovative solutions.

Pressure to complete the procurement process quickly can also limit the number of offers received and can lead to suboptimal outcomes. Fear of delays and a risks aversion also limit motivation to include in call criteria adaptation of new technologies or circularity in the procurement calls.

All these concerns are fully legitimate. Unless innovative aspects are in focus, the reason for initiating most of the public procurement processes is the existence of well-defined problems or needs to be addressed facing the public entity. And the tendering unit's prime objective is to find a solution to a defined problem, which is not causing too many problems from a procedure and decision-making point of view.

However, considering the size of the public budgets which public procurement represents, it is important, as formulated in the Parliamentary resolutions, to ensure that in the future public procurement should also promote innovation and the development of critical and nascent industries in key sectors and better align it with commercial practices to ensure maximum flexibility.

5. Addressing SME challenges connected to public procurement.

To address the barriers that young SMEs face in public procurement processes while fostering innovation and circular economy solutions, a multi-faceted approach is needed to streamline processes, reduce structural and financial barriers, and build stronger relationships between SMEs and public entities.

The cause of many of the barriers lies in the formulation of formal requirements, which can only be overcome by training and education. Other barriers are to some degree "self-imposed" and originate from "this is how we use to do it". The standard arguments are that risk is reduced:

- when using standard/known processes and solutions to well defined problems.
- by applying simple price/performance/quality ratios as the key decision element.

Other barriers lie on the side of the SME's, which need to better understand the requirements and limitations connected to the "arms-length and neutrality" standards under which the public sector operates.

On a national or EU level actions could be taken to secure both SME capacity building and simplification of procurement processes. SMEs could be offered targeted workshops and mentoring programs to guide them through the public procurement processes. This could include training in how to respond to tenders, how to meet requirements, and how to identify opportunities. It could eventually become embedded as a standard in the entrepreneurship teaching curriculum at business schools and universities.

Effort could also be allocated to reduce the complexity of application forms and requirements to align with the capabilities of young SMEs. For instance, allow self-declaration forms or reduce the need for extensive documentation of past performance.

The use of Pre-Commercial Procurement (PCP) process could also be an approach to engage SMEs in research and development for innovative solutions, bypassing some of the traditional procurement barriers.

In general, there is a need to enhance the flexibility of public procurement frameworks. With the use of outcome-based specification instead of rigid technical descriptions, public tenders could define outcomes or problems to solve, allowing innovative approaches from SMEs.

It is obvious there is a risk connected to outcome-based specification, namely that the contract is awarded before it is documented, that the foreseen outcome will materialize. If the winner of the tender is an SME, a substantial financial penalty for missed outcome may discourage innovative solutions to be presented. On the other hand, only a small penalty may invite solutions to be presented,

which are more "wishful thinking" than achievable reality. This leaves a very complicated evaluation process in the hands of the public entity – who's fall back solution is to return to "best price" for solving a predefined problem with standard solutions.

A possibility for the EU community could be an adaptation on a national or EU level of innovation-friendly procurement models like the, in the US widely used, "Small Business Innovation Research[15]" (SBIR)-type programs, where SMEs receive funding to develop and demonstrate solutions that could directly have an impact. This has proven effective, if combined with a type of dynamic purchasing system that allows continuous updates and entries of new solutions by SMEs. This could also be combined with pilot and prototyping opportunities that include provisions for trying new technologies or business models in smaller-scale contracts.

A better outreach, when formulating the procurement calls, is to encourage consortiums or partnerships to include young SMEs to join forces with larger companies to meet procurement requirements collectively. Broadly implemented in connection with public procurement processes could also secure better inclusion of innovative solutions.

It goes without saying that implementing swift public payment cycles for SMEs to maintain cash flow during project delivery would also make participation in public procurement processes more attractive for SME's.

There are many other initiatives which could be taken, like hosting pre-tender market dialogues to gather insights from SMEs about feasible solutions and barriers they face. Partnerships could also be initiated where public entities and SMEs collaborate to co-design innovative solutions that meet public needs. This could be supported by including representatives from young SMEs in advisory groups that promote procurement policies, ensuring their challenges are directly addressed.

For special Circular Economy initiatives there is also a need to develop clear guidelines on public procurement that can integrate circular economy principles, enabling SMEs with innovative solutions to align their offerings with public needs. This could be supported by using transparent scoring principles in tenders for solutions that promote environmental sustainability and circularity.

The regulatory environment also needs to be examined, e.g. by adjusting thresholds for tenders that prioritize SMEs or innovative solutions, allowing for more direct awards or simplified processes. Also, but more complicated, is the need to push for legislative changes at the national or regional level to mandate SME-friendly procurement practices. This would be an important action to be implemented.

[15] The **SBIR Program** was created in **1982** under the **Small Business Innovation Development Act**, and is coordinated by the **U.S. Small Business Administration (SBA)**. Its mission is to:

- Stimulate technological innovation.
- Strengthen the role of small businesses in meeting federal R&D needs.
- Foster and encourage participation by minority and disadvantaged persons in innovation.
- Increase commercialization of innovations derived from federal R&D.

A companion program, the **STTR (Small Business Technology Transfer)** program, focuses more on collaboration with universities or nonprofit research institutions.

It can be done, an example is Denmark's "Partnership for Green Public Procurement" that integrates market dialogue and outcome-based specifications, making it easier for innovative SMEs to participate in tenders while promoting green and circular solutions.

Green Procurement for a Green Future sets the direction for a green transition of public procurement in three dimensions, which together aim to ensure a significant reduction in the climate footprint of Danish public procurement by 2030. The three dimensions of the strategy contain different elements. The first is an implementation track with initiatives that prompt immediate green action. The second is a development track that requires long-term green development towards 2030, and the third ensures the availability of necessary knowledge and tools to follow up on the green development.

Figure 10 Green Procurement for a Green Future

By addressing these barriers systematically, public procurement can be used as a driver of innovation and a platform for integrating sustainable, circular economy models, ultimately enabling young SMEs to thrive in public-sector projects.

In the Danish Green Procurement white paper there is an excellent illustration of how formulation of needs can have the potential to generate innovative solutions.

There are severel avanues for green procurement

- We can choose a greener product. For example, an eco-labelled product or one with a longer shelf life.
- We can have our needs met in a completely different way.
- And we can buy less altogether. For example, through common policies and better consumption management.

Forcing this way of thinking, before a final procurement process is initiated, has the potential for inviting innovative solutions to become part of the reaction to public procurement calls.

Conclusion

Securing better inclusion of innovative solutions provided by young SME's for addressing the growing need for circular economy solutions is mandatory, if there shall be any chance to fulfill the ambitions behind EU's most recent climate action plan, which include initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages

sustainable consumption. The aim is also to ensure that waste to the extent financially viable is valorized and reused, and virgin resources used are kept in the EU economy for as long as possible.

Achieving this objective requires actions to be taken, like those outlined in European Parliament resolutions, both to better streamline the public procurement process and to promote the inclusion of innovative solutions, including those provided by SMEs.

However, actions also need to be taken towards the innovative SME community to secure that SME's understand, accept and become familiar with the basic public procurement's "neutrality" and "arms-length" principles.

6. Challenges for circular economy business cases

Lessons learned from 2 “Calls for Entrepreneurs”

One of the objectives behind the InvestCEC project was to use concrete business cases as demonstrators for a better understanding how to provide support to the funding challenges facing circular economy businesses, The two “call for entrepreneurs” were conducted to identify interesting circular economy solutions and business cases, which would be relevant both for public sector representatives or serve as potential investment target.

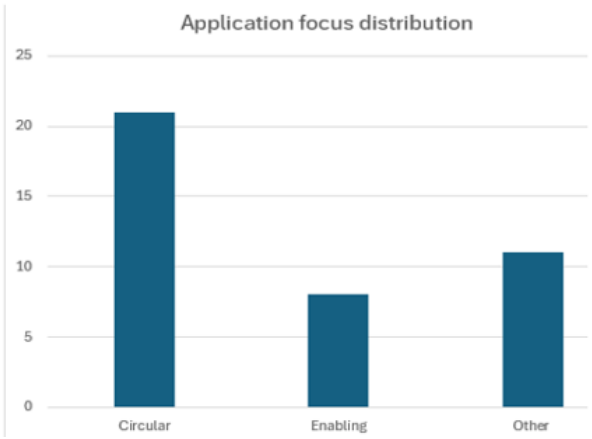


Figure 11a Distribution between "circular" and "other"

The calls gave a good insight into almost 60 interesting business cases, of which about 50% could be categorized as “circular”. The applications originated from all over Europe, and a few even from outside Europe).

To guide the applicants the call text identified 5 sectors/problem areas of special interest to the public sector party represented in the EU-project consortium. However, only about 1/3 of the applications, which were submitted, had a focus matching these needs, while the rest were addressing other problem areas. From examining the applications and the miss match between “call text” and “reply profiles”, it became clear that the interest to get funding advice and potential contact with investors ranked higher as motivation for sending an application than responding to the “needs” specification in the call text. It is not unusual that for many SME’s accesses to funding and investor networks remain the strongest magnet, when deciding to respond to a call like this. It also became clear that responding to an “EU related call” for many of the SME’s represented a chance to gain visibility for their solutions and innovations and to get an opportunity to be taken to a next level of interest.

As mentioned in the introduction, when looking at the close to 60 business cases and when taken “at face value” the business case descriptions, there were no obvious differences with respect to generic business risks or challenges connected to technology, business models or business concepts, management challenges or IP issues between the “**circular**” and the “**linear**” cases. They all looked like “normal” early-stage business cases.

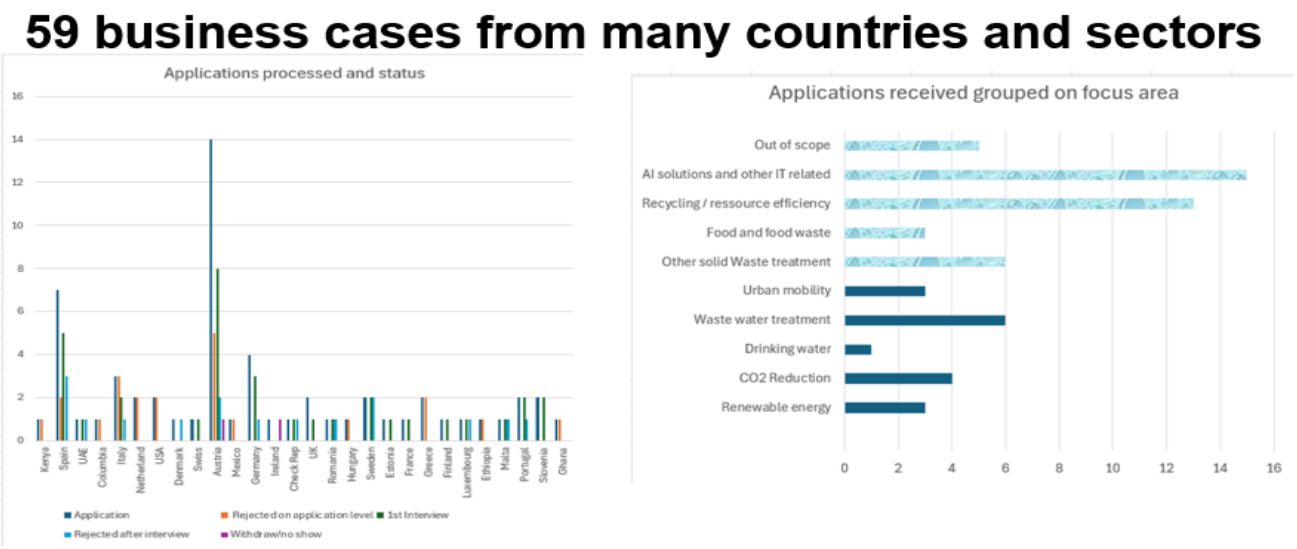


Figure 11b: Sector and country spread (right side graph: dark blue cases address STW Klagenfurt

This compares to the profiles of early-stage business cases which Gate2Growth has been working with during the last 20 years. For pure evaluation purposes, all the cases, irrespective of "circular" or "linear" nature, could be analyzed using standard business and financial evaluation criteria. With respect to funding needs and challenges, beside the special "circular" risk, there were also no apparent difference. But for solutions which were targeting the public sector, "**Public Procurement**" surfaced as an additional **special challenge** and risk.

The **described** growth potential related to "circular economy" business cases did not differ significantly from the "non-circular" cases. Even though there were technological and business scope differences, they all fitted the same profile of standard early-stage tech business cases.

However, although the many "Linear" and "Circular" business cases were similar from a general business point of view, they were different on two aspects, strong ***supply chain interdependency***, and difference in the underlying **"thickness"** of the supply/value chain.

For the "circular" solutions/business cases there were in general no or very few substitutes with respect to "up-stream supply" or "down-stream customers". Hence there was a potential high risk of a "collapse" of the circle. This was contrary to the traditional "linear" business cases. In these cases, if one or two "upstream" suppliers or "down-stream" customers discontinue delivering or goes out of business, it could have an influence on the cost or revenue picture, but the underlying business case in most cases would remain the same.

When comparing the many different business cases, the identified special "circular" risk was not counteracted by a special **higher growth ambition** for the "circular" business cases. A quick calculation would make it clear that to attract investments to "circular" cases compared to similar "linear" cases a substantial pre-money valuation "discount" would be needed in the "circular" case. An alternative solution for the "circular" case would be to secure a reduction in the part of the funding to be met by private investors (e.g. VC funds) via non-diluting funding, e.g. grants, or via public subsidized cost of

operation or of CAPEX. To reduce the potential revenue risk, dedicated revenue assurances could take place as special secured ”gate” or “feed in” tariffs.

It also became clear that “circular economy” investment opportunities in generally are perceived as “exposed to a **higher risk** than similar linear cases”. If this perception is widely accepted, it may reduce the investment community’s interest in dedicated circular economy-focused investment VC funds, even if the circularity aspect appeals to some investors. Investors always have a range of alternative investment opportunities to choose from, including the option of keeping the money in the bank. Therefor to attract investment for a circular business case the potential risk adjusted return on investment must be competitive with alternative investment opportunities. If the risk-adjusted return from investing in a circular economy business is perceived to be too low, investors may have little incentive to commit their capital.

Individual investors or VC funds investing in early-stage companies know that they are investing in unquoted stocks with limited liquidity. They understand the liquidity risk and will logically also require a potential high return to compensate for the risk.

For readers, not familiar with how funding is sourced to traditional Venture Funds, Annex 2 provides a simplified illustration of the “money supply chain” for these types of funds. It also illustrates the role of portfolio company investments and highlights the return requirements needed from these investments to attract investors to the Venture Fund and to meet the investment risk.

In principle it is pure mathematics to calculate the required potential minimum capital gain from selling shares in the successful portfolio companies for a closed-end[16] VC fund. If e.g. 75% of the portfolio companies can realistically be expected to be “winners”, while other investments are lost, then selling the shares in each of “winner” companies shall, on average, generate a 20% IRR to the Fund. This is the minimum return, if the Fund shall be able to generate e.g. 15% IRR on all the money invested in the portfolio companies, pay the management fee and secure the passive investors in the fund between 12-13 % return on investment. When closing the Fund, the proceeds, from selling all its shares in the “winning” portfolio companies (called “exiting”) and after deduction of the management fee, shall be distributed to the investors in the fund.

If the risk is often **50%,** then each portfolio company shall have the potential to generate **30 + % IRR**

If the risk is often **75%,** then each portfolio company shall have the potential to generate **60 + % IRR**

However, a typical early-stage Tech Venture Fund will often experience that more that 25 %, and often 50% or more of the portfolio “does not make it”. The consequence is, if the Fund is still to generate 15% IRR on average from its investments, then the proceeds from selling its shares in the remaining “winning” portfolio companies, need on average to generate a 30% IRR. To generate 30% IRR from selling shares in a portfolio company, the growth in value of the shares of the portfolio company during the 4 to 6 years investment period needs to be strong.

[16] There are typically two types of VC funds: **closed-end funds** and **evergreen funds**. Most of the traditional VC funds are closed-end funds with a maturity of e.g. 10 – 12 years, after which the fund is liquidated the proceeds from investment activity is returned to the investors in the fund. An evergreen fund is in principle created for perpetual lifetime.

This also means that only companies with strong potential growth in business activity are attractive investment targets. The many different types of Venture Funds investing in early-stage tech companies know from experience[17] that only a small percentage of the many businesses approaching Venture Funds for funding meet these growth criteria. If a special "circular economy" additional risk is added to a business case presented to the Fund, then the potential growth requirement may easily move up, otherwise it will not have the potential to generate an IRR well above 30%.

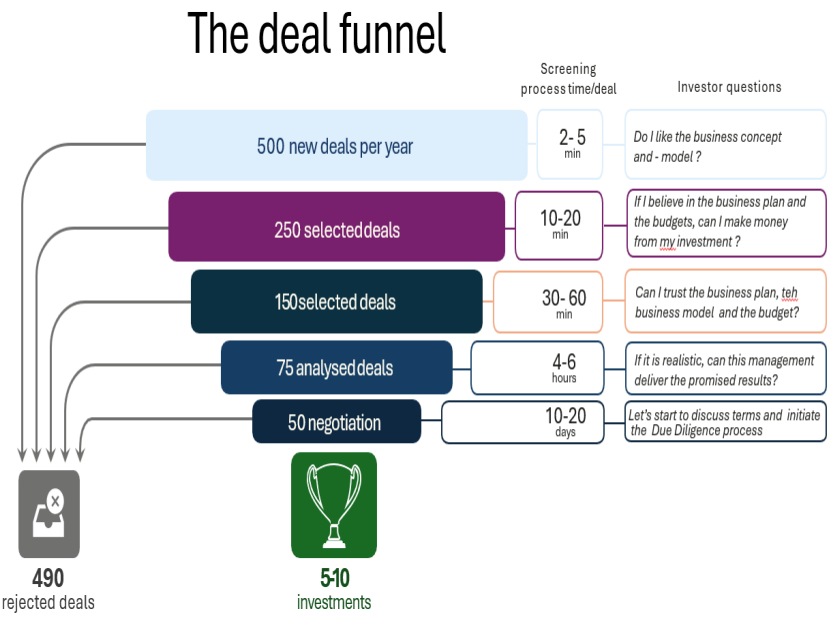


Figure 13: The typical "deal funnel" illustrating only few of the deals send to an investor turns into an investment.

Many SMEs looking for funding can present good and sound early-stage business cases, which over time may generate a profit and a positive cashflow – if getting funded. But for a slow growth company the increase in company value cannot meet investor return requirements, when the risk is taken into consideration. The other problem is that "unquoted stocks" have low liquidity because it is difficult to find a buyer who will also pay a high price. If the investor is a "closed end" VC Fund, the planned time from investment and until exit is often only 5 years. The longer the investor must wait to find a buyer, the more unattractive the investment case becomes[18]. Shares in "slow growth" companies are therefore not attractive, if there is a need to exit with a high multiple on the investment. Therefore, "slow growth" companies have difficulties in attracting investments from VC funds.

Unquoted shares in high-growth companies are more likely to show a rapid increase in value and are therefore more attractive as investment targets. Therefore, such shares also represent a potential for higher liquidity. They can complement an investment portfolio for a "later stage" investor or can be offered to a larger corporation, which is interested in the technology or want to get access to a new market developed by this company. However, it is only exceptional and rare business cases which realistically can demonstrate these high growth rates, which are needed to make an investment attractive.

[17] E.g. How to attract investors, a personal guide to understand their mindset and requirements, Uffe Bundgaard-Jørgensen, Pan-Stanford Publishing, 2017, .

[18] To get money back 3 time´s in 4 years= IRR 32%, to get 3 times money back I 6 years =20 % IRR

This is why a VC fund must screen hundreds of business cases before finding the right, but very few, companies to invest in, as illustrated in figure 13[19].

The special growth challenge connected to circular economy business cases is also reflected in the VC industry, which experiences special challenges for raising investments for VC funds with a circular economy investment focus only.

Part of the many challenges facing the process of raising circular economy focused VC funds have been connected to the special **"circular economy" risk,** a risk which was confirmed, when we analyzed and compared the business cases behind the applications from the 2 calls for entrepreneurs.

The analysis confirmed that for the "circular economy" business cases a substantial risk is connected to the **close interdependency** with the other parties in the "circle". This interdependence was often caused by specialized process requirements connected to resource reuse, limited down-stream capacity to absorb processed waste, immature market for recycled products and many other reasons. For an individual case this risk is difficult to properly assess without detailed knowledge about the business and financial situation of the other parties in the "circle".

When looking at the "circular" business cases, the initial focus was on the "disruption" risks, meaning a part or a party in the "circle" disappear or become unstable, which often happens during the early phases of business developing. It is in these situations the entire "circle" may collapse leading to the collapse of the individual parties in the circle.

However, after closer examination of the many business cases generated by the call for entrepreneurs, the "circularity dependency**"** also turned out to have an **important implication for the growth assumptions** connected to the individual circular economy business cases. When taking the requirements for return of investment into consideration, it became clear that if the growth assumptions for other parties in the "circle" are challenged, it may have severe implications for an individual party's funding possibilities.

Numbers may be best to illustrate the problem.

In the exampel illustrated in figure 14 the investor is asked to invest 1 mio EUR in a company, and is offered a 20% ownership in the company. If the investor requests to get the money back 3 times in 5

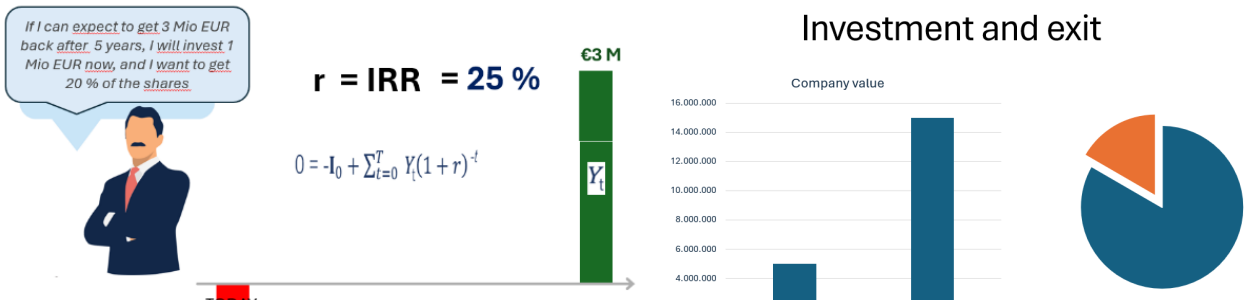


Figure 14: Investment and exit value requirement

[19] Page 5, How to attract investors, a personal guide to understand their mindset and requirements, Uffe Bundgaard-Jørgensen, Pan-Stanford Publishing, 2017

years, this means that the investor is expecting an IRR of 25%. It also means that the potential exit value of his investment need to grow to 3 mio EUR.

The implication of a request for return on investment like this is that the total value of the company needs to grow from a "post-money" value of 5 mio EUR to 15 mio EUR in 5 years' time. Otherwise, the investor will not get his 3 mio EUR back (20 % of 15 mio EUR) – still under the uncertain assumption that someone eventually would like to buy the shares.

As shown above, to become an attractive investment target, the business case must demonstrate a substantial growth potential to meet the return requirement attractive for Venture Capital funding.

When reviewing the applications from the 2 calls for entrepreneurs solely from a growth perspective, it turned out that for most of the "circular" business cases there was a need to take into consideration the embedded dependencies with the other parties in the "circle". There was a need to understand and evaluate the interest and possibilities of the other parties in the "circle" to pursue the same growth pattern. E.g. there was a need to secure that "up-stream" parties had plans and possibilities to grow supply and that "down-stream" customers should also have the possibility to increase their demand capacity to match the input/output growth assumption of the company analyzed.

Because of the "circle" interdependency the evaluation process of an individual circular business case becomes more complicated. For a potential investor is also becomes more costly, as there is a need to analyze the business activity of both "up-stream" suppliers and "down-stream" customer and to understand if it is realistic that they can or will be growing at the same rate as the foreseen growth for the investment target. If these preconditions do not exist, the growth assumptions behind the investment case analyzed will collapse.

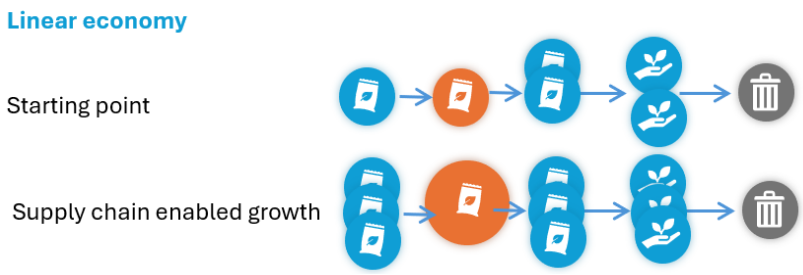


Figure 15: "Linear economy" and company growth

This is a very different evaluation task compared to dealing with traditional "linear" business cases where there are normally many "up-stream" suppliers or substitutes, and normally also many "down-stream" users/customers. Hence when analyzing the growth potential of a SME, it can normally be assumed that assumptions regarding access to increased supply, or the exsitence of more customers to be added to the existing customer base is within reach. Therfore there are normally no need to make special analysis of the up-stream or down-stream situation, other than the standard TAM_SAM_SOM type of analysis.

When looking at the similar growth scenarios for "circular economy" business cases, the interdependency or lack of realistic substitutes become a problem, which needs special analysis. To make an assesment of the realistic growth potential for a circular economy business case, there is actaually often a need to make a broad analysis of the entire supply chain, and to make an assessment if the funding assumptions for both up-stream suppliers and downstream customers are realistic.

Figure 16 illustrates that conditions for growth are not established even if new "up-stream" suppliers is added to the "circle". It is illustrated that the "down stream" demand side does not grow at a similar pace. Therefore the assumptions behind a growth business case are not realistic, ans may be pure "wishful thinking". Lack of well-aligned growth strategies by all parties in the "circle" often serves as a "straight jacket" for growth – and if funding is needed, it may kill investor interest.

Figure 16: "Circle" limitation for growth.

When confronted with this analysis some of the entrepreneurs contacted during analysis, who's growth assumptions were a pre-condition to attract the funding, began to consider to abandon part of the "circle economy" ambition and make part of the business "go linear" as a strategy to get access to funding.

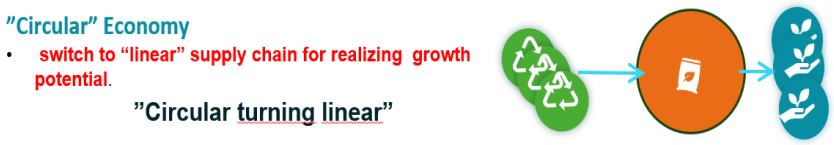


Figure 16 "go linear" to secure growth

However, there are other ways to meet investor requirements. In the previous example, the investor requested a 20% ownership in the company against an investment of 1 Mio EUR. If the realistic growth potential in the "circles" leads to only a doubling of company value during the next 5 years, when all "circle parties" realistic growth assumptions are taken into account, then the potential value of the investor's 20 % shares at exit drop from 3 Mio EUR to 2 mio EUR and the calculated IRR is only 15%. One way to compensate for this potential lower exit value, could be to offer the investor a larger portion of the shares, e.g. 30%, which will bring back the "3 times money back".

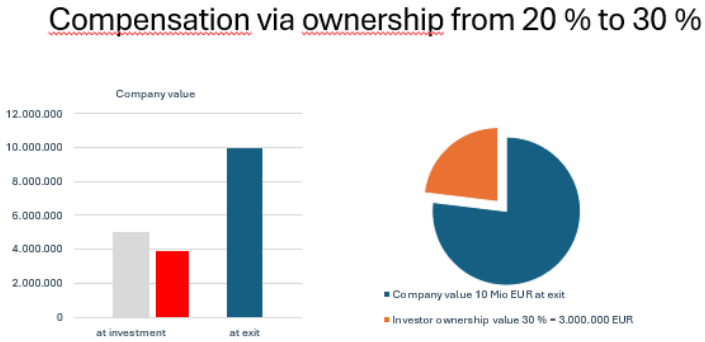


Figure 17: Compensation via larger ownership %

Although it is simple mathematics, it often come as a surprise to many entrepreneurs, that there is a close relation between "investors requested growth in company value" and "ownership offfered". In figure 18 is illustrated how an investors expected return of investment (e.g. IRR = 25 %) is connected to different assumptions about future growth in company value and the ownership % offered to the investor.

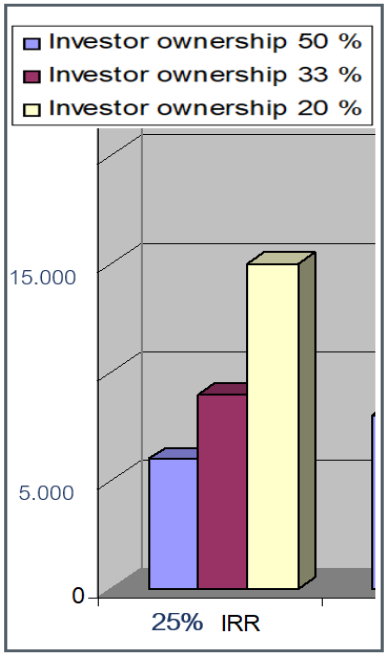


Figure 18 5 years growth assumption, Ownership% and IRR

Another way to solve the "funding challenge" could be to secure a grant to cover part of the needed in funding, as these "non diluting money" can reduce the need for other external funding. A co-funding via a grant can make the situation to look very different. If we in the above case assume that a grant of 500.000 EUR is awarded. This will reduce the funding needed from an investor from 1 mio EUR to 500.000 EUR. Then, even in the case of the "slow growth" scenario, the investor will get the "money back" 3 times, even if offered only 15% of the shares in the company. So, a "win/win" situation for both the investor and the entrepreneur.

When looking at early-stage investments in general, owning shares in these types of investment targets is not only about owning a ***risky asset*****,** but also owning an ***illiquid asset***. This needs to be compensated by a potential higher yield, **irrespective of whether the business case is "Circular" or "Linear".**

But most "circular" business cases are in addition to these two "normal" risks carrying a higher **growth risk** compared to similar "linear" business cases which have same "early-stage" risk related to technology, management, market and funding. Therefore, it is reasonable to conclude that there are potentially two "additional" risks to be considered, when evaluating "circular economy" business cases compared to "linear" cases:

- Risk associated to **collapse of the "circle"**
- Risk associated to **"growth constraints"** connected to the supply chain

Combined, they can constitute substantial barriers for funding circular businesses. The risk associated to "growth constraints" is currently the most overlooked risk, because it does not materialize as a particular risk until a full financial analysis of the critical parties in the "circle" is conducted.

7. Addressing funding challenges for circular economy business cases

There are many ways of addressing **two of the substantial barriers for funding Circular economy businesses:**

- Risk associated to **collapse of the "circle"**
- Risk associated to **"growth constraints"** connected to the supply chain

When the development of an early-stage SME with a circular economy focused business strategy require funding from private financial investors, like VC fund or smaller private investors, the business case must offer these investors a potential **risk adjusted return**, which is not very different from what investments in similar "linear" early-stage SME's can offer.

Different way of addressing risk including "circular" risks have been illustrated in section 6. None of these are new and are fully applicable for any early-stage business cases in need of funding. But the need for putting these solutions into action occur more often for "circular" business cases than for "linear" business cases.

- Adjust (lower) the requested **pre-money valuation**
  - **=** offer the investor more shares for the same investment.
- Substitute part of foreseen investor funding with "non-diluting" money: **grants**
- Secure access to
  - **subsidized cost**, rebate on fee's, taxes et.al. to reduce funding requirements
  - **subsidized**/artificial gate-**tariffs** or feed-in tariffs to improve P&L balance

Many circular economy business cases involve different ways of "waste valorization" broadly speaking. The many ways of handling and processing" waste" for the valorization process also often rely on the involvement of the public sector, both as an active party in the "circle" or in a regulatory function. Currently the processes and formalities connected to public procurement creates barriers for these public sector entities to take an active role in making the "circle" work – and grow.

Growth in business activity, as shown in section 6, is a prerequisite for most SME's looking for private funding. If the value of the company cannot be foreseen to grow, the investors cannot expect to get the required return of their investments – so why invest?

The special "circle" interdependence problem which often is connected to the identified growth constraints equals the problems many SME's were facing in the renewable energy sector 10 to 15 years back, where e.g. grid constraints prevented establishment or expanding of wind or solar power parks.

The success of any new wind turbine park, solar field or biogas plant, and any connected technology solutions, always depends on sufficient "down-stream" capacity in cables or pipes to absorb the energy

generated. Because the interdependence problem in this sector was very "technical" and easy to identify, and because most of the organizations working with energy production and infrastructure had a long tradition for planning – and because a well-functioning energy system is crucial for society – the interdependency problems were addressed through planning, public infrastructure investments (transmission and distribution system) and if needed, introduction of artificial (high) feed-in tariff to secure the business case for a large number of renewable energy projects. Because the "interdependence" problem was very physical and easy to identify, requests for funding of new wind turbine parks, solar fields or biogas plants always included full system operational and integration plans.

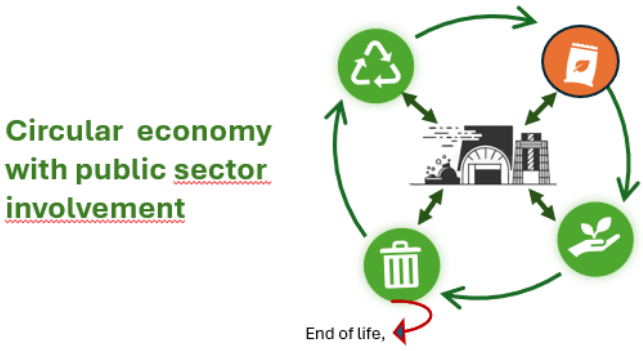


Figure 20 Involvement of public sector

Many of today's emerging "circular" business cases are much less uniform and the interdependence between the parties in the circle more complicated to describe in a uniform manner. For most of these cases funding remains a barrier, but for the cases with a focus on "waste valorization" a public sector involvement is often predominant as an active part in the "circle" or in a regulatory role. An active involvement[20] of the public sector and/or an adaptation of public procurement processes has for such business cases the potential to become a way to address the two special major risk factors connected to "circular economy" business cases.

An active public sector involvement as a direct or virtual partner can potentially also remove part of the "circle collapse" risk. Contrary to the network and resources of individual small SME's, the network and human resources available to public sector entities in a local and regional context is typically larger and better. If a public sector stakeholder is involved, its network and human resources can be activated to find alternatives or substitutes, if one or more parties in the "circle" need to be replaced. Similar impact on the sustainability of a "circle" could be the involvement of larger cooperations[21]. With this type of involvement part of the "collapse" risk can be removed and depending on the level of involvement by these parties, probably also part of the "growth" risk can be removed.

In the often-quoted Danish Kalundborg Symbiose[22] case several innovative SME's providing new technology and solutions has had their growth assumptions assured through the active involvement of other active partners from large private industries, the local municipality and from public works. The Symbiosis is therefore an interesting full scale "circular economy" example, where different companies in cooperation with the Kalundborg municipality and its public works in 40 years have been cooperating and been using each other's by-products, energy, and water streams to improve both economic and environmental performance.

[20] The analysis does not include private and other non-governmental funding sources which are not looking for a return on investment, and which are less risk adverse or have other objectives.
[21] A good example is Kalundborg Symbiosis
[22] https://www.symbiosis.dk

The unique key to success has been geographic proximity, industrial diversity and organic evolvement over decades. This has enabled adaptation of new technologies and installation of efficient **grid & pipeline connections** for sharing steam, water, gas, gypsum, and other resources. The diversity of industries (energy, pharmaceuticals, biotech, and manufacturing) has also created complementary resource needs and outputs.

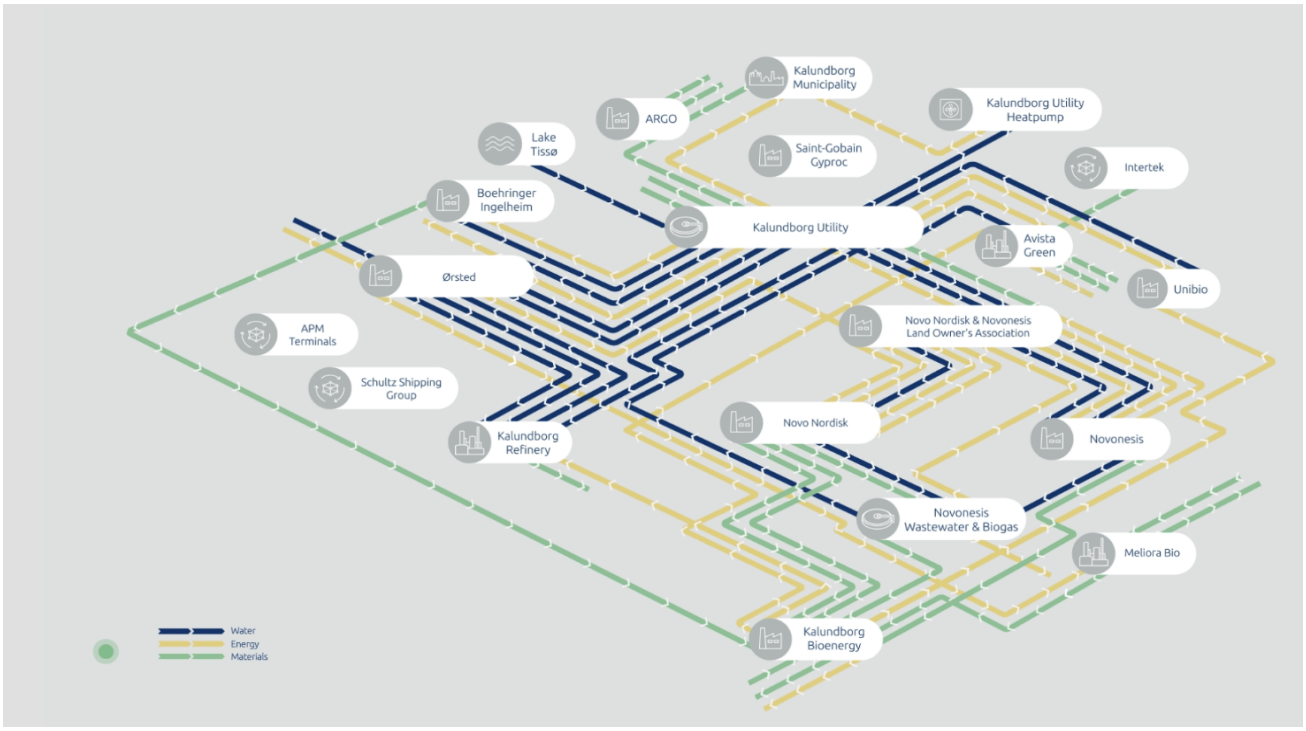


Figure 21 Kalundborg Symbiosis

The driving force behind the development of Kalundborg Symbiosis has been practical business need, leading to cost reductions, reliable and secure supplies and an active involvement of Kalundborg municipality. The municipality has played an enabling role by providing supportive regulations and permitting processes. It has also allowed access to heavily regulated public infrastructure such as water systems and district heating. The very small, and rather informal, Symbiosis organization has undertaken a coordination role between the parties and secured adequate balancing between industrial and community needs.

"How was it possible" to realize Kalundborg Symbioses, despite often conflicting technical and economic interests and regulatory constraints? There is a common shared agreement that it was the local **culture of collaboration** among the companies and the local municipality that was one of the key forces behind the successful development. Over time the stakeholders developed **trust-based relationships** facilitated by informal networks and direct communication. Combined it allowed balanced long-term contracts and shared investments in infrastructure like steam pipelines and water systems.

However, the individual stakeholder's clear economic interest also plaid a role, because the Symbiosis offered the stakeholders **tangible business benefits** from cost savings on materials, water, and energy. It secured stable supplies and reduced waste disposal costs. The industrial partners benefited from direct reduction in CO_2 emissions and environmental impact, which with today carbon tax and

regulatory regime have had a direct impact on the P&L of the commercial partners and on the "climate" account of the municipality.

Although Kalundborg Symbioses on three significant aspects differ from many of today's circular economy business cases

a) Most of the stakeholders were large industries, and

b) funding was not an issue.

c) It could not have materialized without the enabling role of the local municipality.

there are other lessons to be learned.

The critical element behind the development of Kalundborg Symbiosis was that most of **the inter-stakeholder agreements could be concluded on standard commercial terms, which is a more rapid and flexible process compared to the standard public procurement process.**

The current principles and rules behind the public procurement process have difficulties in addressing uncertainty and need for flexibility. Often the public organizations also lack in-house skills and experiences to formulate innovative aspects in the calls for tender. Combined, the current public procurement structure is not well adapted to address further development and changes, as highlighted in the EU Parliamentary Resolution.

In practice the ideas behind the Symbiosis correspond to many of the recommendations in the parliamentary resolution. Decision processes were designed to move away from excessively lengthy procedures aiming at reducing bureaucracy and regulatory burdens. The explicit purpose was to reinforce the different party's strategic resilience and economic security and ensure, when needed, that public procurement could be used to promote the development of local and regional industries in key sectors, and to anchor industrial capacity within the Symbiosis to address critical dependencies.

Change became a key element in the Symbioses, and it was fueled by new technologies, company expansions, and new sustainability goals. Examples of new developments have been that waste heat from power generation to provide district heating to thousands of homes, and secure that nutrient-rich sludges from biotechnological production are reused in agriculture. The physical structure in Kalundborg Symbioses includes substantial flexibility and is designed to accommodate both growth and incorporation of new technologies, which make it ideal to accommodate new stakeholders and enable current stakeholders to grow. This adaptability has kept the Symbiosis relevant for over half a century.

The preconditions for replication of Kalundborg Symbioses do not exist everywhere. In particular "trust between stakeholders" does not evolve "over-night". But identification of common interest and removal of fear of dominance by one or more parties is a key "trust building" element behind getting a "circle" started.

To reduce the risk of "circle collapse" the involvement of one or more public entities in an enabling role often add to trust – also for investors. If a public sector entity is foreseen to be directly involved in getting the "circle going", there will be a need to explore how a flexible use of public procurement processes can be implemented, and how the staff at the public entities become trained in including

innovative elements/requirements in the formulation of “calls for tender” or in regulatory processes. As previously quoted, another example from Denmark is the "Partnership for Green Public Procurement" that integrates market dialogue and outcome-based specifications, making it easier for innovative SMEs to participate in tenders while promoting green and circular solutions.

To secure the required growth potential for SME’s and to meet investors requirement for return on investment, the structure of the “circle” and the interaction between the stakeholders need to be flexible and non-exclusive. It must be possible for the individual stakeholders to pursue their own growth strategy, even if it may require adding new suppliers or customers with different profiles to the “circle”. In other words, to include potential “substitutes” in the circle both on the supply and the demand side, even at the cost of “purity” of the “circle”.

To sum up, the learnings from comparing and examining the many “circular” and “linear” business cases with a focus on the funding aspect have been:

- As long the Circular Economy is, or need to be considered as, an “infant business sector”, then, irrespective of normal technology, management and market risk, there is a potential additional risk to be addressed connected to the often “thin” or “fragile” supply/value chain.
    - Active public sector involvement can be a key element to reduce the “collapse” risk
    - Inclusion of large industrial / business partners also reduces the “collapse” risk
- From an investor point of view, if the special “circular” risks are not addressed, investment grade will in most cases require:
    - Adjustment (lower) in the pre-money valuation
    - Substitution of part of foreseen funding from private investors with “non-diluting” money: grants
    - Secure that the investment target to some degree has access to:
        - subsidized cost, rebate on fee’s, taxes et.al. to reduce funding requirements
        - subsidized/artificial gate-tariffs or feed-in tariffs to improve P&L balance

The potential funding challenges for “circle economy” business cases are not unique to an emerging business sector which has a focus on recycling and resource conservation. When the technology and market access for renewable energy sector was in its early phases 10 – 15 years back, public support and creation of special preconditions were also needed to attract funding.

Until circular economy business broadly speaking move into a more mature stage and the typical supply/value chain interdependence becomes less fragile, funding of many highly interesting early-stage circular economy projects remains a challenge, which must be addressed by special measures. If business cases depend on cooperation with the public sector, more flexible use of public procurement processes is needed.

Gate2Growth, Copenhagen, November 2025

Annex 1:

Summary of European Parliament resolution, September 2025

On 9 September 2025, the European Parliament adopted a resolution on public procurement (2024/2103(INI), hereafter: the Resolution) in which it outlines its priorities for the upcoming revision of the EU public procurement directives. The Resolution identifies several strategic objectives, main challenges, areas for improvement and several recommendations. The Resolution also highlights the importance of further digitalization of public procurement.

Strategic objectives

The European Parliament's recommendations regarding the strategic objectives outlined in the Resolution can be summarised as follow:

- **Simplification and efficiency:** Simplify the application of the rules, move away from excessively lengthy procedures, and streamline and clarify the focus of public procurement goals. It explicitly calls for a reduction of the current 476 articles, or 907 pages of law, to reduce bureaucracy and regulatory burdens.
- **Strengthening EU strategic resilience:** Reinforcement of Europe's strategic resilience and economic security. Public procurement should be used to promote the development of critical and nascent industries in key sectors, and to anchor industrial capacity within the EU to address harmful dependencies.
- **Balancing strategic goals and core principles:** While public procurement can be a useful tool to reach strategic objectives, its primary function is to achieve the best value for public tax funds. The three guiding principles of public procurement - value for money over the entire life cycle, fair competition and anti-corruption measures - remain valid and should not be compromised.
- **Promoting European preference (with safeguards):** In response to global competition shaped by foreign subsidies and discriminatory practices, exploring how to introduce preference to European goods and services in targeted strategic sectors within the boundaries of legal certainty, transparency and fair competition is recommended.
- **Accessibility:** The reform should make public procurement more accessible for smaller actors, including SMEs and start-ups, while maintaining sufficient flexibility for contracting authorities to adapt procurement processes based on their specific needs.
- **International Engagement:** Public procurement processes must remain as open as possible and compliant with the EU's WTO commitments, while also ensuring clear rules for the treatment of products and economic operators from non-EU countries.

Main challenges

The European Parliament outlines several challenges to take into account throughout the revision process of the public procurement directives:

- **Inconsistent implementation and uneven playing field:** Significant discrepancies remain between Member States in their implementation and enforcement of public procurement rules, discouraging cross-border bids and the participation of smaller businesses and social economy enterprises, which creates an uneven playing field.
- **Decline in competition:** Competition in public procurement has significantly declined over the past decade (see ECA Special Report). Complexity, excessive qualification criteria and increasing bureaucratic burden of procurement processes disproportionately affect SMEs and local businesses, dissuading them from participating and thereby reducing the diversity of bids.
- **Limited use of strategic procurement:** Contracting authorities implement strategic procurement to a very limited extent (the share of procedures using award criteria other than the price remains insignificant). This is due to a lack of legal certainty in the interpretation of the requirements.
- **Burdensome and lengthy procedures:** Procurement procedures have become increasingly complex and burdensome, creating unnecessary administrative hurdles that deter a diverse range of suppliers, including cross-border suppliers, from participating.
- **Lack of transparency and inadequate enforcement:** Transparency and enforcement in public procurement remain inadequate, as evidenced by persistently low publication rates for contract awards, limited accessibility to procurement data and ongoing risks of abuses, fraud and corruption.
- **Challenges in subcontracting chains:** Long and complex subcontracting chains can be used to escape legal responsibilities and pose numerous challenges for labour enforcement authorities. The current procurement directives do not provide contracting authorities with sufficient tools to effectively address the non-performance of public contracts.

Areas for improvement

The European Parliament also identifies clear areas for improvement to address with the revised public procurement directives:

- **Updating thresholds and streamlining procedures:** Public procurement thresholds should be updated in light of the significant inflation and construction costs increase. The Commission is called upon to introduce a mechanism taking inflation rates into consideration.
- **Ensuring autonomy and flexibility for public authorities:** A clearer distinction between contracting authorities and public undertakings, to safeguard the freedom and autonomy of public authorities, is recommended. Procurement rules for public undertakings should be better aligned with commercial practices to ensure maximum flexibility.
- **Addressing rigid formalism:** A significant number of exclusions from public procurement procedures are due to minor formal irregularities. Regularization or clarification of such minor irregularities should be the rule rather than the exception.

- **Improving competition and data analysis:** Some procurement procedures are rarely used due to their complexity and bureaucratic hurdles. Procurement data should be analyzed in a comprehensive manner to identify and address the underlying causes of declining competition. Award criteria should be designed to promote fair competition, considering new entrants, start-ups, and SMEs.

Key recommendations

The European Parliament concludes with several relevant key recommendations for the revision process:

- Simplification and standardization: Reduce and simplify the rules for both contracting authorities and bidders. Introduce uniform non-binding guidelines and standard contract section templates to create greater uniformity in tendering procedures while preserving national flexibility.
- Fair competition and market access: Streamline administrative processes to ease burdens and refine selection criteria while ensuring fair access for all bidders. Use sourcing practices prior to the design of calls for tender, simplify the selection criteria and modify requirements that disproportionately hinder newly established companies.
- Tackling unfair practices: Make full use of the EU's trade defense toolbox, including the International Procurement Instrument and the Foreign Subsidies Regulation, to prevent unfair competition from non-EU countries. Introduce stronger measures to detect and address abnormally low tenders.
- Fostering social and environmental value: Move away from awarding contracts based solely on the lowest price. Encourage awards based on the best price-quality ratio (MEAT) and promote systematic integration of social and sustainability criteria in public procurement procedures.
- Professionalization and support: Train contracting authorities, providing adequate clarification of the use of non-price-related criteria. Enhancing support mechanisms for very small entities, SMEs, start-ups, and social economy actors to enable them to effectively compete in public tenders.
- Addressing procedural and legal issues: Concrete actions should be put forward to combat corruption and increase transparency in negotiated procedures. Exclusion criteria should be revised to better address specific sectoral risks and for the establishment of a general principle allowing for the regularization or clarification of minor irregularities in tenders.
- Subcontracting: Strengthen transparency and accountability throughout the supply chain to end abusive subcontracting and consider introducing a well-defined regime for joint and several liability of economic operators and subcontractors while ensuring transparency regarding the subcontractors involved and the share of the contract that the contractor intends to subcontract.
- Public-Public cooperation: Increase flexibility in public-public partnerships and consider exempting cooperation between public authorities, for the purpose of efficient task fulfilment, from the scope of the procurement directives.

Annex 2: Funding a VC fund fundamentals

Annex 2 has been compiled to help readers who are not familiar with how funding is sourced into traditional Venture Funds and to understand the requirements for return of investment and connected challenges. It provides a simplified illustration of the "money supply chain" for a typical VC fund and illustrates the role of portfolio company investments: It highlights the return requirements needed from these investments to attract investors to the Venture Fund and to meet the investment risk.

There are typically two types of VC funds: **closed-end funds and evergreen funds**. Most of the traditional VC funds are closed-end funds with a maturity of e.g. 10 – 12 years, after which the fund is liquidated and the proceeds from investment activity is returned to the investors in the fund. An evergreen fund is in principle created for perpetual lifetime

Investors making funds available for a "closed-end" Venture Capital Fund, will in principle[23] have their money tied to the VC fund for this long period. Therefore, to compensate for this illiquidity, the investors will normally require an illiquidity premium to be put on top of a risk premium. The general stock market risks are also associated with investments in VC Funds. The investment period is long, and the general business circles may have turned sour, when it is time to exit from the portfolio company investments. Even if the individual portfolio companies in which the VC fund invest excels with respect to business performance, the general market price on both quoted and un-quoted shares may have fallen through the floor when the VC fund is finally exiting from its portfolio companies. Therefore, each individual investment in a portfolio company made by the VC fund needs to have the potential to offer a high return. We all know that not all the investments will turn out as expected, many will even fail, but when making the individual investments the belief is: This is a winner"

This is the explanation to the often-heard question by entrepreneurs: *Why are investors requiring a 20-30 % internal rate of return, when a bank loan only cost me 5%.* The short answer is: "*take the bank loan if you can get it"*. For a longer answer, follow the reasoning below.

A "closed end" Venture Fund means that after e.g. 12 years of operation, the fund is "closed" and the proceeds from selling the shares (the investments) in the portfolio companies is returned to the investors in the VC Fund. The VC Fund is normally operated by a management company, which co-invest in the Fund together with several larger or smaller "passive" investors (limited partners). Some of these investors may be large institutional investors like pension funds or large international corporations.

The co-investment by the management company is partly done to demonstrate that the management team is willing to take a similar risk as the passive investors are taking, partly done to make private capital gains. Many management teams operate 2 or 3 "closed end funds" under the same VC Fund company name and logo. Some of these funds are "mature" meaning they are "old" and in the process of being disinvested prior to being closed, others are "virgin" funds with many years of active new investments to make before being closed.

[23] Some VC-Funds operate with a "draw down" and "pay-back" principle, reducing the time the limited partners money are tied into the VC fund.

To attract investments from the "passive" investors, that always will have a range of alternative investment opportunities to invest into, the management company need to present an "offer you cannot resist". Why should an investor make an illiquid investment and tie money up in a VC Fund, unless the investor can expect to get a reasonable risk adjusted return? To convince these investors to invest in a new VC Fund, the potential "return of investment" therefore need to match these investors' alternative risk adjusted investment opportunities. If the potential return of investment or the IRR[24] is too low, why invest?

Figure 1 illustrates a simplified version of a Venture Fund and the connected money flow. In the example it is assumed that "passive" investors will request a potential return of investment of 12% above the "secure" interbank rate[25]. This is to compensate for the investment risk and to get a premium for tying up their money in the Venture Fund for e.g. 12 years. The management team/company coinvest and will also charge an "operators" fee between 1.5-2% of the committed capital. They need to get paid from handling all the screening, investment and disinvestment activities of the Fund, and they expect to "make the real money" from their investment in the Fund. It is also assumed that the Venture Fund invest in so-called "low to medium risk" early-stage business cases. In the example it is assumed that about 25% of the business cases will fail, in other words the expected success rate is 75%. This is a high success rate for this type of early-stage investment.

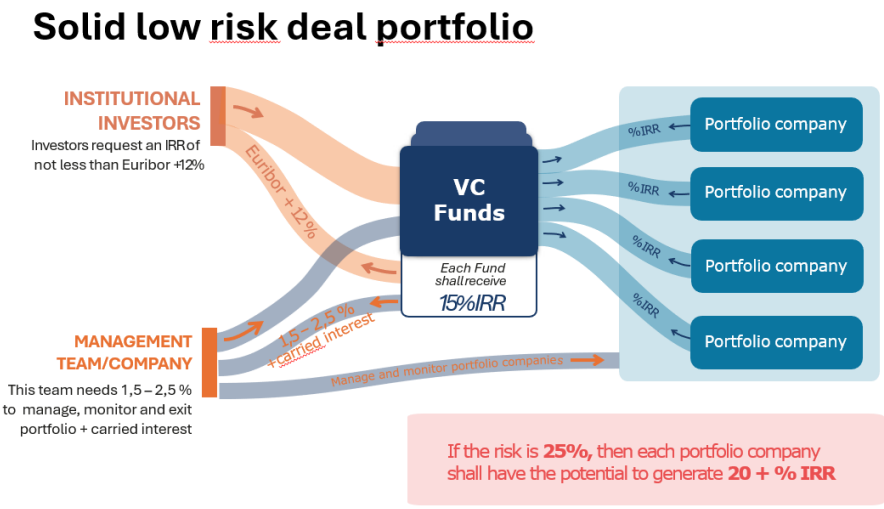


Figure 1: Simplified illustration of a VC fund

The only way the VC Fund - after deduction of the management fee - can pay the investors in the fund 12% + Euribor[26] (assumed 1%), is by selling the shares in the "surviving" portfolio companies and hope for, that after having been a shareholder in these portfolio companies for 4 – 6 years there has been an increase in company value, which will be reflected in the share prices, when these unquoted shares are sold.

In some way it is a "lottery"; you win on some lots and loose on others, **but when your buy, all lots shall have the same chance of success**. But the big difference, compared to a lottery, is that an active involvement by the management company can influence chances of success – after the investment has

[24] IRR: Internal rate of return.
[25] Euribor: Euro Interbank Offered Rate. The Euribor rates are based on the interest rates at which a panel of European banks borrow funds from one another.

been made. But even if a portfolio company performs as expected, it remains a substantial challenge to find the buyers at the right price for these unquoted shares.

To reduce the risk, the overreaching rule is that the management team will only invest in a company after a thorough due diligence process evaluating technology, IP, management, competitors and market. They do not make an investment decisions unless the assumption is: "this is the winner" or at least, with my money and my expertise it can be made a "winner". However, experience tells that some of the investments will still fail and the value of the shares in these companies will be nil or close to nil – but at time when the investment is made: *this is an investment in a potential winner.*

Now, it is back to pure mathematics. To reach the promised "return of investment" target, which has been "promised" to the passive investors in the Fund, 75% of the portfolio companies shall be "winners". Selling the share in these companies shall, on average, generate a 20% IRR to the Fund. This is the minimum return if the Fund shall be able to generate 15% IRR on all the money invested in the portfolio companies. When closing the Fund, the proceeds, from selling all its shares in the "winning" portfolio companies (called "exiting") and after deduction of the management fee, shall then be distributed to the investors in the fund, both to the "passive" investors and to the management team (for their role as co-investor).

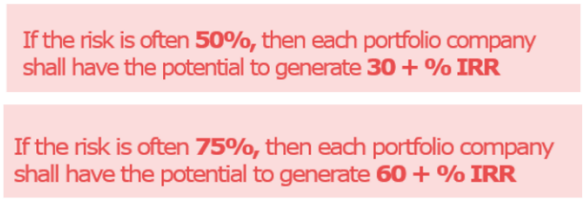


Figure 2 Risk & IRR requirement

However, a typical early-stage Tech Venture Fund will often experience that more than 25% and even more than 50% of the portfolio "does not make it". The consequence is, if the Fund is still to generate 15% IRR on average from its investments, then the proceeds from selling its shares in the fewer remaining "winning" portfolio companies, need on average to generate a 30% IRR or more. To generate 30% IRR from selling shares in a portfolio company, the growth in value of the shares of the portfolio company during the 4 to 6 years investment period needs to be strong.

This also means that only companies with strong potential growth in business activity are attractive investment targets. The many different types of Venture Funds investing in early-stage tech companies know from experience[27] that only a small percentage of the many businesses approaching Venture Funds for funding can meet these growth criteria. If a special "circular economy" additional risk is added to a business case, then the potential growth requirement may easily move up, otherwise it will not have the potential to generate an IRR well above 30%.

[27] E.g. How to attract investors, a personal guide to understand their mindset and requirements, Uffe Bundgaard-Jørgensen, Pan-Stanford Publishing, 2017,