

PURSUING FINANCIAL REALITY OF THE CIRCULAR ROAD

A pathway to Road-as-a-Service



Koninklijke Nederlandse
Beroepsorganisatie
van Accountants

NBA



A white paper by the 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 - THE COALITION CIRCULAR ACCOUNTING

WHY CIRCULAR REPORTING AND ACCOUNTING?

Circular Incentives are instrumental to achieve maximum impact.

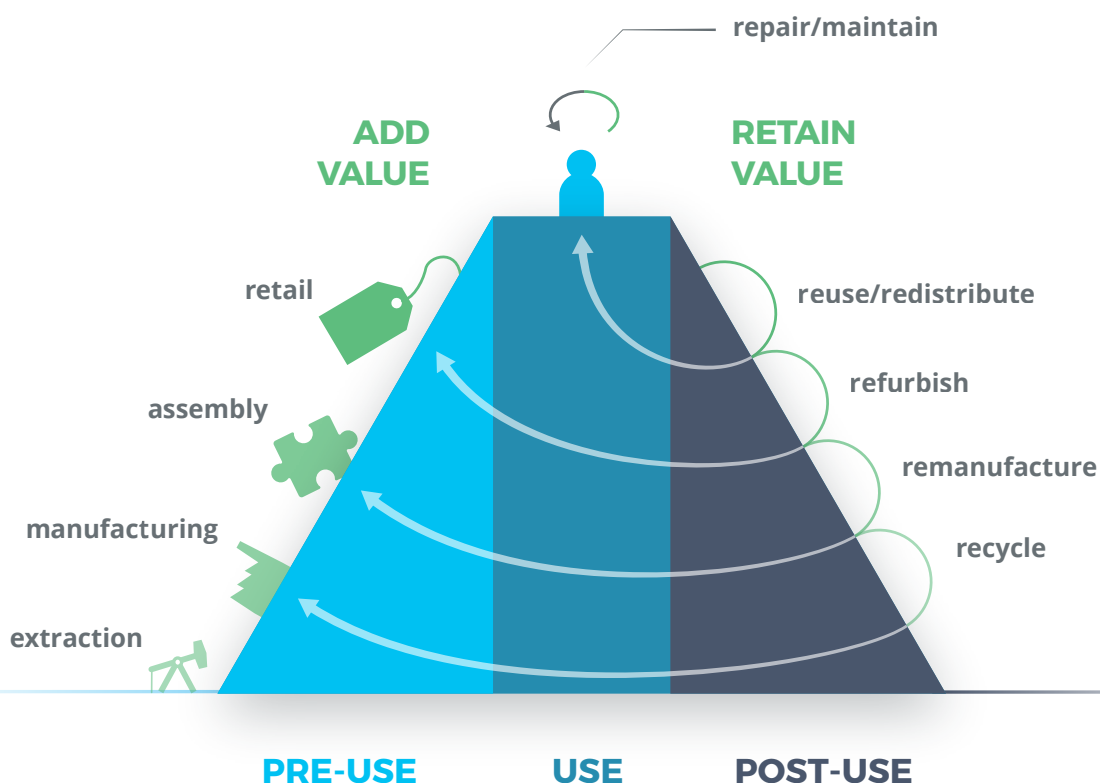
Implementing circularity requires alternative business models. These circular business models typically employ strategies to extend the lifespan of products for as long as possible, at their highest value. The Value Hill framework (figure 1) shows different strategies to retain the value of a product. The further downhill, the more value is lost.

To optimally retain value demands shifting our business focus from make-buy-waste to designing products and processes for an ongoing cycle of use, reuse, refurbishing and recycling. However, such a long term focus - potentially spanning over many life cycles requires alternative earning models and further insights on how to apply current finance and reporting guidelines. Reflecting the economic reality of circular business models is uncharted territory while essential to boost the transition to a circular economy.

THE COALITION CIRCULAR ACCOUNTING: COLLABORATIVE AND TRANSPARENT

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, to reflect on the existing arsenal of financial reporting guidelines and to propose alternative perspectives where necessary. The coalition further consists of internal financials, financiers, sustainability consultants and public auditors. In order to conduct research on a practical level, rather than having a discussion on a conceptual level, a tangible case was selected to enable delving into the specific challenges, work through these challenges and develop new knowledge and potential solutions.

In a Community of Practice (CoP) format - a pre-competitive environment where different stakeholders share and develop knowledge - the Coalitie Circulaire Accounting (CCA) worked on a tangible case: a pilot project of Dura Vermeer to build a circular road and to



exploit this Road-as-a-Service to their client province of Overijssel. Currently, after being built roads are transferred to the client often in a so-called D&C (Design and Construct) or DBFM (Design, Build, Finance, Maintain) contracts. Exploiting a Road-as-a-Service can be a way to increase incentives for circularity.

The CCA was based on a collaborative and transparent approach, focusing on accounting challenges in the circular economy using the specific case of Dura Vermeer RaaS. The participants were:

[Circle Economy](#), [NBA](#), Dura Vermeer, ABN AMRO, Rabobank, KPMG, Overijssel Province and scientists of Erasmus University, Open University, Groningen University, Nyenrode Business University and Avans University of Applied Sciences. The CCA was co-funded by [Nederland Circulair!](#)

ABOUT THE WHITE PAPER

CCA members collaborated to create shared knowledge on the topic of accounting for the circular economy. This paper collected findings and outcomes from an open learning environment (CoP), which involved multiple workshops and thematic deep dives. At first glance the contractual setup of the Road-as-a-Service seems similar to a commonly used way of structuring infrastructure projects in the Netherlands - DBFM-contracts. However, there is another contractual form that has a convincing structure for circular economy incentives, a Circular Service Contract (CSC). In this paper we discuss some important differences between DBFM and CSC contracts that have to do with incentive structure, ownership, balance sheet, and ultimately financeability of the business case. The paper provides a reference for infrastructure and building commissioners, financiers and investors to pioneer circular construction.

ROAD-AS-A-SERVICE

Dura Vermeer is a family business and has developed from a carpentry business - founded in 1855 - into a Dutch market leader in construction and infrastructure. Having a long term vision, being embedded in the DNA of the family business, the nature of their long lifespan products and public sector clients, Dura Vermeer has the ambition to focus on circularity. In the infra division they investigate how to extend the lifespan of asphalt, how to reuse raw materials smartly and quickly and how to make more use of innovative materials. Moreover, Dura Vermeer is looking into circular business models in order to incentivise sustainable construction, maintenance and harvest of the roads.

The circular road is a pilot project with the province of Overijssel to develop the N-739 **Road-as-a-Service**. This implies the client (Overijssel) is the legal owner of the road while the contractor (Dura Vermeer) retains the economic ownership of the raw materials of the constructed road and the use of the road as a service. Both parties enter into a contractual obligation for the use period of the road. There is a periodic payment from the client for the services of the contractor based on functional requirements of the road, such as safety and availability. The contractor himself bears the costs of road maintenance. Because the contractor receives the residual value at the end of the contract term, based on contractual agreements, he will feel an incentive to use durable, long lasting materials constructing the road and to optimize the maintenance and (re) use of the road and the embedded raw materials. This incentive stimulates that he will maintain the road as well as possible based on existing knowledge and expertise and ultimately ensures a higher residual value.

Dura Vermeer is setting up a partner program around the Road-as-a-Service pilot. Participating organizations are involved in the pilot to learn together with Dura Vermeer.

2 - CONTRACTING ROAD-AS-A-SERVICE

The circular road is a pilot project with Overijssel province to develop the N-739 Road-as-a-Service (RaaS). This implies the client (Overijssel Province) is the legal owner of the road while the contractor (Dura Vermeer) retains the economic ownership of the road and exploits the road as a service. Overijssel Province pays a recurring quarterly fee for the use of the road. The agreements of this value proposition are embedded in a contractual agreement between both parties. Depending on the objectives, RaaS can be contractually structured in several ways. In this case a comparison was made between DBFM+ and a Circular Service Contract (CSC).

DBFM+

If the value proposition is structured using an adjusted DBFM contract (we call this DBFM+), the contractor (i.e. Dura Vermeer) has a contractual right to use raw materials - economic ownership. The client (i.e. Overijssel Province) has the legal ownership of the road. At the end of the contractual term, there are two options. Option one; the client receives a discount on the last installment proportional to the residual value of the road and have the road harvested by Dura Vermeer. Option two; is to have the economic ownership of the road transferred to the client. Thus the choice for Overijssel Province is to either return the materials or payment of the residual value (i.e. the last installment) and thus ultimately transfer of ownership. Although Dura Vermeer aims to increase its chances of getting its materials back at the end of use, in reality there is a more significant chance of transfer. Due to the necessity of the road for traffic and the possibility that the road can be used a bit longer than the exact contract term an ultimate transfer is the likely outcome. This is not necessarily a negative, since this contract incentivises Dura Vermeer to aim for the highest possible residual value, as this will increase the last installment. However, it also incentivises steering towards the end of the contract and optimizing for potential transfer. From an accounting perspective, this structure reads as a finance lease (i.e. sale), meaning the road will appear on the balance sheet of the client.

CIRCULAR SERVICE CONTRACT

If the value proposition is structured using a Circular Service Contract (CSC), the contractor (i.e. Dura Vermeer) retains the economic ownership of the road. The client (i.e. Overijssel province) has the legal ownership of the road. Ideally, the contract is structured as an ongoing service and therefore has no defined contract period. The reason for this indefinite contract period is to avoid steering towards an end point and potential transfer, but rather to extend the lifespan of the road as much as possible. The road is harvested when the economic value falls below the residual (i.e. material) value. This would also be the optimal moment to discuss if both parties are still content with their agreement and potentially can opt out. Terminating the contract at another stage jeopardizes the financial return of the contractor, hence termination clauses should cover this financial risk. Since the ongoing service does not include a point of transfer, from an accounting perspective, this structure reads as an operating lease (i.e. rental), meaning the road will appear on the balance sheet of the contractor.

From a circular economy perspective, a CSC has certain advantages over DBFM+. The contractor receives a fee for the availability of the road while staying economic owner of the road before, during and after its lifespan, it is in the interest of the contractor that the road lasts for as long as possible. This incentivises an effective Total Cost of Ownership (TCO) approach. It pays off to make adjustments towards a smarter design that will reduce maintenance costs and enable exploiting the road for a longer period of time.

3 - VALUING ROAD-AS-A-SERVICE

In a circular economy we assume roads to have a residual value after their lifespan; elements and materials can be harvested and used again in new roads or other products. The province currently depreciates roads to zero over the course of thirty years, assuming no residual value at all. In the alternative RaaS proposition the aim is to calculate the residual value and to make this an explicit part of the value proposition. This assumption differs substantially from the existing way of doing in the sense that residual value is designed into the business model from the start.

RESIDUAL VALUE

A discussion about residual value resulted in the conclusion that residual value equals the purchase price minus depreciation (based on an estimate of economic useful life) minus dismantling costs plus value of upgrades, plus price increase of labour and materials. Moreover, as long as the road is in a sufficient condition to be used as a road, the economic value is assumed to be higher than the residual value of the materials in case of harvesting.

The residual value will likely be higher in case of CSC, because the road is designed for longevity and anticipates material reuse afterwards. A primary concern is to increase and protect the residual value. In comparison, in case of DBFM+ the residual value is offset against the last installment. As a result, residual value becomes a 'nice to have', instead of a primary concern and incentive throughout the agreement.



4 - ACCOUNTING ROAD-AS-A-SERVICE

Accounting challenges arise primarily for CSC. Where in the DBFM+ scenario the road is 'sold' to the client (i.e. Overijssel Province), in the case of CSC, on the contrary, the road appears on the balance sheet of the contractor (Dura Vermeer) resulting in a so-called 'expanding balance sheet'. Only in the case of CSC, we picture a substantially different financial reality for the contractor in which it makes sense to take into account residual value and have a discussion about reporting and accounting.

SALE VERSUS RENTAL BALANCE SHEET

The fundamental question is whether a sale takes place or not. If a sale takes place, the road goes to the province and will be booked on its balance sheet, and Dura Vermeer starts receiving a payment in return. Whether the money is paid at once or in installments is not important in determining whether a sale takes place or not. Financial reporting is about economic ownership and the (moment of) transfer of risks and rewards. If at the end of the contract, economic ownership is transferred to the other party, it appears on their balance sheet from the start. The bottom line is the risk and reward have been transferred to the province. When setting up CSC, Dura Vermeer remains the owner of the road, and it stays a fixed asset on the balance sheet of Dura Vermeer. Paying a recurring fee for the use, the province is seen as rental client and risk and reward remain with Dura Vermeer.

FINANCIAL RATIOS AND FINANCEABILITY

An expanding balance sheet may negatively change current financial ratios (solvency, liquidity, profitability). It is mainly an issue for companies that want to move away from a sales business model to a Product-as-a-Service (PaaS) business model, whereas companies that start out with some sort of PaaS (i.e. rental) business model generally experience less difficulties. A business model based on rental service is not a new feature in general, but may be a new feature for specific industries or companies. When attracting bank finance we distinguish between corporate lending (recourse) and project finance (non-recourse). Corporate lending provides financing based on the balance

sheet of a company. The lenders have full recourse to the parent company and its subsidiaries. Project finance provides financing based on long term contracted cash flows. A separate project company (SPV) is set up and the lenders have no recourse towards the owners of the project. The indefinite contractual structure of the CSC can imply longer finance cycles than currently applied (i.e. non-recourse infrastructure projects often have a tenure of 15-30 years). From a corporate lending perspective, one would want Dura Vermeer to be (at least partially) liable for the results of CSC (i.e. not a SPV structure). Although the cash flow becomes most important, the residual value nevertheless remains important for solvency. Evaluating CSC structures should therefore be a joint effort of corporate and project lenders.

5 - KEY LEARNINGS

In this case of Road-as-a-Service (RaaS) the Coalition Circular Accounting (CCA) has done a deep dive into the circular business model and the need for more guidance on applying accounting rules for a Circular Service Contract (CSC), in particular for a Road-as-a-Service agreement. Our main conclusion is that there is no necessity for adapting or fundamentally changing the accounting rules, but that we have to change our accounting perspective. In attracting capital, the ratios may change negatively, which require another risk assessment by financiers.

A RaaS means that the contractor remains the owner of the road, instead of selling it to the client, and is contractually bound to maintenance and other activities in order to keep the road in perfect working condition. Although the roles and responsibilities as described in a traditional Design, Build, Finance & Maintain (DBFM) contract can be used for RaaS, we discussed a CSC contract as an alternative that may better incentivise circularity. The contract is leading for the execution of the business model and how to account for it is primarily influenced by the mutual agreements. The auditors and financial experts participating in the CCA saw many possibilities within the current accounting rules to accommodate a RaaS business model.

A RaaS incentivises a Total Cost of Ownership (TCO) approach. It pays off to make adjustments towards a smarter design that will reduce maintenance costs and enables exploiting the road for a longer period of time. TCO applies to all contracts that combine a construction phase with an operational phase, hence is also applied in DBFM and DBFM+ and CSC contracts. With a fixed period contract (i.e. 30 years) the contractor/owner would strive to get the highest revenue for the road. The incentive stays at the end of the contract instead of having the incentive (reclaiming the materials for re-use) at the beginning of the contract. An indefinite contract (CSC) for owning and maintaining the road would be a better option for a proper circular business model. The contractor/owner has a better opportunity to optimise the maintenance and higher incentive to reclaim the materials. For the province the availability of the road will be optimised in extending usage of the road, which leads to less road works for its users when new roads are built (according to the current model).

Preconditional legal issues can have a major impact on the choice of whether or not to opt for a CSC. For instance, determining and agreeing on a fee which reflects the risks of this model is a challenge. These risks could be about the change of material usage, when in 30 years other materials will be used in constructing roads. Changes in increased sensor-usage in electric- or self-driving cars in roads may require additional changes to the road construction, which entail more complexity. Agreements in these changing requirements should be reflected in the contract. For the province to accept a road-as-a-service, the agreements about these future opportunities and challenges and the accompanying fee may be of substantial influence on deciding between a CSC and a DBFM+.

The fundamental question becomes “to sell or not to sell”. Both in DBFM and DBFM+ the road is ultimately sold to the client. If RaaS is structured in a CSC the road is not sold and is owned by Dura Vermeer. This has also consequences for the balance sheet of both parties and obtaining financing for the investment. If a sale takes place, the road goes to the province and will be booked on its balance sheet, and Dura Vermeer starts receiving a payment in return. With a CSC, Dura Vermeer remains the owner of the road, and it stays a fixed asset on the balance sheet of Dura Vermeer. The province pays a recurring fee for the use of the road and Dura Vermeer has the risks and rewards. The road is then an asset on the balance sheet of Dura Vermeer. The extension of the balance sheet is considered to be one of the challenges for CSCs.

The need for looking at CSC from a different accounting angle appears here. From a corporate finance perspective, one would want Dura Vermeer to be (at least partially) entitled to the revenue of the CSC. From a traditional financing perspective, the cash flow would be the most important source. But because the contract foresees a residual value that Dura Vermeer owns, ownership could also be viewed as an (appreciated or depreciated, depending on the scarcity and market value of the materials) asset that is relevant for the company’s solvency. This is actually a theoretical shift to a combination of financing features including some corporate debt that should lead to a different type of financing.

In this first edition of the CCA we have decided not to look into the social and environmental advantages or disadvantages of a RaaS. Considering the previously identified environmental advantages of the circular economy, researchers and practitioners can come up with suggestions for how to include these advantages in the business case. Moreover, from a public finance point of view RaaS could free up financial resources for local governments. This is a topic that public finance experts could look into. Both additions can potentially make the business case for a RaaS stronger.

CCA CONTINUED - 2020

Coalition Circular Accounting 2020 is in the making. We aim to deep dive into three exciting new cases. Are you interested in providing a case or being involved in the Coalition Circular Accounting please contact aglaia@circle-economy.com



Accounting is not the main challenge. It is about the circular objective contained in financial incentives. We must therefore primarily try to capture circularity in financial incentives; they must then be expressed in the contract; accounting will follow.

– **Paul Hurks**, RA (NBA)

NOTES

1. [The Value Hill](#); Achterberg, Hinfelaar & Bocken (2016).
2. A business model describes how one creates, delivers and retains value. An earning model is part of the business model and provides insight into the way in which a company generates (financial) value by mapping out the revenues and costs ([KPMG](#), 2019).
3. In this case we have not elaborated on the technical specifics of the circular road. We assume a road that is built to last longer and that can be disassembled with the purpose of harvesting and reusing materials after its lifespan.
4. The legal owner is the person who is recognized in law to own the asset or good in question. At the same time the economic owner could be another person who exercises control over the asset and ultimately benefits from its use. Economic ownership takes account of where the risks and rewards of ownership lie (<https://www.unece.org>).
5. For more information regarding Circular Service Contracts and for a downloadable CSC contract template please see the whitepaper [The Circular Phone](#).
6. Total cost of ownership (TCO) is the purchase price of an asset plus the costs of operation. Some argue that for circular Product-as-a-Service, we should talk about Total Cost of Usage (TCU), potentially taking into account multiple lifespans, calculating costs of using a product.
7. Note: Although the road is depreciated to zero, the materials remain in situ and are taken into account in the next tender. Hence part of this value may appear as a deduction in the purchasing costs of a new road. This could be included as an incentive for the maintenance provider, i.e. to maximize this value as part of its performance targets under the maintenance contract.
8. It is probable that pollution and / or material use will be priced in over the next few years. Therefore, lower abatement costs related to circularity measures support the business case. A scenario exercise (out of scope in this project) can provide insight into the potential effects.
9. Accounting guidelines for DBFM are clarified in IFRIC 12. IFRIC 12 clarifies how certain aspects of existing IASB literature are to be applied to arrangements whereby a government or other public sector body contracts with a private operator to develop (or upgrade), operate and maintain the grantor's infrastructure assets such as roads, bridges, tunnels, airports, energy distribution networks, prisons or hospitals.
10. A Special Purpose Vehicle (SPV) is a legal entity created to fulfill narrow, specific or temporary objectives. SPVs are typically used by companies to isolate the firm from financial risk.

