

# THE CIRCULAR FACADE

Building a sustainable financial reality with  
Facades-as-a-Service



**INVESTNL**



A white paper of Coalition Circular Accounting

## COLOPHON

We are very thankful for the valuable contribution of all members of the Coalition Circular Accounting and their organisations. Their expertise, motivation and collaborative spirit resulted in a tangible and transferable outcome, accessible to all.

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# 1 - COALITION CIRCULAR ACCOUNTING

## WHY CIRCULAR ACCOUNTING?

Implementing circularity requires alternative business models. These circular business models typically employ strategies to extend the lifespan of products for as long as possible, at their highest value. The Value Hill framework (Figure 1) illustrates strategies that can retain the value of a product. The further downhill, the more value is lost. To maintain value, the focus shifts from take-make-waste to designing products and processes for a continuous cycle of use, reuse, refurbishing and recycling. Such a long-term focus requires alternative business models, with appropriate revenue models<sup>1</sup>. Reflecting the economic reality of circular business models is uncharted territory while essential to boost the transition to a circular economy. In other words, only through a healthy and adequate financial valuation of circular entrepreneurship will this transition gain momentum.

## COALITION CIRCULAR ACCOUNTING

Circle Economy and the NBA (The Royal Netherlands Institute of Chartered Accountants) have formed a coalition to jointly identify and investigate reporting and accounting issues in the circular economy. The coalition consists of internal financials, financiers, sustainability consultants, accountants and scientists.

In the Coalition Circular Accounting, we collaborate to gain a better understanding of current financing and reporting guidelines and, where necessary, to formulate new guidelines that are fit for purpose in the circular economy. The coalition utilises a variety of practical case studies to investigate challenges and develop new knowledge and potential solutions.

In a Community of Practice format – a pre-competitive environment where different stakeholders share and develop knowledge – the Coalition Circular Accounting (CCA) has been working on the case of *Facades-as-a-Service*.<sup>2</sup> This is a pilot project in which three facade

builders, Alkondor Hengelo, Blitta and De Groot & Visser, have entered into a partnership to build facades that are offered -as-a-Service. This implies that a Facade Service Company (a joint venture of the three facade builders) retains ownership while the facades are offered as a service to customers, in this case apartment owners. This business model has the potential to increase circular incentives while unburdening customers from the responsibility to maintain the facade. However, Facades-as-a-Service also presents a number of challenges that will be addressed in this white paper.

The Facades-as-a-Service Community of Practice is a collaboration between the following organisations:

Circle Economy, ABN AMRO, Rabobank, Triodos bank, KPMG, Allen & Overy, Alkondor Hengelo, Blitta and De Groot & Visser, area developer AM, Sustainable Finance Lab, and scientists affiliated with Nyenrode Business University and Avans Hogeschool. The CCA is co-funded by Invest-NL and NBA.

## FACADES-AS-A-SERVICE

A facade, the exterior of a building, is a fundamental part that requires regular maintenance but also offers room for technological innovations. Facades-as-a-Service is a collaboration between three Dutch facade builders - Alkondor, Blitta and De Groot & Visser - initiated by area developer AM in order to realise Facades-as-a-Service in the Bajes Kwartier in Amsterdam. Tower J, a residential tower with owner-occupied apartments, serves as the pilot project.

The facade builders offer their services through a 'Facade Service Company'. This service entails protection against the elements (wind and water), ventilation, (sun) light regulation, energy generation and can possibly be smartly controlled with sensors and remote control.

Instead of transferring ownership of the facade in a traditional manner, the Facade Service Company remains the owner of- and responsible for the facade, its proper functioning and the agreed quality of services. This service model stimulates the provider to develop a sustainable, future-proof facade and incentivises taking into account technological innovation and adaptability in the design phase. The facade is better maintained, can be optimised during its lifespan and as a result will last longer. Standardisation and modularity of facade components ensure that the parts can be easily adapted or replaced. At the end of its life the materials can be recycled, which is already taken into account in the design and choice of technology and materials. Due to a number of challenges in the business case, contractual structure and financing the business case has not yet been implemented. Underlying reporting rules - and specifically balance sheet extension - form a significant barrier.

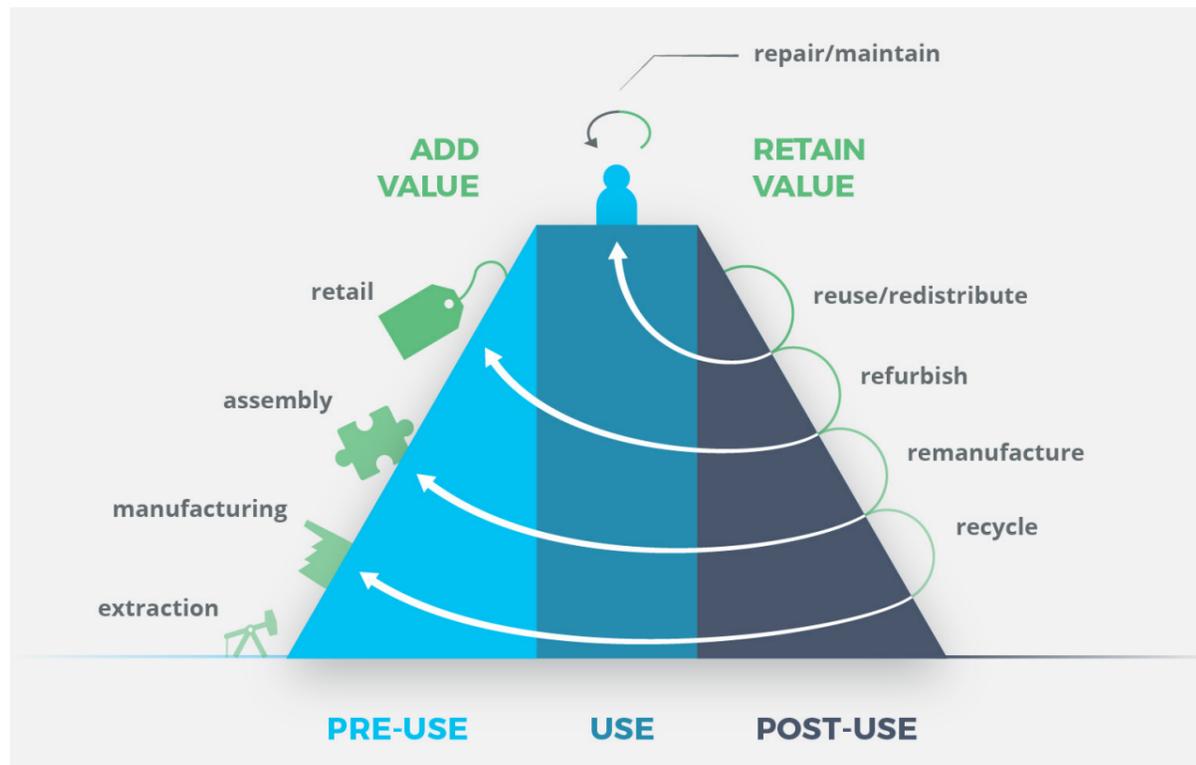


Figure 1: The Value Hill. Adapted from Achterberg, Hinfelaar & Bocken. (2016)

## ABOUT THIS WHITE PAPER

CCA members collaborate to create shared knowledge about accounting, legal structures and financeability in the circular economy. This paper provides an overview of the findings and results of this Community of Practice, which included workshops and thematic Deep Dives.

In this paper, we will discuss various topics that have been investigated to enable Facades-as-a-Service (FaaS). First of all, we discuss the business case, paying attention to the perspectives of various stakeholders. This is followed by chapters about contract structures, balance sheet extension and financing. The FaaS case is important for the construction sector, organisations that finance construction and organisations that support companies and banks, such as accountants and lawyers. The case is construction-related, but the findings are generally applicable to Product-as-a-Service propositions in multiple sectors.

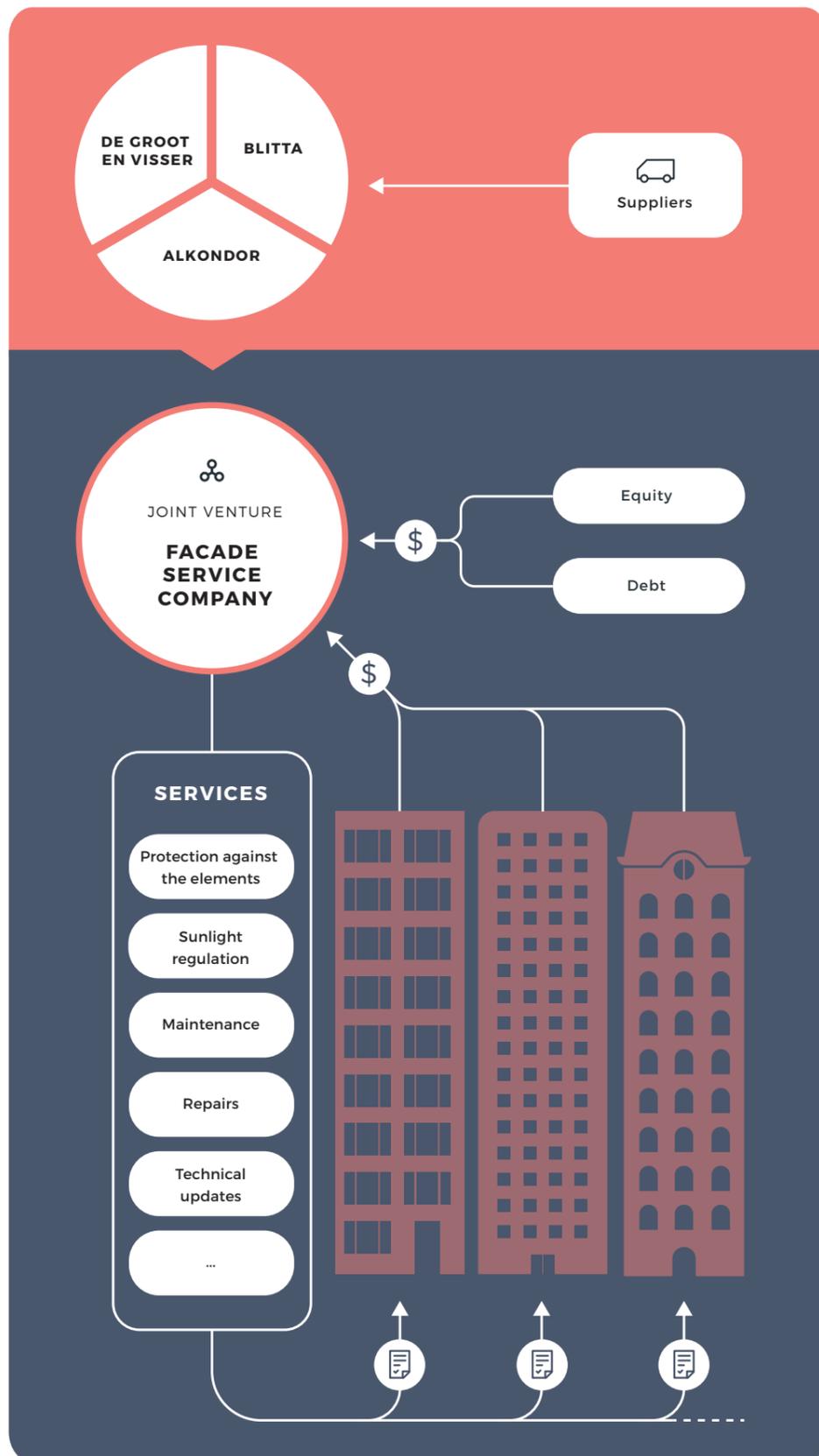


Figure 2: Facades-as-a-Service Structure.

## 2 - THE BUSINESS CASE

### WIN WIN WIN - THE KEY TO SUCCESS

One of the basic principles of the circular economy is to produce long-lasting products that retain their value for as long as possible. This is contrary to the economic incentives of the linear economy, where the incentive lies in selling as many products as possible. One of the ways to ensure that economic incentives are in line with the circular principles is to use a Product-as-a-Service (PaaS) business model: the product is no longer sold. Instead, the customer pays a periodic fee for the use of the product, i.e. for its performance.

A well-thought-out PaaS business case creates an incentive for all parties involved to act more sustainably and to balance the distribution of the costs and benefits of the relevant service fairly. To make the PaaS business case a success, it is important to have an overview of all parties involved and to create a win-win-win situation. The following matters are decisive:

- The higher the level of service<sup>3</sup> provided, the more a customer is willing to pay for it. In return for paying a fixed periodic fee the customer receives the services and is unburdened: the Facade Service Company takes care of maintenance, repair and technical updates. This reinforces the 'trust' factor for the customer.
- Linking good behaviour to a reward for the customer can stimulate a change in behaviour. This can for instance incentivise sustainable energy consumption. This is however not yet the case in the pilot project. There may be a possibility for a discount on the monthly service fee when maintenance costs are lower thanks to careful use of the facade.
- Financially, this proposition is attractive if the total cost of usage (TCU, i.e. the cumulative monthly contribution during the lifespan) of the facade does not exceed the total cost of ownership (TCO, i.e. purchase of the facade and maintenance costs during operating time). FaaS's TCU is influenced by the 'harvest value'<sup>4</sup> of the facade, a factor that typifies the circular economy.

Adjustments made at one organisation can lead to positive effects for another organisation in the supply chain. A favourable effect of FaaS is that there could be more and/or earlier collaboration between the devel-

oper, construction company, architect and the facade builder. This is related to the underlying incentive for circularity, which revolves around responsibility for the use of raw materials, for waste, for energy consumption, in short for environmental effects over the entire life cycle of a product.

### THE STAKEHOLDERS PERSPECTIVE

There are several essential stakeholders involved in a Product-as-a-Service business case. The manufacturer<sup>5</sup> who makes the product, the service provider who offers the service around the product and the customer / user who uses the service and pays an amount for this periodically. The manufacturer and the service provider can (but do not have to) be the same party. In some cases, the customer and the user are two different parties, for example if the user rents the property from a housing association or an entrepreneur who rents a commercial property from a commercial real estate party.

Finally, there is the owner. The (economic) ownership of the product (depending on the underlying contract structure) lies at the manufacturer, at the service provider, or at a separate entity set up for this purpose (i.e. Special Purpose Vehicle).

In a real PaaS business model, the customer can never become the owner. If a sale takes place at any point in time – in regard to accounting principles – then it is no longer possible to speak of a service, but it becomes a sale of goods on deferred terms (or financial lease). This topic will be further elaborated in the chapter on balance sheet implications.

#### Manufacturer and Service Provider

The three manufacturers - the facade builders - set up a joint venture, called 'Facade Service Company' (FSC). The FSC is a separate entity (Special Purpose Vehicle) and the economic owner of the facades and provides services to customers.

#### Customers and Users

In this case, the private apartment owners are both customers (contracting party via the property owners association) and user of the service. In addition to the individual interest of each apartment owner, there is

also the collective interest of the apartment owners, which is promoted by the property owners association (POA) of the building. The apartment owners have to agree to a new situation: they buy an apartment without buying the facade, because it is not included in the sale. For the service of the facade, the apartment owners will pay a monthly fee that is added to the POA contribution. As this is still a new service it is difficult to estimate how future apartment owners will respond to FaaS, a survey is being conducted among possible future apartment owners to investigate the extent to which they are open to this. Will future owners mainly see the benefits of unburdening and the opportunities for technical updates or do they find it difficult to accept that the facade – legally speaking – is not part of their apartment?<sup>6</sup> The benefit for apartment owners should be reflected in a balance between lower mortgage costs (after all, the facade does not have to be financed) and the monthly payment via the POA contribution. It remains to be seen whether this shift from mortgage payments to POA contribution will increase the accessibility of a mortgage. The fact that mortgage costs - as opposed to POA contributions - are tax deductible will also play a role. Finally, one may wonder how the perspective of the business market (e.g. a housing association or commercial real estate investor) will differ from the private market when it comes to FaaS.

#### The developer

Area developer AM also plays an important role. AM aims to develop the Bajes Kwartier in Amsterdam based on circular economy principles. To experiment with different circular construction methods and associated new circular business models, the facade of Tower J will be developed as-a-Service. It is important for AM that the apartments are attractive for buyers, and that potential buyers are excited about living in an apartment with a Facades-as-a-Service.

#### FROM RESIDUAL VALUE TO HARVEST VALUE

In the linear economy, we are not used to managing harvest value. We assume that a product has been written off at the end of its economic life and therefore its value is of negligible significance. In the circular economy, we aim for the highest possible harvest value. An important goal of Product-as-a-Service is that manufacturers will make better quality products, think about design and use of raw materials, for example by choosing secondary over primary raw materi-

als. This is accompanied by a mindset shift in which we will no longer talk about demolition costs, but about yields. To what extent waste may yield as input for a new product depends on the scarcity and availability of virgin materials and on policy incentives (such as CO<sub>2</sub> tax).

In a Product-as-a-Service proposition, a higher harvest value has two advantages. Firstly, a high harvest value results in cost savings that can positively influence the production costs and the periodic payment, which ultimately results in a more attractive proposition for the customer. Secondly, the harvest value can potentially serve as security for financing.

#### HARVEST VALUE OF FaaS

In the current real estate market, the value of a facade is not separated from the building to which it is attached. For Facades-as-a-Service, we will have to separate the facade from the building. It is a modular facade, consisting of panels that are attached to the building and can easily be removed again. The value of the facade is highest at the time of completion of construction and will subsequently decrease. Based on the current 'sales model', a lifespan of at least thirty years can be assumed. However, by exploiting the facade as a service, value is added during the use phase through maintenance, repair and technical updates. Therefore, the facade is expected to last longer than thirty years. Moreover, we expect a substantially higher harvest value. It is difficult to estimate the value of a modular facade after X years of use. The emergence of a market for used construction elements and materials, increased diversity in functionalities, increased standardisation of facade frames, and increasingly strict environmental legislation will all positively influence the facade's future harvest value. It is unclear exactly how the harvest value will develop, making it difficult to include this in the business case. To achieve a higher harvest value, standardization and a mature future market (insight into the building stock and life cycles to estimate which element or material becomes available where and when) are key<sup>7</sup>.

#### FINANCIAL BUSINESS CASE

Attracting funding is the final part of every business case, and at the same time a guiding theme in drawing it up. Calculating the business case and creating insight in the opportunities and risks results in a list of

conditions from financiers and a choice of the term and the interest rate. Everything has to fit in such a way that the financing reflects the value (at risk) of the business case.

The financial side of the business case consists of the calculations of the cash flows. Outgoing cash flows are the costs of building the facade, offering the service of the facade and financing costs. Incoming cash flows are the periodic compensation to be received and the harvest value. Based on the cash flows, funding is attracted in the form of equity, debt or a combination thereof. The type of funding - and the accompanying risk premium - influences the funding costs.

#### BUSINESS CASE CONCLUSIONS

On the one hand, FaaS has the potential to provide the right incentives to all parties involved to manage the facade in a sustainable manner. On the other hand, the costs and benefits must be distributed in such a way that a win-win-win situation is created. For apartment owners, not owning a facade requires a change in their mindset. It is important that they experience the service, unburdening and the environmental benefits of a circular construction concept as added value. Market research will have to show to what extent apartment owners have a positive attitude towards this. The costs play an important role in this. The fee must be in proportion to the service that the apartment owners receive. Moreover, there should be a balance between a discount on the mortgage versus an increased POA contribution to include the services. If the harvest value of the facade is higher and can be included as part of the business case this will make FaaS more attractive.

## 3 - NEW CONTRACT STRUCTURES

### WHO OWNS THE FACADE?

The Facade Service Company (FSC), a joint venture between the three facade builders, will be the (economic) owner of the facades. There is a challenge here due to the legal arrangement called 'accession'. Accession is a legal figure in which a smaller, in itself independent physical object becomes part of a larger physical object. This can be done in different ways:

- Because a physical object is connected to a main physical object in such a way that it can no longer be removed from one of the physical objects without significant damage, it becomes part of that main physical object.
- Because, according to generally prevailing opinion, a physical object is part of another physical object or is deemed to be permanently connected with this physical object or the land.

The facades are modular so the first form of accession is not relevant. To assess whether the second form applies, an answer must be given to the question: is the building without a facade incomplete? Based on generally prevailing opinion, this question will be answered in the affirmative and the facade is part of the building. Legally, the owner of the physical object is also the owner of all its components, so that the owner of the building is also the 'legal' owner of the facade.

### PREVENTING ACCESSION

With Product-as-a-Service (PaaS), it is crucial that the customer does not become the (economic) owner of the products. Legally, there are two ways to prevent accession: the establishment of a right of superficies or a right of leasehold.

The right of superficies is a right *in rem* to own buildings, works or plants and shrubs (the so-called superficies) in, on or over immovable property that is owned by someone else. This then applies to the period for which the right of superficies has been established. A right of leasehold is no more than a right of use *in rem*, but in practice it is equated with ownership (again for the period for which the right of leasehold has been established). The advantage of these rights *in rem* is that a right of mortgage can be established in respect

of them in favour of financiers of a Product-as-a-Service business model. The disadvantage is that these rights can only be established by notarial deed and in order for the mortgage right to have effect in respect of them, the order of priority must be changed with the mortgage right that was established on the land or the building itself. Also, transfer tax must be paid when these rights are established. Practice therefore considers the establishment of these rights *in rem* to be too complicated, especially in view of the objective pursued by the rights of use of parts of the building within the Product-as-a-Service business model. It takes much time and money to establish these rights, to agree the change of the order of priority with the holder of the mortgage on the building (if successful at all), and to have the discussion with the Tax Authority about the payable transfer tax. In addition, the service provider can receive assessments for, for example, property tax and sewerage rights, due to the entry in the land register. In the past, project plans failed because of these obstacles.

Applied to the case at hand, it was subsequently decided within the notarial practice that it is not possible to establish rights of superficies on a building for facades. Application of the leasehold right might be possible but is not desirable in view of the above obstacles. Practitioners were therefore urgently looking for a structure with simpler user rights.

### COMBINING RENTAL & SERVICE AGREEMENTS

Because of the above obstacles, a new structure is therefore proposed for Facades-as-a-Service. Based on new case law of the Dutch Supreme Court on the enforceability of tenancy rights in the bankruptcy of the landlord (the Credit Suisse v. Jongepier judgment<sup>8</sup>), Allen & Overy has developed a simplified rental structure that is well applicable to circular PaaS business models in the built environment. This structure works as follows:

- The FSC rents the suspension points for the facade from the owner of the building. To this end, the FSC enters into a rental agreement with the owner of the building or the property owners association (POA), in which the owner of the building or the property owners association makes the suspension

points available to the FSC for use. This rental agreement includes the right of quiet enjoyment<sup>9</sup> and the right to take back the product<sup>10</sup> for the FSC. A periodic or a one-off fee may be agreed for this rental right.

- Subsequently, a separate contract - the actual service contract - regulates which services the service provider provides to the owner of the building or the property owners association with regard to the facade, such as installation, maintenance and technical updates. A separate periodic fee is paid for this.

Based on case law of the Supreme Court, we now know that if the owner of the building and/or the property owners association does not perform the contract or even goes bankrupt, the service contract may not be legally enforceable and ceases to have effect, but the FSC has, also in the case of bankruptcy of the owner of the building and/or the property owners association, an enforceable right of quiet enjoyment and - more importantly in this case - a right to take back the product with respect to the facade. So, if the owner of the building and/or the Property owners association does not perform the service contract and it ceases to have effect, the service provider has in all cases an enforceable right to remove the facade. In this structure the legal ownership will lie with the owner(s) of the building, but the economic ownership on the other hand, will lie with the service provider because of the right to take back the product. This way, the accession problem as such is not solved, but this contractual structure bypasses the issue altogether.

### SERVICE PROVIDER - PROPERTY OWNERS ASSOCIATION - APARTMENT OWNERS

The property owners association represents the collective interest of the apartment owners. If an apartment owner does not pay his monthly contribution to the property owners association, the other members of the property owners association are responsible for this. This creates, in a sense, extra security that the payment obligation under the service contract - which payments constitute the actual income stream of the FSC - is secured. Assuming that the property owners association (which is a legal entity) would no

longer pay the periodic fee because one or more members (apartment owners) did not pay their property owners association contribution and as a result the property owners association might even go bankrupt, the other members of the property owners association would run the risk that FSC would terminate the service contract and dismantle the facade on the basis of its right to take back the product under the lease agreement. The other members would not easily let this happen. The FSC thus has indirect control over all members of the property owners association, possibly through the bankruptcy trustee of the property owners association.

In the event of a transfer of an individual apartment to a new apartment owner who had overdue payments contributions to the property owners association, the obligation to pay those overdue amounts will pass along to the new apartment owner.

One last point of attention is the following. In the regulations of the property owners association, structured according to the current model regulations, certain clauses need to be written out in order to facilitate the FaaS contract. These clauses relate to the renting out of common parts (e.g. the suspension points for the facade) and the early termination of contracts.

### STEP-IN RIGHTS AND RIGHT OF REMOVAL VERSUS OF RIGHT OF MORTGAGE

In the proposed rental structure, no mortgage right can be established for the benefit of the financiers on the rental rights, as is possible in the case of a right of leasehold. From a legal point of view, tenancy law does not lend itself to this. In the new structure of the tenancy and a service contract, the financier(s) of the FSC (the service provider) will negotiate a right of step-in to the rental and service contract in order to put them in a similar position as in the case of a leasehold on which a mortgage right would be established. This makes it possible to intervene in the event of an imminent breach of contract by the FSC and to replace this party with a party that does perform. Step-in rights as an alternative to rights of pledge or rights of mortgage have meanwhile become very common in European financing practice.

## 4 - BALANCE SHEET IMPLICATIONS

### PAAS, BALANCE SHEET AND RATIOS

In Product-as-a-Service business models, products remain the property of the manufacturer and / or service provider. This leads to a balance sheet extension. In the CCA white paper *Pursuing Financial Reality of the Circular Road*<sup>11</sup>, it was pointed out that balance sheet extension is perceived as a problem by financiers, suppliers and other stakeholders. PaaS implies that financial ratios are affected and the solvency ratio<sup>12</sup> in particular will be lower than for a company that sells products. In general, a low solvency ratio is considered as negative. An exception to this can be found in rental companies and car leasing companies, which, despite low ratios, are still regarded as healthy companies.

The difference between the car leasing industry and FaaS lies in the approach to the products and (available knowledge about) the development of value. The development of the value of cars is predictable thanks to a well established second-hand market. The financier of a lease company can easily securitise its funding by establishing a collateral on the cars. If a lease company can no longer meet its obligations, the cars can be sold, and the value at risk is covered. This is more complicated for facades and many other PaaS propositions, because there is no historical data available and there is no mature second-hand market for these products.

### PREVENTING BALANCE EXTENSION

Because the Facade Service Company is a separate entity, a special purpose vehicle (SPV), and joint venture, there is a way to prevent balance sheet extension (at the facade builders) from occurring. Economic ownership is leading for accounting. Therefore, when the economic ownership of the facade is transferred to the FSC, the facade will appear on the FSC's balance sheet. The financiers will directly finance the FSC. The FSC will have the legal entity of a private limited company (LTD). The articles of association of this LTD stipulate that the three facade builders are materially equivalent. Pursuant to Article 389 BW2T9 and application of RJ 217 (Dutch Accounting Standard) / IFRS11 (International Financial Reporting Standards), the shareholders of the FSC do not need to consolidate.

### THE ROOT CAUSE OF THE PROBLEM

The joint venture construction in this case does not address the real problem. Past financial lessons have taught us that restraint in using SPVs is desirable. However, we can find good references for setting up SPVs in real estate, public-private partnerships and sustainable energy projects. The joint venture solution can only be used if an equal collaboration between different parties is established in the form of a LTD. If a company establishes a PaaS LTD on its own, it will have to be consolidated. Preferably the circular project could get off the ground *with* the dreaded balance sheet extension.

### INTERPRETING RATIOS DIFFERENTLY

A more fundamental approach is therefore to question the current interpretation and bandwidth of financial ratios. This interpretation reflects the perspective of the linear economy, while in the circular economy we want to steer on long-term value creation, value retention and control of products and raw materials. In practice, this entails including circular value creation through maintenance, repair, refurbishing and recycling over a span of potentially multiple product life cycles. In a circular economy, a low solvency ratio no longer indicates that a company cannot meet its future payment and redemption obligations. On the contrary, it could mean that a firm is maintaining grip on its assets and raw materials, which return to the company after the lifespan of products and can be used to start a new production cycle hence a new cash flow. Reinforced by underlying contracts, a stable and future-proof business case can be pictured in the long term. However, this is not a matter of overnight change and it will require a period of adjustment. Moreover, balance extension is not only a problem for the financiers, but even more so for the suppliers, who will suspend their supplies if the ratios fall below the norm. The discussion about the interpretation of financial ratios will therefore have to be conducted broadly with both the financial sector and the supply chain.

## 5 - FINANCING FaaS

At the time of this CCA project, three banks were involved in the FaaS case; Triodos, ABN AMRO and Rabobank. They work together to better estimate the (financial) background and implications of PaaS companies. On the basis of a discussion document from these banks, the various facets of and conditions for financing were discussed. An important topic was the choice between collateral of joint and several guarantees from the facade builders versus 'back-to-back' contracts.

### JOINT AND SEVERAL GUARANTEES

The banks typically request a number of joint and several guarantees from the three facade builders. For example, a guarantee for any cost overrun is requested, which expires upon completion of the building process, after the POA has paid the first term. A guarantee is also requested for the loan charges. This guarantee ends if the Loan to Value<sup>13</sup> is less than 50%. In this case, this means that the facade builders are jointly and severally liable for the FSC paying its loan charges for 8.5 years. This is a significant period over a ten-year loan tenure. The banks substantiate this condition with the argument that FaaS is a new concept. Where normally a mortgage security can be requested, this is not possible in this case. The facade builders on the other hand argue that guarantees should come from the contracts, sustainability, high harvest value, and security of the POA instead of from the facade builders. This is an ongoing dialogue around the question how the risk will be allocated. This dialogue also includes related topics around the business case, such as the amount of equity that will be contributed and providing insight into the earnings during the operation of the facade.<sup>14</sup>

### BACK-TO-BACK CONTRACTS

Another way to secure collateral is to structure back-to-back contracts. This means that responsibilities and risks are allocated contractually (rather than with guarantees) between the different parties. This option means that the FSC is set up as pure project finance and is financed on the basis of its cash flows. The facade builders would not be jointly and severally liable when using back-to-back contracts. According to

legal experts, this way of structuring, with the combination of a rental agreement and service contract, is very suitable for PaaS companies. Where normally collateral is derived from mortgage rights, the collateral in this structure is derived from step-in rights, the right of quiet enjoyment and the right to take back the product. From a financing perspective, back-to-back contracts fit less in the pioneering phase of a business model, but more in a mature market. They argue that a shareholder who gives a guarantee to the bank can be addressed directly. Back-to-back contracts imply a step in between the shareholder and the bank.

### NEW SECURITIES

At banks, the commercial departments are starting to look into back-to-back contracts and the possibilities this offers for PaaS. However, in order to secure financing, colleagues from risk departments have to be on board as well. This can be a bottleneck, because model calculations are currently based on securities of mortgage rights. There is no policy framework yet to assess this type of application. In addition, it is unclear in which risk and return model this product should be placed.

Implementing this new structure requires revising the models to include step-in rights as a collateral value for financing. Revising the existing models requires coordination, not only between legal experts and financiers, but also between different departments within banks. Moreover, this is not just a matter for individual banks. Financial policy makers and regulators such as the Dutch Authority for the Financial Markets (AFM) and the Dutch Central Bank (DNB) have to express their support. Finally, experimenting is needed in order to gain the necessary confidence to apply this new structure on a larger scale.

## A FINANCIAL PERSPECTIVE ON HARVEST VALUE

At the point of writing this paper, no decision has been made about including a harvest value in the business case. Discounting future cash flows (DCF), meaning cash flows have a lower net present value the further they lie in the future, implies that the harvest value of the facade will not have a major impact on a financial picture that is calculated over thirty years. However, the harvest value does have an impact on a short- to medium term and may even determine the business case. For example, if a FaaS contract is terminated after seven years, the facade still has considerable value and can be disassembled and mounted onto another building.<sup>15</sup> This interaction between the factors time and harvest value is specifically relevant for financiers. For example, in the case of a financing period of ten years, it is important to take into account the development of the harvest value of a product during that period. This value can be offset against the linear alternative and should favor its circular counterpart.

## CONCLUSIONS FINANCING PAAS

Challenges in financing PaaS propositions are characterised by a classic catch 22 situation; PaaS is new and therefore the available data is insufficient in showing how a PaaS business model will perform over time. Financiers are cautious, but also see the opportunities and are willing to think differently and develop solutions. During this trajectory, CCA partners proposed a combination of two bases for financing: (1) valuing the cash flow and (2) estimating harvest value, based on a mature future market for construction components.

It is a matter of finding the right fit between the business model, risk profile and financing. In this trajectory, also alternatives with part of the funding raised as private equity, either from the building's POA or from an investment fund, were examined. On the one hand, it can be argued that venture capital is better suited to the pioneering phase of business models such as PaaS. On the other hand, the underlying facade technology is a proven concept, and only (optimally) managing its value and lifespan is the merit of the PaaS business model. Moreover, the high financing costs that characterize private equity do not make the business case particularly attractive. A bank loan therefore seems to be the best form of financing, with the remark that previously described obstacles must be

overcome to create suitable bank financing for PaaS. It is important to take into account important regulators such as AFM, DNB and the Dutch Banking Association (NVB) in this process. They write the policies that the banks are obliged to follow. These policies should be revised with a broader view of value propositions such as PaaS and its characteristic financial ratios. When the input from this trajectory has been taken into account fully and the last questions about the earnings during exploitation and risk (mitigation) have been resolved, it will be examined whether this case qualifies for regular bank financing. Uncertainties will always remain, given that this is a new business model, with little commercial (read: market) experience. In the case that the investor-ready proposition is not eligible for regular bank financing due to perceived uncertainties one can talk about market failure. Whether this is the case for Facades-as-a-Service remains to be seen.

## 6 - CONCLUSIONS

The aim of the CCA is to lay the foundation for scaling up the circular economy by building the evidence base for the successes and challenges in transitioning towards the circular economy. The FaaS case revealed new legal and economic challenges that require a new perspective. A solid value proposition that benefits all parties involved is the key to success. Apartment owners' acceptance to buy an apartment without owning the facade is decisive. This will be influenced by the benefits of unburdening, increased sustainability and the balance between lower mortgage costs and a monthly service fee as part of the POA contribution. How the market value of a residential apartment without ownership of the facade will differ from a "normal" apartment has yet to be seen.

**Harvest value** plays an important role in the circular economy. In order to increase the harvest value in the future, standardisation must increase and a future market for construction elements and materials should evolve. Including the harvest value in the business case is especially important for the short to medium term and can determine the viability of the business case. Discounting cash flows implies that the long-term harvest value is negligible for the business case.

The proposed **legal structure** consisting of a combination of a rental and service contract can potentially unlock financing for Product-as-a-Service. Hitherto, the construction sector has worked with the right of superficies and leasehold. However, this has tax implications and is unnecessarily complex. A rental construction in combination with a service contract is a viable alternative that offers security, through step-in rights, the right of quiet enjoyment and the right to take back the product instead of mortgage rights. Due to the newness of this rental/service structure financiers find themselves challenged to translate this into adequate risk models. Financial regulators should also be included in the assessment and recognition of this structure in order to support a broad implementation.

Product-as-a-Service is characterised by **balance sheet extension**, which leads to unusual financial ratios. This poses problems for obtaining financing and jeopardises relationships with suppliers. In this case, balance extension can be prevented by setting up the joint venture as a separate entity with three

equal shareholders. However, a structural solution lies in redefining bandwidths for financial ratios in the circular economy. This may lead to a new paradigm in which a company that owns products - hence has an extended balance sheet - is being considered more stable than a company that sells products and therefore has less control over raw materials and long-term cash flows. Financial regulators play an important role in recalibrating these bandwidths and play an important role in creating a better fit between financial directives and circular business models.

The concluding element of the business case is **financing**. It is important for financiers that the business generates a solid cash flow that matches the risk profile. Due to the lack of proof of concept information is still mainly qualitative, and all parties must rely on the securities arising from the contracts. Financial institutions are currently in the process of developing appropriate financing structures for the circular economy. This development is mainly visible at the front office, whereas at the back office discussions with the risk departments and risk managers are needed in order to challenge current risk models. It is important to seek connections between different organisations and expertise such as in this CCA, as well as within the companies themselves.

## I FOOTNOTES

1. For information on (the difference between) business models and revenue models, please consult this white paper from KPMG, Copper8 and Kennedy van der Laan (2019).
2. The term Facades-as-a-Service (FaaS) is derived from Product-as-a-Service (PaaS) and is made specific for facades in this white paper.
3. In the service specification, the Key Performance Indicators (KPIs) of the facade are formulated on the basis of NEN standards. These concern the functioning of the facade (wind/watertight), windows and balcony doors, sun blinds and any other agreed services.
4. The word 'residual value' was initially used. However, this has a negative connotation, while in a circular economy we aim for the highest possible value of products and materials: before and after use. That is why we speak of a harvest value in this whitepaper.
5. Supply chain cooperation can be of great added value for PaaS models, for example by optimising raw material flows, refurbish activities and return logistics. In this case, we did not look into the supply chain, instead the choice was made to take the facade builders as a starting point.
6. The results of this survey are expected in September.
7. Initiatives such as the [Urban Mining Collective](#) and the recently established [EMA platform](#) are examples of market development. By forming collectives around the harvesting of buildings and creating a marketplace, supply and demand are brought together and the harvest value of used elements and materials in construction increases. Providing insight into what will become available when using BIM and material passports as developed by [Madaster](#) also have a positive influence on this market development.
8. Supreme Court 23 March 2018, ECLI:NL:HR:2018:424 ([Credit Suisse/Jongepier](#)).
9. Right of quiet enjoyment is the right of the service provider to have and keep the installation that it has made available and with which it provides the agreed service at the agreed location in the recipient's building for the agreed period of time (Allen & Overly).
10. Right of removal is the right of the service provider to remove the installation it has made available and with which it provides the agreed service at the agreed location in the recipient's building at the end of the service contract, provided that this is done without leaving any damage behind.
11. CCA White paper [Pursuing Financial Reality of the Circular Road](#) (January, 2020).
12. The solvency ratio indicates whether a company's cash flow is sufficient to meet its short-term and long-term obligations.
13. The relationship between the loan and the value of the financed object.
14. Joint and several guarantees do not give cause for consolidation. The facade builders must, however, explain the guarantees issued in text in their own annual accounts under the "off-balance sheet (contingent) liabilities".
15. A termination fee will be included in the contract for early termination, in order to cover the remaining value at risk and cover the costs of dismantling and transport. The easier the facade can be dismantled for reuse and the more mature the market for this type of facade (or building elements), the lower this termination fee will have to be in order to cover the value at risk.

