Toward a New Model for Financing Circular Value Chains

Lessons from the Swapfiets Pilot

Kopgroep Circulair Financieren

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Colophon

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Executive Summary

Brief overview of the CISE model and its application to Swapfiets' circular chain.

Innovating finance for the circular service economy
The transition to a circular economy requires more than new products—it requires new business and financing models. This white paper introduces the CISE model, a legal-financial structure designed to enable circular service businesses to scale by aligning incentives across the value chain and enabling access to capital.

This paper is intended for financiers and other stakeholders exploring new ways to fund and grow circular service models. The findings provide a strong foundation for future research and represent an important step toward enabling circular financing.

Why circular service models?
Traditional revenue models reward volume and obsolescence: profitability is driven by selling as many units as possible, often at the expense of product longevity. Circular service models challenge this logic. These models generate income through the sustained use and performance of a product—via subscriptions, pay-per-use, or performance-based contracts.

Circular service models are defined as businesses that combine a recurring revenue model (such as product-as-a-service) with circular strategies like reuse, repair, and refurbishment. They incentivize durability, maintenance, and material stewardship—shifting the focus from ownership to performance over time.

To address this, circular service models must:

1. Embed revenue models that reward long-term product performance.
2. Ensure material stewardship—i.e., that material responsibility remains with those that are best positioned to influence outcomes.

These models face challenges to grow: unpredictable cash flows, high upfront investments, short contract durations, and fragmented value chains with misaligned incentives.

The CISE Structure
The CISE structure[1] provides a new legal and financial foundation for circular service businesses. It is built around three pillars:

- **Collaborative revenue sharing** through the CISE Participation Agreement (PA), which enables supply chain partners to share revenue proportionally, based on roles and responsibilities.
- **Cashflow-based financing**, in which repayments are linked directly to asset performance rather than corporate balance sheets.
- **Product-centric financial metrics**, including Product Lifetime Value (PLV), that better reflect the recurring value of long-lived, circulating assets.

Together, these tools offer a framework to create the financial language and instruments designed to fit the unique needs of circular service businesses, supporting recurring revenue models and chain collaboration. In other words, *circular* financing.

🔍

With ***circular* financing** we mean financial instruments designed to fit the unique needs of circular service businesses, supporting recurring revenue models and chain collaboration.

Testing the structure: the Swapfiets pilot
To test the viability of the CISE model, a pilot was conducted with Swapfiets (bike-as-a-service) and its supply chain partner Vittoria (tire supplier). A shadow agreement simulated shared revenue based on the CiSe PA, and banks from the Kopgroep Circulair Financieren[2] assessed whether and how this setup could be financed.

[1] A deeper look into the CISE model can be found in the two previous white papers. https://www.cise.network/resources/
[2] The story behind Kopgroep Circulair Financieren. https://www.invest-nl.nl/invest-nl-verhalen/kopgroep-circulair-financieren?lang=en

Lessons learned

1: **Setting up a CISE participation agreement with existing partners is challenging.** Negotiating with established partners like Vittoria was difficult, as existing relationships and data-sharing concerns complicated the process. New financial models must consider existing contracts and trust among partners.

2: **The question "what's in it for us?" arises again and again**. Stakeholders need to clearly see the (financial) benefits to engage in circular partnerships. This highlights the importance of aligning incentives across all parties to ensure long-term collaboration.

3: **Trigger points and their impact on payments need to be clearly defined.** Agreements should specify the trigger points that affect cash flow generation. Trigger points in the Swapfiets casus were, for example, bike usage, idle time, repair status. Defining trigger points ensures clarity on when, how and to whom payments are made.

4: **Data sharing is essential when risks are shared**. Transparent data sharing is crucial to risk-sharing and performance evaluation. Facilitating this transparency may require a neutral party to ensure trust and clear assessment.

5: **Long-term agreements need flexibility**. Contracts must be adaptable to changing conditions, such as service volume or maintenance costs. Building flexibility into long-term agreements ensures they remain viable over time.

6: **In circular service models, focus shifts from the customer to the product and, crucially, the system that keeps it in use: repair, maintenance, and continuous circulation.** Profit in circular models comes from optimizing resource usage and maximizing the lifespan of products, not *just* customer acquisition.

7: **Update financial *metrics* and develop circular benchmarks to assess financial health and to avoid misunderstandings**. Existing financial metrics, like "churn" and "customer lifetime value," can create confusion when applied to circular service models. Returning a product (churn) can be seen as an opportunity to bring the product to the next customer and does not necessarily reflect "failure" from a circular perspective. However, not all churn is beneficial, so new metrics must assess product idle time, switching costs, and net return

value to distinguish between sustainable turnover and systemic issues. Updating financial terminology is key to helping stakeholders understand their unique financial value proposition.

8: **Lifespan and repairability heavily impacts price and profitability**. In circular models, the lifespan and repairability of products significantly affects pricing and profitability.

9: **The lower the switching costs (thanks to smart circular design), the higher the Product Lifetime Value (PLV), the stronger the financial case.** The most important metric for circular businesses is the Product Lifetime Value (PLV), which indicates the cash flow-generating capacity of the asset, in this case bikes. The ability of the asset to keep on generating cashflows (by multiple, subsequent users) is the core value of circular assets. This metric allows for more accurate assessment of long-term value and profitability.

10: **In the CISE setup, financed is only the fleet of products in the circular service proposition—not the whole balance sheet.** The CISE model ties financing to specific assets rather than companies, with repayments based on the cashflow these assets generate (e.g. subscriptions or pay-per-use). By ring-fencing financial exposure to the asset pool, it allows investors to support circular business segments without taking on broader corporate risk.

Key challenges raised by banks were:

11: **Short-term user contracts make it difficult to apply traditional long-term financing logic. This was addressed via borrowing base financing, tied to the asset's lifetime and performance, not contract duration.** This provides a more flexible and circular fit—but requires more dynamic risk assessment and administration. For Swapfiets, this means that as more bikes are used and generate income, more financing can be drawn. If fewer bikes are active, the available financing limit adjusts accordingly. This system works well for circular economy projects because it aligns financing with real-time performance, making it more adaptable and sustainable. Note: under the condition that this can be automated with solid dashboards. See also following insight #12.

💡12: **To adjust financing in line with actual asset use, banks require secure, real-time visibility into performance data**. **Technology platforms are crucial to enable this transparency and make circular chain finance operational and scalable**. This demands a robust technical infrastructure, like the proof-of-concept platform from CISE Network, which enables secure, chain-wide monitoring and is crucial for scaling cashflow-based circular finance. This is an identified topic for future research.

💡13: **Banks require priority in the waterfall**. Banks require priority, meaning they must be repaid first in the event of revenue distribution. This was easily solved through a cashflow waterfall prioritizing senior debt. Although this is not new information, it is crucial to keep in mind when structuring cashflow payouts.

💡14: **Need to ringfence assets**, which can be addressed through setting up an SPV or the proposed CISE Foundation: a shared, bankruptcy-remote custodian replacing costly individual SPVs (also an identified topic for future research).

Conclusion

By applying the model to Swapfiets and Vittoria, we explored how shared revenue models and cashflow-based finance could unlock growth for circular service models.

This pilot was the first real-world test of the CISE structure –an effort to prove that businesses built on long-term product use, not just product sales, can become financeable when structured right.

The pilot did not result in a financing deal. It was a shadow test–a safe space to explore what might be possible. And while we uncovered viable pathways, we also surfaced key frictions still to be solved:

1. **Shift from company to product:** Value creation depends on durable, circulating assets–not one-time sales.
2. **Structure matters:** Hybrid models combining borrowing base logic, project finance mechanisms can unlock finance for circular models, however, do require transparent data-sharing.
3. **Banks are willing–within clear frameworks:** The pilot showed that banks are open to innovation when risk is well-managed and performance is measurable.

Next Steps
The CISE framework is now being formalized through legal documentation and will be validated in live financing scenarios.

Key focus areas for future development:

- **Technical infrastructure for real-time performance monitoring,** enabling financiers to assess circular asset pools based on verified data.
- **Validation of the CISE Foundation** as a shared, bankruptcy-remote vehicle to simplify asset management and reduce transaction costs.
- **Pilot implementation** of the structure in real deals—starting with the world's first Building-as-a-Service project in collaboration with the *Kopgroep Circulair Financieren*.

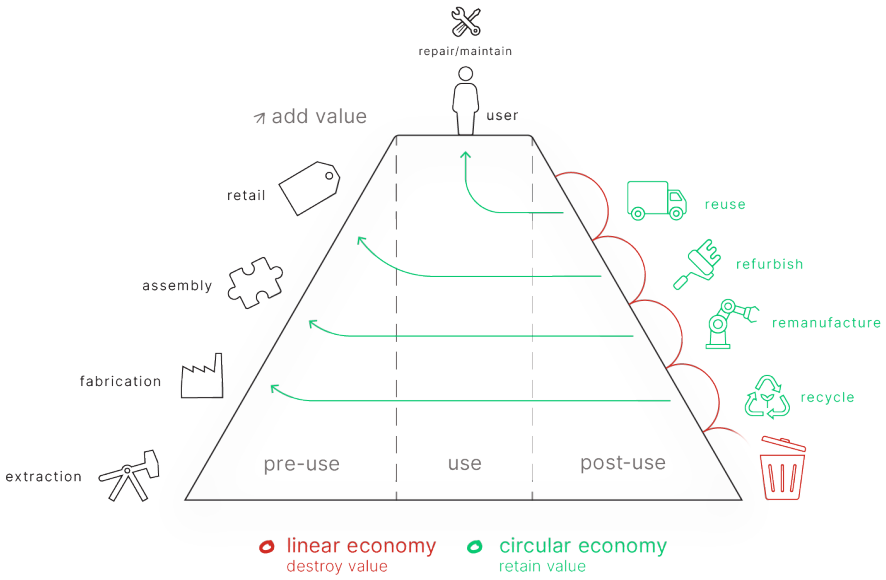
Financing circular value chains is no longer a theoretical ambition. With the right legal, financial, and technical foundations, it is ready to move from paper to practice.

Introduction

Let's start with the beginning: the circular economy

Let's start at the beginning: In a circular economy, products and materials are kept in use for as long as possible through reuse, repair, remanufacturing, and recycling. The goal is to decouple economic welfare from resource consumption and environmental degradation.

One of the simplest ways to visualize the difference between the **linear** and **circular** economy is the **Value Hill** model.



The Value Hill. Adapted from: Achterberg, Hinfelaar, and Bocken (2016). "Master Circular Business with the Value Hill." [link]

The Value Hill shows how value is created, maintained, and lost over the lifecycle of a product.

- **Up the Hill (Design & Production)**: Value is created when a product is designed and manufactured.
- **Top of the Hill (Use Phase):** Value is retained when the product is actively used and maintained.
- **Down the Hill (Waste or Recovery):** In a linear system, the product is discarded, and value is lost. In a circular system, value is preserved or recovered through repair, reuse, remanufacturing, or recycling.

In the circular economy, the key is to stay at the top of the hill—keeping products in use and maintaining their value for as long as possible.

There is a mismatch between the effort to build durable, circular products and the revenue model...

Most businesses today generate revenue through selling as many products as possible. These products are often designed with limited lifespans, encouraging frequent replacement and contributing to material waste.

In contrast, in a circular economy, products are designed that are durable, repairable, and adaptable over time. This represents a long-term investment in quality and material stewardship. Yet the value of that investment often unfolds beyond the traditional business horizon, sometimes even after the original entrepreneur has moved on or the business has changed hands.

When a business relies on a single sale for revenue, there is little financial incentive to remain engaged with the product throughout its life cycle. The incentive to design for reuse or responsibility fades once the initial transaction is complete.

Consider the example of the century-old lightbulb that continues to function long after its sale. Despite its enduring value, it generates revenue only once—at the point of sale—highlighting a mismatch between the effort to build durable, circular products and the revenue model, which still rewards short-term sales.

Designing products to last a lifetime raises a paradox: how can a business survive if it sells a product only once?

To make such a business viable, the price would need to be extremely high—high enough to cover all future cash flow that a shorter-lived alternative might generate. Alternatively, the company must plan to shrink after market saturation, maintaining only a small team to handle rare replacements or repairs. But neither approach reflects a resilient business model in the current economy.

Only when revenue is tied to the ongoing use, performance, or availability of a product—through subscription, pay-per-use, or service contracts—do businesses have a reason to invest in long-lasting, high-performing assets. In such circular service models, the longer a product lasts, the better the cashflow. Designing to last becomes a business advantage, not a liability.

A circular service model rewards durability and long-term material stewardship...

A circular revenue model addresses this mismatch by ensuring that income is tied to the continued use or performance of the product, not just its initial sale. Instead of making money from one-time transactions, circular businesses generate revenue through recurring services like repairs, maintenance, or use-based payments.

We call these revenue models circular service models—they reward durability, reuse, and long-term material stewardship.

7 types of Circular Revenue Models[3]:

1. **Functional Result ("Mobility-as-a-Service")**
   Sell the outcome, not the product. For example, providing "mobility" rather than selling a bike. The provider retains ownership and is responsible for all materials, maintenance, and performance.

2. **Pay-Per-Use ("Pay-Per-Ride")**
   The user pays for each ride or kilometre travelled. This aligns incentives for efficiency and long product lifetimes, as the provider benefits more when the bike lasts longer and is used frequently.

3. **Product Pooling ("Shared Bike Use")**
   A single bike is shared among multiple users (e.g., a shared cargo bike for neighbours or a company bike pool). This reduces the need for personal ownership and increases utilization.

4. **Rent/Share ("Short-Term Rental or Bike-Share")**
   Users pay for temporary access to a bike—such as hourly or daily rental. The provider maintains ownership, taking responsibility for maintenance and end-of-life processing.

5. **Subscription Model ("Bike-as-a-Service")**
   Customers pay a recurring fee for access to a bike and service package, including repairs, swaps, or replacements. To ensure circularity, providers retain ownership and/or implement end-of-contract return and reuse.

6. **Sell and Buyback ("Circular Purchase Agreement")**
   The bike is sold to the user, but with a repurchase agreement at the end

[3] Adapted from: https://elisaachterberg.nl/want-to-make-money-forever-do-this/

of use. This allows the provider to recover valuable components or refurbish the bike for reuse.

7. **Traditional Sale ("One-Time Purchase with Circular Add-ons")**
   The bike is sold in a conventional transaction. While circular incentives are limited, sustainability can be supported through long-term warranties, access to repair services, and guarantees of spare part availability.

❗ ***Note:*** *A revenue model is not inherently circular—but some models offer stronger financial incentives for circular design, ownership retention, and long-term responsibility than others. Circularity is only ensured when end-of-life responsibility is legally transferred back to the supply chain (e.g. Extended Producer Responsibility).*

However, Extended Producer Responsibility alone does not incentivize durability—it simply mandates accountability at the end of life. Without ongoing revenue tied to long-term performance, there's little financial motivation to invest in lasting design.

That's why combining end-of-life responsibility with a circular revenue model creates a more complete foundation for a truly circular business: one that rewards durability, material stewardship, and long-term value creation.

🔍 **Definition of a Circular Service Model**

In this paper, we use the terms *circular service model*, *circular revenue model*, or *circular service business* to refer to business models that have **implemented one or more of the circular revenue models listed as types 1 through 6** and combine these with circular strategies. These models are characterized by recurring revenue linked to the continued use, performance, or outcome of a product, rather than a one-time sale. They incentivize durability, maintenance, reuse, and material recovery—core principles of the circular economy.

The Swapfiets case: how a circular revenue model drives circular design

Swapfiets provides bikes as a service. Their customers use a bike for a fixed monthly fee and receive free repairs within 48 hours when needed. Swapfiets remains responsible for the bikes for the entire life of the bike.

The company aims to offer users a 'hassle free' cycling experience by taking full responsibility for all inconveniences and breakdowns. A terrific business idea in the Netherlands where everyone cycles!

At their start, Swapfiets did not have any circular objectives. But as they grew bigger, they realized that they needed the most bulletproof (i.e. circular) bike as possible to make the business case. A bike that does not break and if it does, is quick and easy to repair. So, they started to re-design their product together with the producer of the bikes.

This is an example of reversed logic: by choosing a circular revenue model, they needed to innovate their product to be as easy to repair and durable as possible. The key here is the integration of free repairs and taking the responsibility for the full functioning of the bike.

The success of a circular service model depends on the entire value chain

However, whether a product is truly capable of (infinite) reuse and a long-life of intensive use, depends on the quality and replaceability of its parts, and thus the entire supply chain.

In 2023, we met one of the founders of Swapfiets at a circular event in the Netherlands where we discussed their circular strategy and their financing needs. Two important lessons were shared from their journey so far[4]:

(1) They realized that their success did not depend on themselves alone: they needed to start **integrating chain partners** into the business model, and

[4] Part of their circular journey can be read here: Making Cycling Circular: The Case Of Swapfiets. Coalition Circular Accounting. https://www.circle-economy.com/resources/making-cycling-circular-the-case-of-swapfiets

(2) They wanted to investigate **cash-flow financing** rather than developing new depreciation models to estimate residual value of the bike.

To help businesses like Swapfiets scale circular service models, CISE Network developed a new legal and financial structure: the CISE Model.

This model addresses exactly the two core challenges faced by Swapfiets (and many other circular service businesses):

1. **Enabling Collaboration Through Shared Revenues**
   The CISE Participation Agreement (PA)[5] allows multiple chain partners to collaborate around a single product or service, sharing revenues in proportion to their roles and contributions. It offers a contractual framework for collective ownership, responsibility, and risk-sharing– crucial for complex service models like Swapfiets'.

2. **Enabling Cashflow-Based Financing**
   Rather than relying solely on the resale value of assets or the creditworthiness of individual companies, the CISE model enables financing based primarily on the future cashflows of products-in-use. This better reflects the value logic of circular service models and opens new perspectives on how financiers can assess and support such businesses. The model reframes risk and value around the ongoing performance of assets over time.

🔍 Circular Service models are built on recurring revenue and close partnerships.

[5] A template of the CISE Participation Agreement can be downloaded here: https://www.cise.network/resources/

Value chain finance: A shadow test of the CISE Model with Swapfiets

This white paper documents a pilot project where we tested the CISE model with Swapfiets and one of its key chain partners, Vittoria.

The goal was twofold:

- First, to explore whether and how chain partners can collaborate through a shared revenue model using the CISE Participation Agreement.
- Second, to understand how a bank could fund this type of collective proposition–and under what conditions.

We developed a shadow agreement–a simulation without legal or financial execution–to safely test the structure and facilitate transparency and innovation among the participants.

How this Paper is structured

- Chapter 2: We describe the collaboration between Swapfiets and Vittoria, and how the CISE PA was structured to match their roles, responsibilities, and value contribution.
- Chapter 3: We present the discussions with financiers, including the proposed funding model and how it was adapted in response to feedback from banks.

⚠ **Note**: This was a shadow exercise. The model is not yet business as usual–but it provides important insights into how circular service models can be structured, valued, and eventually financed as collaborative, cashflow-generating systems.

Part 1: From service to system: how Swapfiets and Vittoria shared the ride

🔍 A collective revenue model integrates the risks, costs and revenues of different stakeholders in one model.

A collective revenue model is all about sharing incentives

The need for a collective business model stems from the root of the problem: split incentives.

A huge barrier for circular businesses is dependence on chain partners that operate from a linear mindset and business model. And there is no reason for their linear chain partners to change, because of split incentives: an investment in one part of the chain benefits another part of the chain. And so, the investment never happens.

Let's look at the example of Swapfiets. There are several components of the bike that are crucial to both circularity and the financial model, because they are expensive, costly to repair or replace and deteriorate quickly. By integrating the suppliers of these parts in a collective business model, you share the risks and rewards.

How? By providing the *performance* of the parts as a *service* to Swapfiets. This way responsibility of the parts remains at the party that has most influence on its performance and is compensated for it. This incentivizes each party to make the product perform for as long as possible.

💬

"A bicycle has 150 parts or so, but some parts wear out very quickly and are also relatively expensive. Tires for example. If the tires break down easy, and are difficult to replace, this leads to huge losses for us. For these parts a service concept is very suitable. Also, very technical parts such as a motor or a battery. A frame is less suitable to service, as they never breakdown. You can purchase (or make them yourself) relatively cheap parts that do not wear out quickly but make recycling/repair agreements with the supplier to guarantee circularity."

– Richard Burger, co-founder Swapfiets

We selected one crucial component of a bike: the tires to start a pilot with. We set up a CISE Participation Agreement for these two chain partners: Vittoria (tires) and Swapfiets.

Note: this example is with one chain partner but can be extended to uphold many other chain partners in the same way.

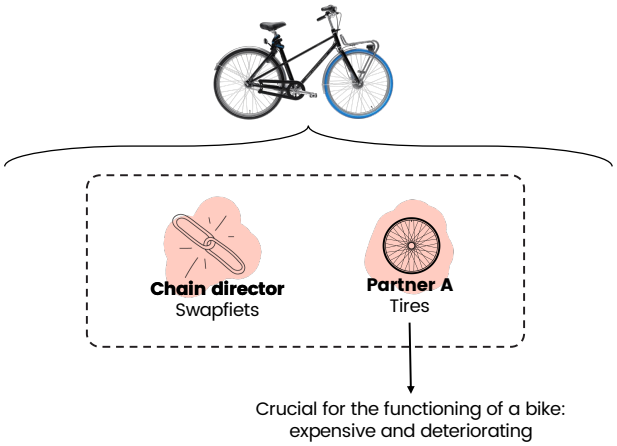


Figure 1. Two crucial parts of a bike in terms of circularity

We'll detail the CISE structure and bring it to life by showcasing how this collective revenue model was implemented with Swapfiets & Vittoria in the next paragraphs.

The CISE Participation Agreement

The CISE Participation Agreement (CISE PA) is at the heart of the CISE model. It is the glue that holds value chain partners together, making sure everyone is aligned on responsibilities and revenues.

The CISE PA is a legally binding, multi-party agreement that defines roles, risk sharing, revenue distribution, and performance metrics for all stakeholders (e.g., Swapfiets and suppliers,). In the original CISE PA, all parties share the risks related to the product's actual usage and functionality. That way, everyone has skin in the game to ensure the product performs optimally. It is, however, possible to alter the CISE PA to cater to specific value chains.

For Swapfiets and its key partner, Vittoria (tire supplier), negotiating the CISE Participation Agreement revealed both the promise and the challenges of embedding circular principles into established relationships.

One of the first challenges was managing the delicate balance between protecting existing relationships and fostering transparency. Partners including the chain coordinator were hesitant to share sensitive data, fearing it could disrupt their current agreements.

💡 Setting up a CISE participation agreement with existing partners is challenging.

Step 1: Negotiating the Allocation Arrangement, who gets what

In the CISE structure, all incoming payments are distributed among the chain partners based on a predetermined allocation arrangement. This is a distribution key that decides that every euro received by the customer is shared with all partners as a percentage.

In the case of Swapfiets, a user is using the bike and paying a monthly fee. This monthly fee is split according to the distribution key as agreed. This breakdown is expressed as percentages.

The payments are distributed *pari passu* (at the same rate). This means that everyone is paid at the same time. There are no partners that receive their payments before someone else. Of course, it is possible to choose another distribution method if that is preferred, it's flexible.

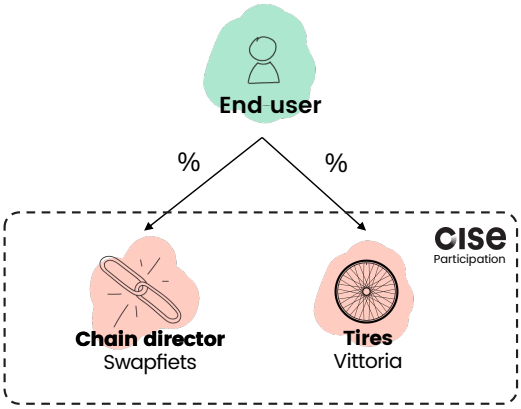


Figure 2. CISE Participation with Swapfiets and Vittoria

To decide how payments will be allocated, it is important to consider the roles and responsibilities of each partner and how this affects price and costs.

The role of Swapfiets as chain director is to manage the full rental process for partners, ranging from transport, storage, cleaning, repairs, refurbishing, and customer service. But also marketing & branding, billing & credit checks.

The role of Vittoria is to ensure that there is always a functioning tire on the bike. Providing performing tires-as-a-service, taking full responsibility for the lifecycle of the tires and making sure the tires live up to certain quality standards.

💡 The question “what’s in it for us?” arises again and again.

What’s in it for Vittoria?
An important step to make this happen is through asking: “what is in it for my chain partners”?

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"We view a shared revenue model as an opportunity to pioneer sustainability initiatives. This business strategy not only enhances our resource efficiency and encourages innovation, ensuring we always offer top-performing products, but also allows us to leverage the strengths of our joint venture partners to enter new markets with sustainable products and services."

- Giada Barzaghi, ESG specialist at Vittoria

The most time-consuming aspect of the pilot with Swapfiets and partners was negotiating this allocation arrangement between Swapfiets and Vittoria, deciding how payments should be divided based on their roles and added value. But eventually, a percentage was established, as displayed in the table below. Note that these percentages, although based on real data, are hypothetical as this is a shadow agreement.

Step 2: Pre-set conditions to claim payouts, who gets what, when

Whether a chain partner is paid or not depends on the conditions under which they can claim their piece, so-called trigger events. Trigger events change the status of a product or part of a product, such as determining whether it is being used or in repair, and influences payments.

An e-bike of Swapfiets, generates revenue only when it is in use. When a bike is being repaired, is missing, or is beyond repair, no cash flows are generated unless the issue is caused by an external factor (insured or compensated by user).

In the Swapfiets case, five trigger statuses were distinguished:

1. **In-use**: a user is using the e-bike (and is paying for its use),
2. **Non-payment**: a user is using the e-bike, but is not paying,
3. **Ready-to-use**: an e-bike is in stock, ready to be used,
4. **In-repair**: an e-bike is being repaired,
5. **Lost or beyond repair**: some e-bikes get lost or are beyond repair.

In the example below you find the product events related to these trigger events. In the Swapfiets case it was chosen to share risks fully, to keep it simple and to incentivize for circularity.

Table 1. The trigger events for the e-bikes

Status of e-bike	(Non-) Payment trigger
In use	Everybody gets paid
Non-payment	Nobody gets paid
Ready to use	Nobody gets paid
In repair	Nobody gets paid
Missing or beyond repair	Nobody gets paid (unless from external cause)

Parts are provided to be in-stock even while they are not generating money.
The status in-stock led to a discussion on the implications of sharing risks fully. Choosing to pay nobody if e-bikes and parts are in stock, incentivizes to have as low stock of parts as possible. This is suboptimal from a service point of view for Swapfiets and Vittoria.

...because sharing risks optimizes service
However, if the customer base grows you want to be quick and flexible. The other service providers are financially incentivized for Swapfiets to be able to grow as smoothly as possible, so allows for a bigger stock. Sharing these risks therefore balances the stock towards an optimum.

💡 Trigger points and their impact on payments need to be clearly defined.

Step 3: Transparency is key to success

Transparency is key to success in this model as data drives (circular) performance. So, chain partners need to keep tabs on how the product is being used and understand any risks that might affect the cash flow.

In the case of Swapfiets, there was already an established infrastructure for data sharing. Swapfiets creates a digital twin of each bike. All actions related to the bike are tracked, including repairs and usage.

Partners have access to a dashboard with data filtered for their specific needs.

For example, for the tire partner: The number of tires and those replaced is monitored. This data is compared against benchmarks to ensure performance standards are met.

💡 Data sharing is essential when risks are shared.

Step 4: Contract flexibility enables long-term commitment

A circular approach requires long-term commitment. The CISE PA is designed to be for the long-term, being for an indefinite period. Basically, for as long as the assets can be (re-)used.

This scares some entrepreneurs away in the first place, others charge high risk premiums resulting in high prices and low market demand for circular services. A terrible business case.

To make committing long-term safe, the PA allows for review events
To make committing for the long term a little less daunting, an option was added in the CISE PA for periodic reviews of the allocation arrangement. This gives everyone a chance to adjust the terms, with everyone's consent, of course.

An *allocation review event* lets you tweak the deal while it is running. These reviews happen at pre-set times, and any changes must stay within limits agreed upon upfront.

This gives peace of mind because if the numbers are not adding up, you can adjust. Suppliers can get jumpy about fixed prices, which is why short-term contracts are so common, leading to linear practices. With a review event in place, partners can lock in longer-term deals without feeling stuck.

The percentages in these reviews are based on *open cost calculations* and *set returns*.
To build long-term trust with business partners, you need to be transparent with certain aspects of your business without having to reveal everything.

💡 Long-term agreements need flexibility.

Step 5: Provide financiers with confidence and security to take the leap

The CISE PA allows specifically for financiers to get involved in the revenue sharing. How that could work and how banks can join, is discussed in the next Chapter.

Step 6: Filling in the remaining blanks

The CISE PA of course also covers other legal stuff such as term and termination, confidentiality, what happens when things do not go as planned, and all other rules needed to play the circular game in a trustful and safe environment. The full CISE PA template can be downloaded on the CISE website.[6]

[6] cise.network: https://www.cise.network/resources/

Part 2: From product to portfolio: bringing banks into the circular chain

Having navigated the challenge of aligning circular collaboration between Swapfiets and its chain partners, we now turn to a critical enabler of scale: financing.

⚠ **Note**: When we speak of *financiers* in this section, we point to banks. Further research and implementation has to show how other types of financiers respond to the model.

Why investigate cashflow-based financing for circular service models?

Circular service models shift the focus from ownership to long-term performance and use. Instead of selling products, businesses provide outcomes—mobility, clean laundry, light, climate control—through ongoing access, maintenance, and functionality.

In this logic, material becomes subordinate to function: the physical product is no longer the end goal, but a means to deliver a lasting service.

This shift introduces financing challenges, however. Specifically:

- **High upfront capital** is required to develop and deploy durable assets.
- **Slower returns** emerge through pay-per-use or subscription-based income.
- **Heavier balance sheets** result from retaining ownership of products and parts.

Traditional financing frameworks are not designed for this setup. Financiers are used to funding up-front capital expenditures based on ownership, collateral, and predictable depreciation schedules.

This mismatch in structure and language makes it challenging to assess risk, value assets, and design suitable financial instruments – often resulting in barriers to capital access, even when the business model is robust.

In the remainder of this chapter, we explore how the CISE model could help develop a financing structure that aligns with the principles of circular service models while remaining accessible to traditional financiers.

Rather than detailing the broader financing barriers faced by circular businesses (which are well covered in other publications[7]), we focus here on the practical application. We seek to answer the following questions:

- How can a financier enter into a CISE Participation Agreement (CISE PA)?
- Can the principles of Project Finance—typically reserved for large infrastructure developments—be applied to circular service models? And if so, under what conditions?
- How would that work for banks? On what terms would a bank be willing to participate in a CISE structure?

Together with the Kopgroep Circulair Financieren, we tested the Swapfiets-Vittoria agreement as set out in Part 1, with several participating banks.

The remainder of this chapter is structured around the key steps of that process:

1. **Reframing Value**
   We examine how circular service models require a shift in financial perspective—introducing new metrics, timelines, and language to assess value creation over time.
2. **Exploring Access for Financiers**
   We explore how a financing proposition could be built around a scoped example of 20,000 e-bikes within the CISE framework.
3. **Adapting the CISE Model for Banks**
   We present the feedback from banks, the terms that emerged from the discussions, and the concrete adjustments proposed to align the CISE structure with banks' expectations.

Reframing value: embracing circular metrics

In our initial discussions with financiers, the instinct was to fall back on traditional SaaS-style metrics like Customer Lifetime Value (CLV) and churn rate. These metrics are familiar tools for assessing business performance in subscription models, where predictable customer retention is tied to financial health.

[7] Barriers to financing are, for example, discussed here more in detail: (i) Achterberg, Elisa, and Rens van Tilburg. 2016. "6 Guidelines to Empower Financial Decision-Making in the Circular Economy." Amsterdam: Circle Economy. http://www.circle-economy.com/financing-circular-business. (ii) Toxopeus, Helen, Elisa Achterberg, and Friedemann Polzin. 2021. "How Can Firms Access Bank Finance for Circular Business Model Innovation?," January. https://onlinelibrary.wiley.com/doi/10.1002/bse.2893.

However, applying these metrics directly to circular service models introduces a range of new dynamics—and potential misunderstandings. Circular businesses operate within a different logic—one in which the core unit of value creation shifts from the customer to the product and, crucially, the system that keeps it in use: repair, maintenance, and continuous circulation.

> 💡 In circular service models, focus shifts from the customer to the product and, crucially, the system that keeps it in use: repair, maintenance, and continuous circulation.

Churn = Product Return Rate (PRR), aka circulation

In traditional SaaS models, churn—the rate at which customers cancel subscriptions—is a red flag. It signals customer dissatisfaction, pricing pressure, or poor service, and it directly undermines the value of predictable cash flow.

But in a circular service model, churn can have a different meaning. When a customer stops using a bike (or other product), the product is not lost—it returns to the provider, is refurbished, and is circulated to another user.

Therefore, it might be more appropriate to call it the Product Return Rate (PRR)—a form of churn that is essential to the functioning of a circular system. Some products are inherently used for short periods or in seasonal cycles. For example, children's products may only be suitable until the child grows out of them, or student-focused services are typically handed over when studies end. In these cases, high churn is expected and even desirable—as long as the product remains in circulation and continues to generate value through reuse.

That said, not all churn is good. Frequent product returns also drives up costs—refurbishment, reallocation, and customer acquisition costs (CAC). The key question becomes: *why* is a product being returned?

Rather than simply measuring customer departure, the focus must shift to:

- How long is the product idle (not generating revenue)?
- What are the refurbishment and reallocation costs?
- What is the net PRR after taking into account new acquisitions?

New benchmarks need to be developed that distinguish healthy product turnover from signals of service failure or poor product design.

Understanding these drivers allows both entrepreneurs and financiers to make more informed decisions.

> 💡 Update the *metrics* and develop circular benchmarks to assess financial health and to avoid misunderstandings

From Customer Lifetime Value (CLV) to Product Lifetime Value (PLV):

In circular service business models, long-term value does not stem from a single customer's lifetime—it is tied to the recurring revenue that a product can generate over time. This gives rise to a different metric: Product Lifetime Value (PLV).

This shift is illustrated in Figure 6.

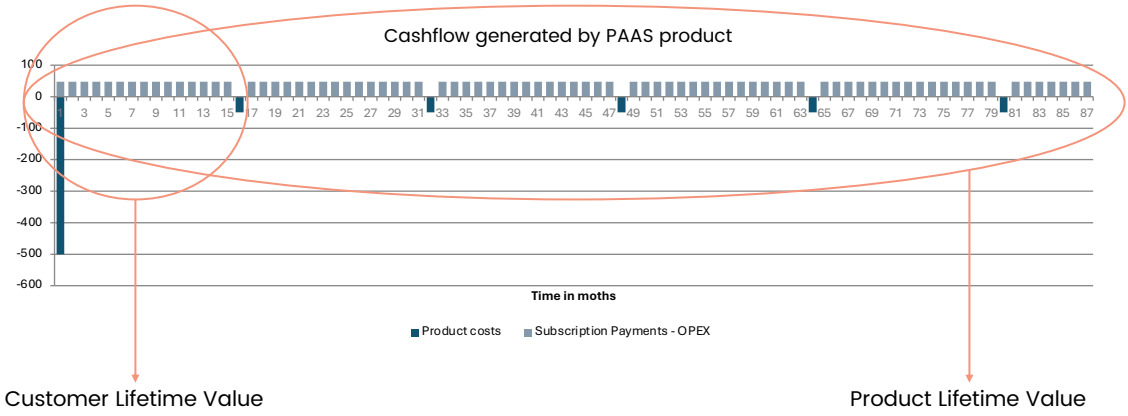

Figure 3 Cashflow generating capacity of a product in a circular subscription model.

Whereas Customer Lifetime Value (CLV) measures revenue from a single user or contract, PLV focuses on the full cashflow potential of a product over its usable life.

💬

“In terms of selling the asset [e-bike] they are worth very little but they can technically still last for a very long time.”
– Richard Burger, co-founder Swapfiets

In a circular service model, PLV can be expressed as:

Product Lifetime Value (PLV) =
(Net Revenue per Use Period × Utilization Rate × Total Product Lifetime)
– (Number of Switches × Switching Costs)
+ Salvage Value

Where:

- **Net Revenue per Use Period** = revenue minus recurring operating/service costs
- **Utilization Rate** = % of time the product is actively in use
- **Total Product Lifetime** = number of periods the product can generate income across its lifespan
- **Switching Costs** = costs incurred per user switch, including CAC and refurbishment
- **Salvage Value** = residual or recoverable value of materials or components at end-of-life

Switching costs are a crucial design lever in circularity. The more easily a product can be repaired, cleaned, and turned around between users, the lower the switching costs—and the higher the overall PLV.

Note that the same reasoning applies when applying a sell-and-buyback model, where
products are reacquired, refurbished, and reintroduced for multiple use cycles.

💡 Lifespan and repairability heavily impacts price and profitability.

So, while PLV is a product-centric concept, many of the associated costs are still user-driven. High churn increases switching costs, especially through customer acquisition and refurbishment. But churn is not inherently bad—it depends on the business model.
As one financier put it:
"I'd rather have one user for ten years than ten users for one year each—because switching costs are real."

💡 The lower the switching costs (thanks to smart circular design), the higher the Product Lifetime Value (PLV), the stronger the financial case.

Shifting from CLV to PLV helped financiers see circular service models—like Swapfiets—not as less risky, but as more promising. It helped them see past short contracts, opening the perspective of long-term circular value creation.

Exploring Access for Financiers

The original CISE setup

If a chain partner (e.g. Swapfiets or Vittoria) requires funding, a financier can be invited to participate directly in the value chain. The CISE Participation Agreement (CISE PA) is specifically designed to allow financiers to join the revenue-sharing structure alongside operational partners.

In the original CISE setup, the financier is entitled to a fixed share of the incoming cash flows generated by the product (e.g. e-bikes), on a *pari passu* basis with other participating partners. Importantly, any actor who provides capital in exchange for a share of future revenue can take on the role of financier within the agreement—whether a bank, investor, or another supply chain partner.

In practice, this means that incoming cash flows are allocated proportionally across all participants, including the financier. This is illustrated in figure 4. Naturally, the specific terms and conditions—such as repayment priority, return expectations, and risk exposure—may vary between financiers.

Entering the CISE PA this way as a financier implies:

- **Cashflow-based financing**: The financier provides capital for a defined portfolio of assets (e.g. e-bikes), with repayments directly tied to the cash flows those assets generate in use.

- **Anyone can be a financier**: A financier can be a professional lender, but equally a chain partner or even an end user—any party willing to provide capital in exchange for a share of future revenues.
- **Project Finance Characteristics**: The cash flow distribution is contractually pre-agreed, and the financing is non-recourse—secured solely by the revenue generated from the financed assets, not by the broader balance sheet of the participating companies.

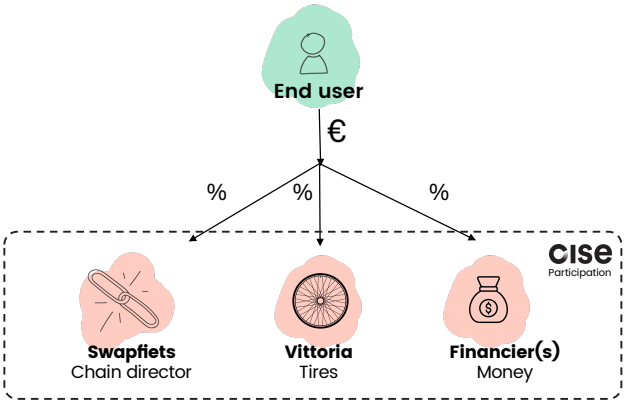

Figure 4 Hypothetical setup of CISE structure with Vittoria and Swapfiets, including any financier.

What sets the CISE model apart from traditional financing structures?

- **Asset-specific financing:**
  The financing is tied to a designated set of assets—such as bikes #1-#20,000—instead of being extended to the participating companies (e.g. Swapfiets BV or Vittoria BV) themselves. This makes the cashflow generated by the assets the primary repayment source.
- **Cashflow-driven repayments:**
  Financing is repaid from the actual income stream that the assets generate during use, such as subscriptions or pay-per-use contracts. This creates alignment between value creation, usage, and financial returns.
- **Risk containment through ring-fencing**:
  The financial exposure is limited to the specific asset pool within the circular service model. This approach enables financiers to participate in the circular segment of a business—without necessarily being exposed to the broader (often linear) performance of the parent companies.

💡 In the CISE setup, financed is only the fleet of products in the circular service proposition—not the whole balance sheet.

In short, the CISE model links financing to the actual performance and cash flows of a specific asset pool, ensuring that risk and returns are directly associated with the product's life cycle.

Engaging banks in the CISE Model

To anchor the shadow exercise in a realistic financing scenario, the pilot was scoped around a fleet of 20,000 e-bikes and a corresponding tire fleet. This number was not indicative of an actual funding request but served as a practical reference point, enabling participating banks to model potential investment structures and assess risk exposure.

To accommodate the requirements of cashflow-based financing within the CISE framework, several adjustments were made to the original structure. These modifications were aimed at addressing key concerns voiced by the banks—particularly around risk management, repayment flexibility, and the unfamiliarity of circular service models.

In what follows, we summarize the most important terms and conditions discussed by the banks as prerequisites for potential participation.

CISE does not eliminate conventional due diligence for banks—it complements it

While the CISE model introduces an asset- and cashflow-based logic, banks emphasized that they still assess the general financial health of participating companies. Financing is not extended solely on the strength of the asset pool—especially not for early-stage or unproven propositions.

"Yes, we are interested in the asset's performance. But at this stage we don't disregard the debtor behind it."
– Participating bank

As such, CISE does not eliminate conventional due diligence for banks—it complements it. The innovation lies in enabling financing of a specific part of a company's operations (the circular part), rather than relying solely on traditional asset ownership or long-term customer contracts.

Concern 1: Cash flow volatility and mismatched contract duration
Banks raised concerns about the volatility of cash flows in circular service models—driven by factors such as churn, bike loss, and fluctuating maintenance needs. These variables affect revenue predictability and complicate risk assessments. Compounding this issue, the average customer contract is often shorter than the product's lifespan, making it difficult to match repayments to predictable, long-term income streams.

To address this, and recognizing that not all 20,000 bikes in the pilot would generate cash flow simultaneously, banks proposed integrating a borrowing base facility into the CISE structure. This flexible financing mechanism adjusts loan availability based on the number of active bikes generating income—grounded in real-time data and historical performance expectations.

The beauty of this approach is that the more circular and efficient the system becomes (i.e. fewer lost bikes, minimal downtime, and quick turnover), the greater the asset pool's cash flow potential. Ideally, this would allow for more favorable financing conditions: higher leverage ratios and potentially lower interest rates.

Additional design elements included:
- **Grace periods**: Delaying repayment obligations to give Swapfiets time to scale and build cash flows.
- **Milestone-based tranches**: Releasing funds in stages based on operational rollout milestones (e.g., number of bikes in use), aligning capital deployment with actual market uptake.

The phased rollout was modelled as follows:
- 5,000 bikes after 6 months
- 10,000 bikes after 12 months
- 15,000 bikes after 18 months
- 20,000 bikes after 24 months

Between each tranche, performance would be assessed and financing terms potentially recalibrated.

Why borrowing base financing fits circular service models
In traditional project finance, banks rely on long-term contracts (often 15-20 years) to secure stable cash flows. These contracts offer predictability and reduce default risk.

Circular service businesses like Swapfiets, however, operate with short-term, flexible subscription models. This creates a mismatch: there are few long-term contracts to underwrite, but the assets still produce long-term value. The solution? A borrowing base projected not on contract duration, but on product lifetime.

As one participating bank put it:
“It was a combination of borrowing base but projected on the product lifetime. Essentially, Project Finance without the long-term contracts underneath.”

This means:

- Instead of financing based on fixed customer contracts, banks assess the **cash-flow generating capacity of the asset itself** (e.g. a bike).
- Assets with **high utilization and low idle time** (i.e. well-designed for circularity) can **generate strong, repeatable income**, even with customer churn.
- With robust data on usage, refurbishment costs, and downtime, financiers gain confidence in the asset’s long-term value.

A **borrowing base model** that tracks product performance over time—rather than fixed contracts—offers a promising financing path for circular service models. If backed by transparent and reliable data, this approach bridges the gap between circular business logic and traditional finance. It gives financiers the confidence to support asset-heavy, service-based companies without needing them to lock customers into long-term contracts.

However, a consequence of this borrowing base structure is the increased administrative complexity.
Banks require up-to-date visibility into the number of active bikes generating revenue. This demands constant monitoring of incoming orders and operational status, which introduces a layer of reporting and verification that is not trivial for the borrower.

💡 Short-term user contracts make it difficult to apply traditional long-term financing logic. A borrowing base facility tied to the asset’s lifetime and performance provides a more flexible and circular fit—but requires more dynamic risk assessment and administration.

Concern 2: Data sharing to tie loan structure to actual project performance.

Closely tied to the borrowing base facility is the need for real-time data transparency. Banks emphasized that tying loan exposure to asset performance requires not only a robust financing structure, but also robust information infrastructure.

Key requirements include:

- **Real-time monitoring:** Secure, ongoing data links between Swapfiets and financiers to track core performance indicators such as churn, bike loss, maintenance cycles, and utilization
- **Data protocols**: Clearly defined standards for how performance data is shared, secured, and validated. These protocols are essential to adjust the borrowing base in real time and maintain trust in the financing structure

This requirement goes beyond conventional reporting. It implies a new kind of technical backbone that can aggregate and verify micro-level data across the full value chain.

Nice to note here is that CISE Network developed in earlier work a proof-of-concept digital platform, capable of processing the kinds of real-time, distributed data flows needed to operationalize cashflow-based circular finance. This platform provides an integrated environment to monitor asset usage, track performance against financing terms, and manage contractual rights and obligations across the chain.

The takeaway here is that technology is not a nice-to-have—it is essential to make this type of circular chain finance work at scale.

The development and integration of such technical infrastructure should therefore be seen as a key enabler for the future of cashflow-based circular financing—and a crucial topic for future research and pilot development.

💡 To adjust financing in line with actual asset use, banks require secure, real-time visibility into performance data. Technology platforms are crucial to enable this transparency and make circular chain finance operational and scalable.

Due diligence remains a key bottleneck
On a practical level, banks emphasized that due diligence for circular service (or PaaS) models remains complex and resource-intensive. This is not only due to a lack of dedicated expertise on circularity, but also because banks do not typically have in-house product specialists for the wide variety of assets that may be financed under circular service models—bikes, washing machines, building components, etc. This makes it difficult to verify the underlying assumptions and challenge the data provided.

Additionally, the administrative workload required to process and monitor circular contracts adds further complexity. For example, in the CISE structure, internal operations teams would need to continuously track asset deployment (e.g., incoming bike orders) and update borrowing limits accordingly. Without dedicated "PaaS desks" or automation, this results in a high operational burden.

To reduce duplication and complexity, a dedicated neutral body could play a valuable role in the future—responsible for centralizing technical validation, managing real-time data dashboards, and standardizing contract monitoring across financiers. Such a shared infrastructure would reduce friction, lower transaction costs, and support broader adoption of circular financing models.

Standardizing data, improving interoperability, and centralizing monitoring functions will therefore be critical enablers for scaling circular finance.

Concern 3: Need for priority in the waterfall

The original *pari passu* structure, which distributes cash equally among all stakeholders (Swapfiets, Vittoria, and the financiers), raised concerns. Banks require that their repayments (interest and repayments), have priority.

This concern was mitigated by introducing a revised waterfall mechanism in the CISE PA:

- **Prioritized Repayments**: The revised structure ensures that repayments to the financier (the bank) are made first, after covering the costs needed to keep operations running (OPEX), securing their position by receiving cash flows generated by the bikes before any funds are distributed to other stakeholders.
- **Residual Distribution**: Only after the bank's obligations are met are the remaining funds allocated to Swapfiets, Vittoria, and other parties.

This adjustment aligns with the banks' requirement for a secure repayment hierarchy while still preserving the shared revenue spirit inherent in the circular economy model. This is illustrated in Figure 5.

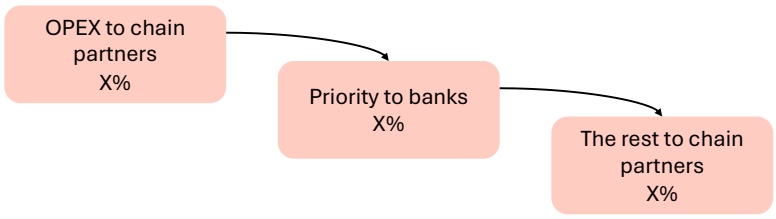

Figure 5. The payout waterfall, with banks having priority over payments.

💡 Banks require priority in the waterfall.

Concern 4: Need to ringfence assets in a Special Purpose Vehicle (SPV)

Banks raised the need to ringfence assets and contracts associated with the financed e-bikes from the rest of the business, to manage credit risk. This typically means isolating the cash-generating activities in a separate legal entity—an SPV—that is bankruptcy-remote and structured to serve as the formal borrower. In such a setup, security is provided through pledges over receivables, contracts, and the movable assets themselves.

While an SPV is not always a hard requirement from the bank's side, it is often a practical solution—especially when the funding need relates to a specific product or business unit, such as a fleet of bikes.

For entrepreneurs seeking financing for a clearly defined set of circular assets—without exposing their full balance sheet—the use of an SPV can be mutually beneficial. It allows for targeted investment in circular operations, without linking risk to the broader company performance.

To reduce the legal complexity and transaction costs for circular entrepreneurs, CISE has developed a standardized, pre-structured SPV

model: the CISE Foundation. This may offer a viable way forward. More on this in the next section.

The CISE Foundation: a custodian for managing circular assets

The CISE Foundation is a new legal instrument designed to support circular entrepreneurs and their financiers. While the CISE Participation Agreement can already operate as a standalone contract, the Foundation plays three essential roles:

1. **Collection services**: Managing and distributing payments to reduce administrative burden.
2. **Alternative to SPVs**: Eliminating the need for setting up a new Special Purpose Vehicle (SPV) for every funding round.
3. **Balance sheet lightness**: Enabling off-balance sheet treatment for entrepreneurs.

In Figure 6 is a visualization of how the CISE Foundation could operate based on a signed Participation Agreement and collection services for Swapfiets and Vittoria.

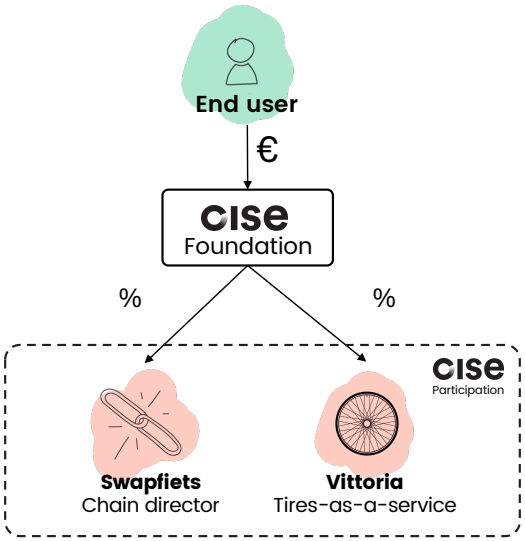

Figure 6. Hypothetical setup of the CISE Foundation with Swapfiets and Vittoria

Benefits for entrepreneurs: flexibility without legal overhead

For entrepreneurs such as Swapfiets and Vittoria, the CISE Foundation offers a lean and scalable alternative to traditional financing setups. Rather than setting up a separate SPV for each project or batch of assets, circular companies can join the Foundation as participants. Their assets (e.g., fleets of e-bikes) are contractually earmarked, and incoming cash flows are allocated accordingly.

This means:

- Simplified legal and financial administration
- Lower transaction costs
- A cleaner balance sheet (through off-balance sheet treatment)
- Easier access to dedicated funding for specific circular asset pools

By reducing complexity, entrepreneurs can stay focused on their operations and service models—while still attracting investment.

Benefits for financiers: structured risk, transparent flows
For financiers, the Foundation offers robust legal safeguards typically provided by an SPV—without the duplication. Each participant has De Iure Limited Recourse, meaning they can claim only against the revenues from the specific assets they help finance (e.g., a defined fleet of bikes). These flows are managed through the CISE Participation Agreement and coordinated by the Foundation.

Key characteristics:

- Revenues are contractually allocated to stakeholders
- Recourse is limited to specific cash flows—no exposure to the broader business
- Structured data and collection services create transparency and security
- Legal ring-fencing ensures protection in case of bankruptcy or default

This setup preserves the benefits of project finance and borrowing base structures—while adapting them for circular, service-based models.

A shared foundation instead of fragmented SPVs
Traditionally, entrepreneurs have set up one SPV per funding project. This can become administratively burdensome and expensive. The CISE Foundation replaces that fragmentation with a shared custodian model.

Instead of five SPVs for five companies, the Foundation can host all five—separately earmarked within one legal structure. Whether it's bikes in one region, washing machines in another, or solar panels on rooftops, each asset pool remains distinct but is managed within one unified framework.

This model:

- Simplifies scaling
- Maintains legal clarity
- Reduces duplication and costs

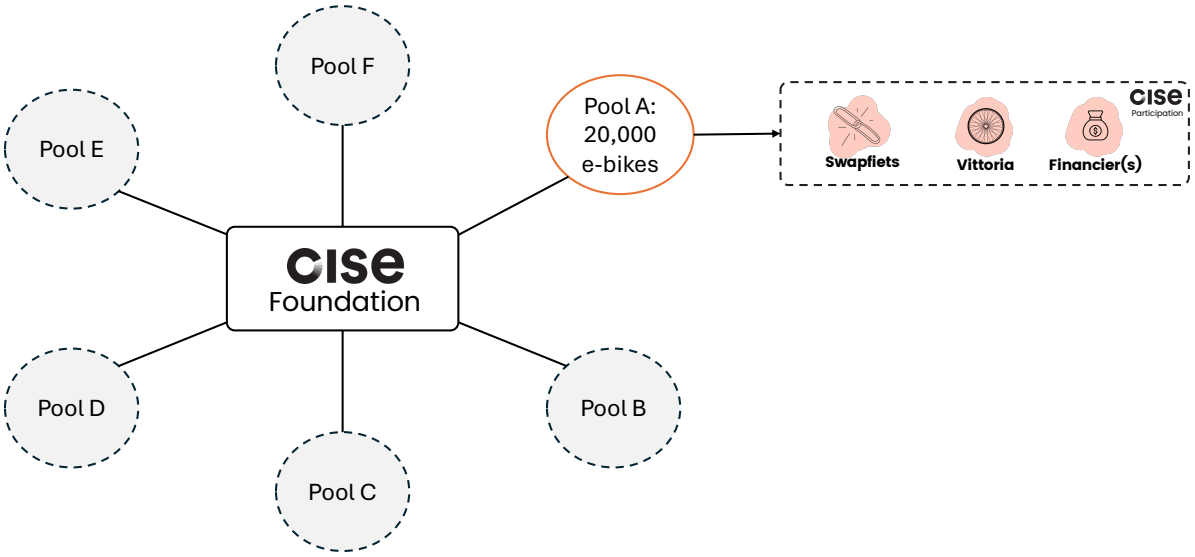

Figure 7. The CISE Foundation acts as a custodian, managing assets separately to reduce risks and enable flexibility.

Next steps: from legal foundation to real-world validation
The CISE Foundation is now being formalized through legal drafting, establishing a clear structure for collection services, risk sharing, and asset ring-fencing. The next step is to validate this legal and financial framework in real-world settings.

This will be done in collaboration with the *Kopgroep Circulair Financieren*, through a new series of pilot cases focused on circular business models in the built environment. These pilots will test how the CISE Foundation operates in practice—assessing its effectiveness in attracting finance, managing risk, and enabling scale.

By grounding the concept in concrete cases, we aim to refine the structure and move one step closer to making circular chain finance business as usual.

In summary: testing a new model in practice

The pilot with Swapfiets and Vittoria served as a real-world testbed to explore how circular service models could be made financeable within the risk frameworks of traditional banks. While the scope was hypothetical—centered on a fleet of 20,000 e-bikes—it allowed financiers to explore how an innovative financing model might work in practice.

Throughout the pilot, banks raised a number of practical concerns, ranging from cash flow predictability and short contract durations to the need for data transparency and asset ring-fencing. These challenges are common when financing circular service (e.g. Product-as-a-Service) models that operate with flexible, short-term contracts and rely heavily on asset performance.

To address these issues, the original structure was adapted, integrating familiar mechanisms such as borrowing base logic and project finance discipline. Table 2 summarizes the key concerns raised during the pilot, and the structural responses built into the adapted CISE model.

Table 2 Overview key concerns raised during the pilot, and the structural responses built into the adapted CISE model.

Key concern from banks	How it was addressed in the CISE model
Cash flow volatility and short contract durations	Introduced a borrowing base facility that ties loan availability to the number of assets generating cash flow, adjusted over time. Financing was deployed in milestone-based tranches, reflecting the phased deployment of e-bikes.
Need for real-time performance data	This requires a technical infrastructure to support real-time, trustworthy performance reporting and dashboards to monitor churn, utilization, and refurbishment cycles. This is identified for future research and development.
Need for repayment priority (seniority)	The CISE Participation Agreement was adapted to allow for prioritization of repayment, shifting from *pari passu* to a waterfall structure where senior debt is repaid first.
Need to separate assets and contracts from the broader company	This can be reached by creating a Special Purpose Vehicle (SPV). This might be fulfilled by the newly established CISE Foundation—a bankruptcy-remote entity managing asset-level revenues. However, this needs to be further researched.

Lessons learned & Next steps

The Swapfiets pilot demonstrated that circular financing is no longer a distant ideal—it can be tested in real-world conditions. Through this first shadow exercise with the CISE structure, we gathered critical insights into how circular service models (e.g. PaaS) can be financed, and what structural elements are needed to make this possible.

This pilot focused on a specific subset of circular models: those built on a Circular Service proposition. These differ from general "circular" businesses because they are based on recurring cash flows generated throughout a product's use. Traditional financing approaches, designed for asset ownership or long-term contracts, are often a poor fit for such models, but because they are not tailored to this use-based logic.

Three main lessons emerged from the pilot:

1. **Circular Service models need a financial structure that follows cash flows, not ownership.**
   Conventional asset-based or contract-based financing does not reflect how circular service businesses operate. The value lies in continued product use, not one-time sales. Key metrics such as Product Lifetime Value (PLV), utilization, and churn became essential tools in this analysis. With the right metrics, financiers can assess the financial health of a product—not just a company.
2. **Structural changes can bring banks closer to circular models.**
   By integrating several key mechanisms—such as a borrowing-base structure (tied to active assets), a senior repayment waterfall, a ring-fenced asset base, and robust data-sharing protocols—the model became compatible with existing bank requirements. Importantly, these structures allow the financing to follow the product, even when contract durations are short or users switch frequently.
3. **Banks are willing to adapt—but within a clear and structured framework.**
   Participating banks showed an openness to explore new models, especially where risk is clearly managed and tied to measurable product performance. Their willingness to consider performance-based triggers, milestone-based tranches, and even interest rate incentives for circularity was a promising signal. But: this pilot did not result in a financing decision. It was a thought exercise, and many open questions remain.

The pilot helped design and test a set of building blocks that could form a new basis for financing circular service models:

- A hybrid approach combining elements of project finance and borrowing base logic.
- A cashflow waterfall that prioritizes senior repayments.
- A neutral, asset-holding entity that isolates performance of financed assets.
- Protocols for real-time data sharing to enable transparent, performance-based financing.

Together, these helped align the logic of circular service models with traditional bank risk assessment structures—without requiring banks to abandon their existing frameworks.

The CISE Foundation: promising to simplify setting up SPV's

The CISE Foundation was introduced to simplify financing for circular assets. Acting as a shared, bankruptcy-remote custodian, it allows multiple asset pools to be ring-fenced under one legal entity—offering entrepreneurs a scalable alternative to setting up separate SPVs. It also helps financiers secure claims on defined cash flows, without exposure to the entire company.

This structure is now being formalized with legal drafting. But it needs validation in real-world cases. Future research will explore its effectiveness and suitability in live financing arrangements.

Future research directions

Several questions remain unresolved, and point the way toward further work:

- Technical infrastructure for performance tracking.
  A key takeaway was the need for tech: a robust data infrastructure that enables real-time visibility into churn, utilization, refurbishment cycles, and cash flows. Without this, performance-based financing cannot scale. This work will return to the origins of the CISE platform, which began in 2019 as a tech infrastructure initiative.
- Validation of the CISE Foundation in practice.
  Can the Foundation truly serve as a shared, multi-asset SPV replacement? What are the legal, operational, and financial conditions under which this works for both entrepreneurs and banks?

Next step: test it in the real world

The first pilot was a shadow exercise. It gave us insight into how the financing of Circular service models could work–and what structural tweaks are needed. But it was not a real deal. The next step is to test the CISE model in live financing scenarios.

We will do so in partnership with the Kopgroep Circulair Financieren, through new pilots in the built environment–starting with the world's first Building-as-a-Service project.

We are one step closer. Circular finance is no longer just a vision. With the right legal, financial, and technical infrastructure in place–it can be real.

Glossary

- **CISE Model**: A legal and financial structure designed to enable circular financing, focusing on recurring cash flows rather than traditional asset ownership.
- **CISE Participation Agreement (CISE PA):** A legally binding contract that defines roles, risk-sharing, and revenue distribution among all chain partners in a circular business model.
- **CISE Foundation:** A bankruptcy-remote entity that holds assets, collects payments, and provides off-balance sheet treatment, effectively ring-fencing assets from the parent companies.
- **Circular Financing:** Financial instruments and models designed to support circular business practices, where revenue is generated through recurring use and maintenance of assets rather than one-time sales.
- **Circular Revenue Model:** A revenue structure that ties income to the continued use, performance, or condition of a product, rather than its sale.
- **Functional Result Model**: A model where users pay for outcomes (e.g., light, clean clothes), not products.
- **Project Finance**: A financing method where repayment is primarily based on the future cash flows of a project rather than the balance sheets of its sponsors.
- **Borrowing-Base Facility**: A financing mechanism that determines loan size based on the anticipated recurring revenue generated by a pool of assets.
- **Cash Flow Waterfall**: A predefined hierarchy for distributing cash flows, ensuring that certain obligations (such as debt service) are met before residual revenue is shared among other stakeholders.
- **Product-as-a-Service (PaaS):** A business model where products are offered as a service, generating recurring revenue through usage rather than a single sale.
- **Product Lifetime Value (PLV)**: The total net revenue an asset is expected to generate over its useful life, considering usage cycles, operating costs, and salvage value.
- **SPV (Special Purpose Vehicle):** A separate legal entity created to isolate financial risk by holding assets and managing related cash flows.
- **Churn (or Product Return Rate):** The rate at which products are returned or cycled back into use; in circular financing, this is often viewed as a positive signal of asset circulation rather than customer loss.