CLOSING THE VALUE CYCLE

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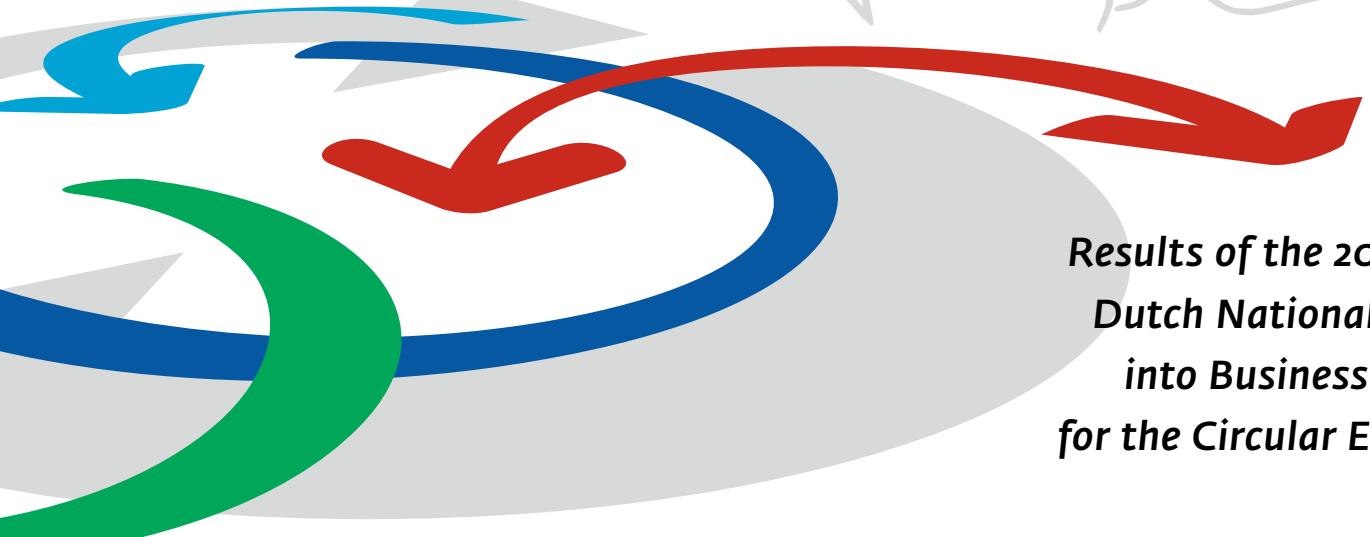

Results of the 2016-2017 Dutch National Survey into Business Models for the Circular Economy

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Please use the following reference when using this text:
Jonker, J., Stegeman, H., Faber, N.R., Kothman, I., and Brennan, G. (2018). Closing the Value Cycle; Results of the 2016-2017 Dutch National Survey into Business Models for the Circular Economy. Doetinchem: OCF 2.0 Foundation.

Editor English version: Geraldine Brennan
Editors Dutch version: Ine Nijland and Maud Notten
Cover and interior design and infographics: Justus Bottenheft
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ISBN: 978-90-827024-1-5
NUR: 801

During 2016 and 2017, a national study was conducted in the Netherlands into the circular economy and, more specifically, into circular business models. This publication reports the findings. In total, over 900 questionnaires were received, 37 interviews were conducted, and over 4,000 businesses were subjected to further analysis.

The starting point of the circular economy is the organisation of cycles of (raw) materials, parts of products, or products. This is nearly always done by several parties. Value preservation, use-extension, and value creation are the often-intertwined aims of closing these cycles. The survey illustrates three key motives for the adoption of circular activities. In order of importance, these are: (1) the creation of ecological and social value, (2) the development of a sustainable business model, and (3) opportunities to innovate in the value chain.

What emerges from the study based upon the survey and interviews is that the closing of cycles is a complicated organisational task for many organisations. Currently, many entrepreneurs are not yet readily equipped for circularity. The search for options to close cycles primarily takes place in-house and in cooperation with familiar parties with outsiders tending to remain excluded. Circular activities mainly occur through recycling, energy savings, and raw-material reduction as these are often the easiest to organize. In their operations, businesses are struggling to design and implement specific strategies to 'circularise' their business activities. This often remains grounded in conventional organisation-centric business- and conventional revenue models. Making circularity a real economic activity implies inter-organisational collaboration in value cycles. This presupposes a different breed of organisational, business, and revenue models. This research shows many companies are still far away from this way of working. Getting closer to the concept of the CE suggests that major steps are still required for the transition to a circular economy.

Organisations mainly focus on a recycling economy and on eco-efficiency - the first steps towards a circular economy. In terms of implementing this economy, respondents mention the following three main obstacles: (1) restrictive regulations,

(2) value chain partners not being ready for circularity, and (3) lack of funding. This demonstrates that the frameworks within which organisations are operating are still inadequate for the implementation of the circular economy.

At this point in time, the circular economy has barely left the starting blocks, not as the primary economy nor as a complementary one to the current linear economy. For some, businesses circularity is a peripheral phenomenon in their business model; for a small number, it represents the core of their value proposition. These are the early signals in the Netherlands that make for a very positive forecast. In summary, this Dutch study demonstrates that thinking about the circular economy is far ahead of organisational practice.

Seven conclusions

- In practical terms, the circular economy has only a limited foothold in the organisational landscape in the Netherlands, which is still a predominantly linear environment.
- To many organisations, the closing of cycles is a complicated organisational task for which they are not yet readily equipped.
- Value creation is predominantly limited to recycling, energy saving, and raw material reduction under the condition that it takes place at the appropriate scale.
- The interdependence between organisations within cycles causes businesses to struggle when designing specific strategies for circular enterprise.
- Options to close cycles are primarily sought in-house and in cooperation with familiar parties. Outsiders are essential for closing cycles, yet they tend to remain excluded.
- Circular activities often remain based on existing revenue models while new business and revenue models are required from the outset of circular organising.
- This study shows that thinking about the circular economy is far ahead of organisational practice. The overarching goal of organisational efforts to create closed value cycles, is rarely shared by partners.

This publication is the result of the study into Business Models for the Circular Economy (BMCE), initiated and coordinated by the authors from Radboud University (Nijmegen School of Management). The study took place between January 2016 and June 2017. In the spring of 2016, a pilot study was carried out in two Dutch provinces that informed the research design of the national research project. The study was based on mixed-methods and included a survey questionnaire, a large number of follow-up interviews with survey respondents, and desk research into existing and publicly retrievable cases with the aim of identifying cases focused on the circular economy. This has resulted in a carefully compiled but non-exhaustive list of circular economy cases in the Netherlands[1]. We are very grateful to all of the respondents and interviewees for their time and for sharing their experiences and insights. Last but not least, we would like to extend our gratitude and thanks to all the interviewers who conducted interviews throughout the Netherlands.

The study into Business Models for the Circular Economy (BMCEs) has been made possible by a large number of sponsors including: Rabobank, Interface, Alliander, Engie, PGGM, Auping, DAR, TNO, CSR Netherlands, the province of Gelderland, the province of Overijssel, Saxion UAS, Windesheim UAS, HAN UAS, the city of Zwolle, the city of Nijmegen, the city of Arnhem, the CIRCLES Foundation, Van Gansewinkel (Renewi), NS (Dutch Railways), the Ministry of Infrastructure and the Environment, Paper-Wise, DuurzaamNieuws [English translation: SustainableNews], Radboud University (Nijmegen School of Management), the KIEMT Foundation and the OCF 2.0 Foundation. Without their moral, material, and financial support, this research could not have taken place. Jan Jonker and the survey team are very much indebted to all of these parties.

JAN JONKER, HANS STEGEMAN, NIELS FABER, IVO KOTHMAN, AND GERALDINE BRENNAN

1 See Chapter 10 Appendix and this report 's accompanying website https://www.circulairebusinessmodellen.nl

CHAPTER 1

What is the circular economy?

There is a burgeoning focus on the circular economy (CE) in the international academic and policy community. Academic publications on the circular economy – ranging from what it is to how to implement it and how to measure results – exploded in the last two years[1]. Policy attention has increased as well. The European Commission promotes the concept of a circular economy, and a number of countries aim to be the frontrunner in it including China, Japan, UK, France, Finland, Sweden, and the Netherlands. Also, some large companies see the CE as the way to go for their own businesses.[2]

In the Netherlands, the CE is at the centre of attention in terms of national, regional, and local policy discussions as well as in terms of business practice. This is evidenced, among others, by the Social Economic Council (Dutch abbreviation: SER) advisory report 'Working on a Circular Economy' (June 2016), the Government-wide Programme for the Circular Economy (October 2016), and the signing of the National Raw Materials Agreement (January 2017). In addition, there are a range of reports, surveys, and memoranda by, amongst others, the Dutch Council for the Environment and Infrastructure (Dutch abbreviation: RLI), the TNO, and the Netherlands Environmental Assessment Agency (Dutch abbreviation: PBL). While provinces and municipalities generally base their own regional or local CE policy on these reports, smaller cities are working on their own approaches to circularity. The Netherlands appears to be one of the frontrunners in Europe in the transition to a circular economy.
This raises interesting and pertinent questions regarding whether and to what extent this movement translates into everyday practice, what is the state of circularity in the Netherlands, and how can circularity be advanced? This publication reports on the findings of a study which sought to answer these questions.

"We should progress from a society in which products are consumed to a society in which products are used."

JASPER KLOMPS (UBBINK)

1 See for recent overviews Bocken (2017), Geissdoerfer (2017), Korhonen (2018).
2 Some of these are organized at the Ellen McArthur Foundation CE100. (https://www.ellenmacarthurfoundation.org/ce100) . Also, the World Business Council for Sustainable Development (WBCSD) is highly involved with the CE.

More than recycling

The CE strives to close material cycles in which products and materials are reused and in which raw materials (and the product and parts made from them) preserve their value for as long as possible. This creates new entrepreneurial opportunities, requires new forms of cooperation, and unlocks novel perspectives on new markets. The implementation of the CE requires innovation of products and services, value chain innovation, and the generation of new business, organisational, and revenue models.

The fundamental starting point of the circular economy is the organisation of material cycles between parties. Seeing this in practice is a key indicator of the state of the circular economy within a country.

Circularity is more than recycling. The objective of recycling is to reuse waste on the basis of (residual) value. In contrast, a circular enterprise's aim is to minimise waste or, ideally, ensure that resources do not become waste and thus preserve value. The latter means that changes need to occur in the entire value chain: from the use of fewer and preferably renewable raw materials to making products that have a longer lifespan and are easy to repair, may be easily disassembled, or can be upgraded a number of times during their life-cycle. Implementing the vision of the circular economy requires strategies and revenue models that can deliver products designed in line with these principles while delivering multiple value. The CE can be characterised as follows:

The CE

- is not a form of extreme recycling 3.0;
- requires a re-valuation of raw materials, semi-finished products, and end products;
- is creating new employment in the organising and management of various forms of high and low value cycles;
- will only flourish as an organisational task between multiple stakeholders (business, citizens, and government);
- requires the design of a new generation of business, organisational, and revenue models;
- is likely to contribute to the shrinkage of the linear economy (see also Zink and Geyer, 2017).

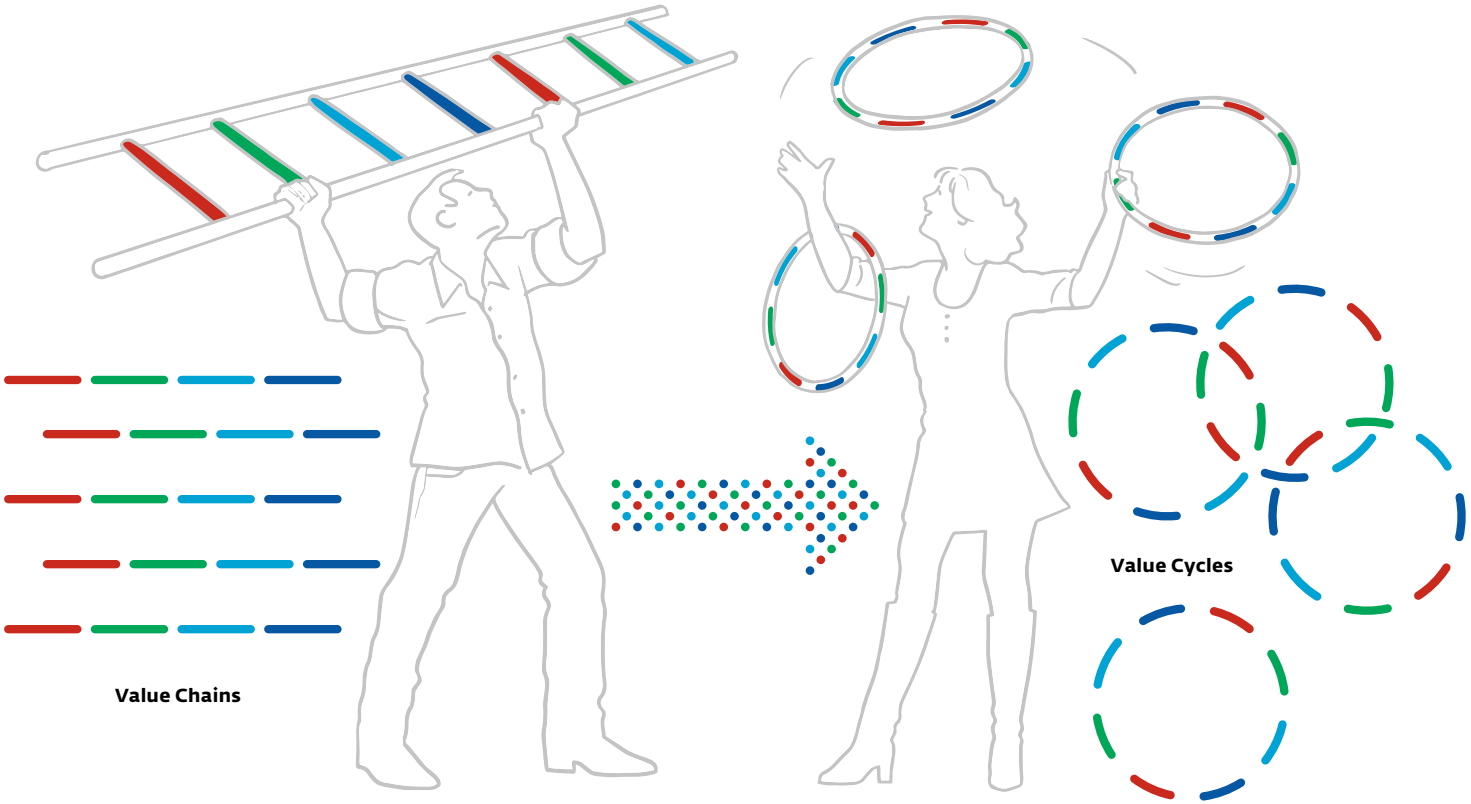


FIGURE 1 *Transition from Value Chains into Value Cycles*

Practical interest in the CE is emerging in two ways. It is expressed in a growing flow of publications and meetings including seminars, debates, festivals and conferences, newly founded platforms, and foundations that are focused on further reflection and practical implementation of the CE[3]. In addition, this is becoming evident in what organisations are saying and doing about it. Ever more, 'business cases' have emerged over the last few years, i.e., businesses that may be characterised as circular enterprises or which claim to be so. This often means that they have incorporated one or a number of circular elements into their business processes – ranging from efficient raw material management to (re) using waste flows, prolonging the lifespan of products, to selling services instead of products (the trend of servitization). This implies a transition from a linear to a circular economy which consequently implies a transition from value chains into value cycles. This transition is depicted in Figure 1.

3 Examples include but are not limited to: Stahel, (1982); Journal of Industrial Ecology's Special Issue on the Circular Economy (2017); Accenture (2014) Circular Advantage; Circle Economy; Ellen MacArthur Foundation (2012; 2013 & 2014) as well as the Circular Economy 100; World Circular Economy Forum; Circular Economy European Summit; FT Circular Economy Summit; The Circulars; Circular Economy Club.

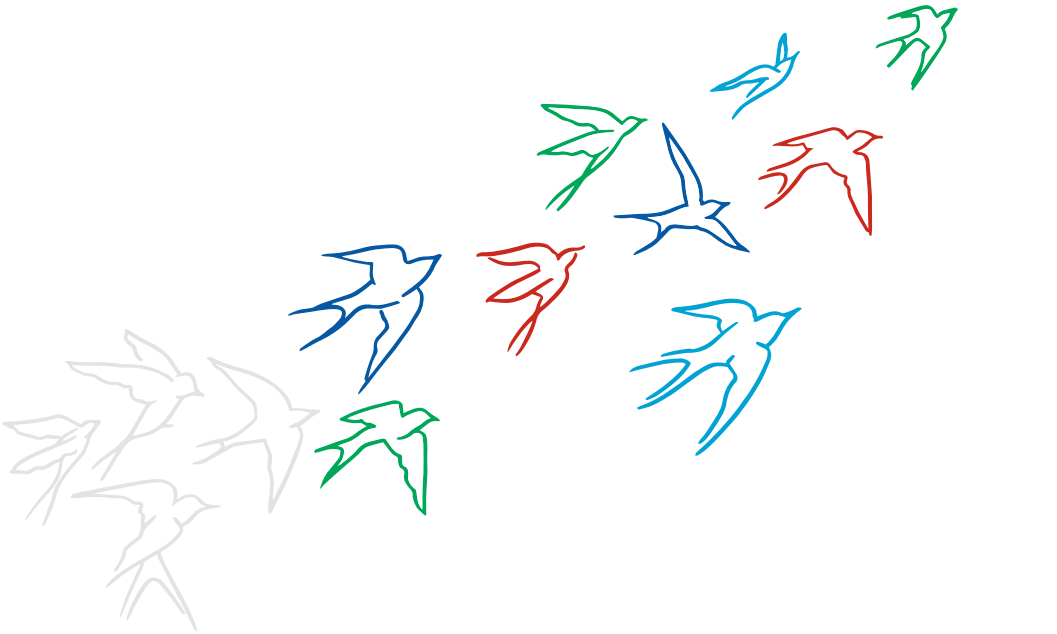
Initial expectations

Because of a growing interest in the CE, several expectations have been formulated at the outset of this study. For starters, we expect that CE activities are reflected in an organisational model for the CE at the company level and within value chains. This implies that a number of parties jointly strive for the closure of material cycles resulting in the transformation of conventional linear value chains into value cycles. Moreover, we assume that organisations that are more circular differ in their strategic orientation from linear organisations and that it is possible to establish if an organisation has a strategy for value cycle cooperation.

The translation of the CE in everyday business practice – organising circularity – is, furthermore, expected to be evident in an increasing proportion of circular activities in the turnover of organisations. We expect this is reflected in the revenue model. While this may be modest to begin with, businesses are assumed to demonstrate their ambition to grow in this area which will eventually lead to a strategy.

Exploring the circular state of the Netherlands in this study represents a broad yet in-depth examination of the transla-

tion of policies, ideas, and ambitions regarding the circular economy into everyday business practices. Conducting research into how circularity is organised is expected to provide an indication of the degree to which an alternative, circular economy is emerging.



CHAPTER 2

From linear to circular

Our society is based on the interactions of many organisations. This organising, at least in Western society, is predominantly based on an industrial model geared towards the transformation of raw materials into products. While this transformation is done in a highly efficient manner from an organisational perspective, this optimal organising ends with the transaction with the end-consumer. Products are used for a period shorter than their lifespan which is also not efficient from an economic point of view. This leads to the promotion of the highest possible throughput speed based on the principle of 'planned obsolescence' – meaning, in practice, that goods are perceived as broken or obsolete after a limited period of use. This underpins the so-called 'take-make-waste' production model based on a linear value chain, i.e., the faster the flow of products, the higher the economic growth. Not surprisingly, this linear production model leads to depletion of raw materials and to all manners of factors including the externalisation of the pollution of our human habitat. Moreover, this model cannot be sustained in the light of a rapidly growing global population. We need an about-turn of this mind-set – sustainability is an alternative way of thinking: using natural and social capital in an economical manner. The idea of 'recycling' arose from this in the 1990s and informs the now infamous trinity of 'reduce', 'reuse', and 'recycle'.

"I believe there are few producers who dare do this. I actually dare because to me it is not about making the greatest possible profit, but about sustainability."

PETER VAN ROSMALEN (PAPERWISE)

Towards an alternative economy

Over the last fifty years, this notion of sustainability – translated into the economical use of natural capital in particular – has developed into various ideas about an alternative emerging economy in which raw materials, parts, and semi-finished products may be used as 'indefinitely' as thermodynamically[1] feasible. The idea – at least, in theory - is also that the circular

1 Particularly the second law of thermodynamics which dictates that, of a closed system (e.g., planet Earth), the total entropy cannot decrease. The practical implication for a circular economy is that there will always be some form of leakage in the economy in terms of degradation of matter and loss of energy through a cycle of material use.

economy is one in which the enterprise contributes to the preservation and growth of various forms of capital including social, institutional, natural, financial, and cultural capital[2]. While this line of thinking is fully supported, the actual focus of this study concentrates more on the organisational aspects of the CE. This shows an on-going development in which the familiar concept of 'People Planet Profit' (the so-called 'triple bottom line') makes way for entrepreneurial activity with a view to preserving and creating multiple value. This is nowadays sometimes referred to as 'restorative entrepreneurship'[3]. Considering these multiple objectives, entrepreneurial activity is no longer 'business as usual' but viewed as contributing towards social challenges such as those formulated in the 'Sustainable Development Goals' (SDGs).

2 Various such 'multi capital' theories exist. Porritt (2005), for instance, identifies five (natural, social, human, constructed, and financial), whereas Gleeson-White (2014) presents six (human capital is divided into human (physiological) and intellectual (cognitive) capitals).

"Circular entrepreneurship is about closing cycles that match in terms of raw materials, products and waste as far as possible. And making sure already at the design stage that the product or material is suitable for reuse."

MARK GEERTS (PAPERFOAM)

Circularity lies in design

Implementing circularity requires the design of products with a simple and efficient 'dismantling system'. Fundamentally, this means the chemical composition of raw materials should be examined with a view to reusability[4].
When it comes to design, products should be made in a relatively simple and modular manner. This requires the organisation of cycles in which the value of (raw) materials is preserved in the best possible way with regard to reuse. The current debate about raw materials sometimes suggests

3 The notion of 'restorative entrepreneurship' is inspired by different sources (Gleeson-White, 2014; Porritt, 2005). The company Interface aims to integrate this idea into its operations.
4 This is also addressed by the "Cradle2Cradle" philosophy – see Braungart & McDonough (2002); McDonough & Braungart (2013).

that all (raw) materials can be reused indefinitely. However, there are major differences between the reusability rate of materials, and there are limitations as well in this respect[5]. For example, several raw materials may be reused 7, 16, and even 27 times (e.g., rubber, glass, wood, tin, textile, concrete, etc.), but material will ultimately degrade and only be suitable for low-value applications over the course of time.

The idea of keeping materials in circulation for as long as possible and utilising them in the best possible way during their lifespan (by upgrading and refurbishing, among others, i.e., 'resource life-extending strategies' [6]) is what we refer to as the CE. This is an economy centred around the design or composition of raw materials. Doing this on a large scale will ultimately lead to an economy which has, at its core, the preservation of the value of (semi-finished) products and raw materials.

> "When we launched our system, we had to pay the recycling company to buy our shards. Now, they pay us because they can manufacture a better end product."
>
> COR WITTEKOEK (VLAKGLAS RECYCLING NETHERLANDS)

This means that raw material flows need to be organised into cycles. It will take a large-scale approach to do this efficiently because material flows need to have sufficient volume. As a result, a shift is likely to arise from a linear to a circular way of organising. This will only be possible once parties start working together in so-called value cycles thereby contributing to the preservation of materials and their value. Subsequently, business and revenue models will also change as a result. Adding value using the same raw materials becomes repeatable over time. It will no longer be a one-off transaction based on virgin raw materials but a series of transactions throughout time with the same materials in modalities that stretch from virgin to (re)used.

5 For further reading, see Allwood & Cullen (2012).

6 See Blomsma & Brennan (2017) for an overview of the emergence of the circular economy as an 'umbrella concept' which articulates the capacity of a group of strategies which seek to extend resource life, otherwise known as "resource life-extending strategies (RLESs)".

An economy organised in line with circular principles has the potential to shrink materially compared to the linear economy as long as the "circular economy rebound"[7] is accounted for. After all, if everything that is made is used for far longer, new concepts of value creation are likely to emerge. Using material in this way has the potential to contribute to value preservation in contrast to value destruction that is symptomatic of the linear economy. Organising around material preservation also offers opportunities in terms of new jobs[8]. This is because many 'hands' are required for keeping material and products in circulation with the latter offering a range of options for a shift to services which has barely been explored yet.

The ultimate objective is a new economy in which material cycles are closed and value preservation rather than value consumption is central. This does require a transition from the currently dominant linear economy towards a CE.

7 See Zink & Geyer (2017) for an overview of the mechanisms that cause 'circular economy rebound' as well as potential mitigation strategies that the authors identify.

8 See Morgan & Mitchell (2015) and Mitchell (2015) for reviews of the job creation potential associated with circularity in the UK and London contexts, respectively.

Cycles Ladder of the Circular Economy

The transition from linear to circular will not come about of its own accord. The 'Cycles ladder of the Circular Economy'[9] distinguishes a number of stages of organisational development. After all, the realisation of the CE means more than just changing the business model of a single organisation. In order to close cycles, parties will have to work together, coordinate their strategies, and mutually reach agreement about common revenue models.

The cycles ladder of the CE distinguishes five levels of development which build on one another.

Phase 1: In-house circularity

The first level of the cycles ladder is straightforward and is called 'in-house circularity', the idea being that an organisation closes cycles that (almost) entirely occur within the scope of the organisation. The organisation may do so alone or with the help of suppliers. The closing of in-house cycles does have its limitations. After all, it only concerns a limited proportion of raw materials used in the production process.

9 See Jonker and Faber (2017) for the original publication in Dutch.

This level is reminiscent of 'eco-efficiency'[10]. Implementing in-house circularity will result in cost savings in the revenue model of the organisation due to a lower demand for raw materials.

"The shortest route from a linear economy to a circular economy can only be found if you work together."

RON VAN OMMEREN (MODULO MILIEUSTRATEN)

Phase 2: Partial chain integration

At step two of the cycles ladder, the focus widens to the part of the production process in which several organisations play a role, for example, customers and suppliers with a partially closed cycle emerging. For example, the waste or heat of one party may be used as raw material for the other, resulting in reuse. In the case of (partially) closing cycles where several parties are involved, there should be an explicit focus on the division of costs and benefits between parties and thus on revenue models.

Phase 3: Material mono-flow cycles

On the next step up of the cycles ladder, we see the emergence of a fully closed 'simple' cycle based on one specific material. This may be called a material mono-flow (think of paper, iron, a specific plastic, rubber, etc.). In this phase, production processes are designed in such a way that the material, once designed and produced with the aim to circulate, enters a closed cycle. The ambition is that they continue to function for as long as thermodynamically feasible. Perhaps the organisation of such a cycle is not immediately applicable for each material as it may not be designed and produced with this aim in mind. It also might be that either the logistics of collection or treatment technology are not available or in place. In this third phase, all parties jointly ensure that the material cycle in question is organisationally and technically closed. This requires joint organisation including related, governance and revenue models, and legal conditions.

Phase 4: Organisational ecology

Organising of value cycles becomes more complicated when there are several mono-material cycles that are mutually de-

10 The popularisation of the concept of eco-efficiency in circa 1994 can be attributed to the World Business Council for Sustainable Development (WBCSD).

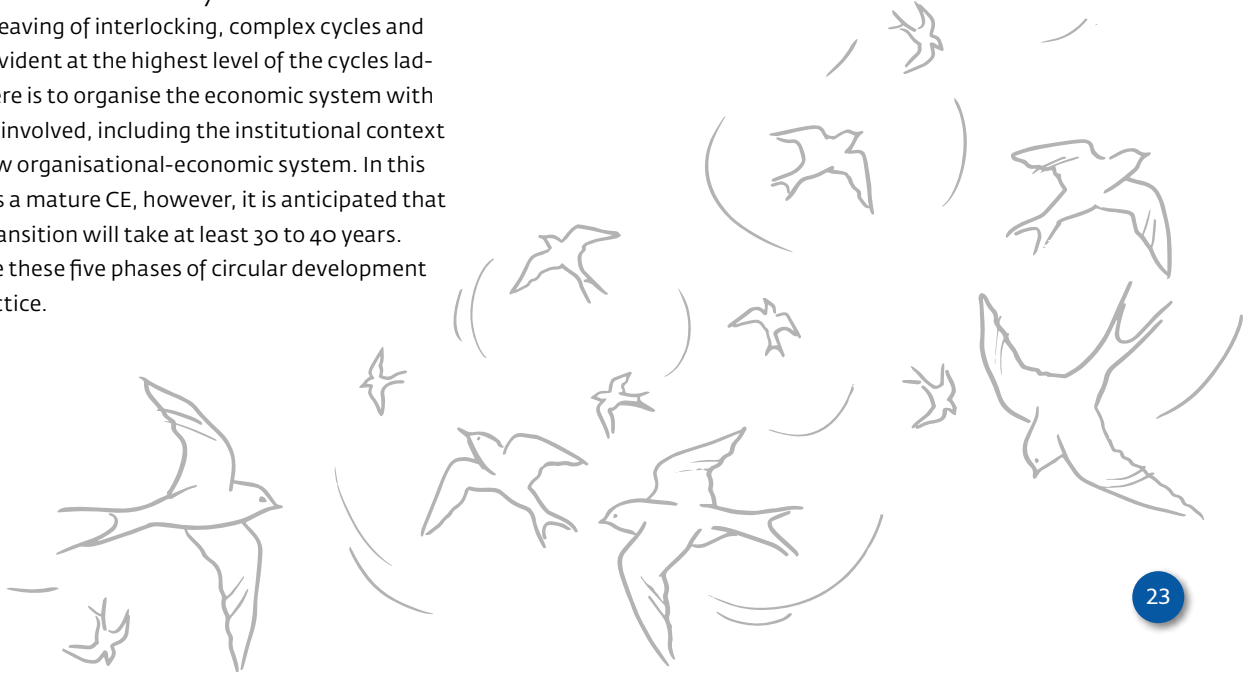
pendent on one another. Typical of Phase 4 of the cycles ladder is the complex tangle of cycles and involved parties that emerge. In other words, an organisational ecology emerges of businesses and parties or sub-systems. Organising and coordinating the latter in cohesion with one another becomes crucial and, here, the underlying organisational, business, and revenue models are complementary to one another.

Phase 5: Organisational-economic system

A further interweaving of interlocking, complex cycles and sub-systems is evident at the highest level of the cycles ladder. The point here is to organise the economic system with all of the parties involved, including the institutional context resulting in a new organisational-economic system. In this scenario, there is a mature CE, however, it is anticipated that achieving this transition will take at least 30 to 40 years. We expect to see these five phases of circular development occurring in practice.

"Don't try to be circular just with your own business because you will not manage. You need partners in your chain. They may reinforce each other."

HUGO VAN DEN ELZEN (Q-VENTION)



CHAPTER 3

Business models and value creation

Organisations create value through their business model. These models consist of three elements, the first being the logic of value creation or the value proposition: what added value is created, financially and socially or ecologically as well? The second element is the way in which this value proposition is organised. This relates to both activities within the individual organisation as well as activities in cooperation with value chain partners as parties work together on the basis of competences in order to create a certain product or service. The third element is one or more revenue models where the costs related to the organisation of the business model are joined with the revenues generated from the value proposition. Traditionally, the focus is on financial profitability. It is common practice not to include a number of costs (e.g., social or ecological) in the cost price calculation; costs that are considered to be externalities and hence irrelevant from the perspective of the business. These elements combined represent a conventional description of a business model.

Changing business models

It is customary for a business model to take one organisation as a starting point, yet most organisations usually have more than one business model. This type of thinking is known as being organisation-centric and, here, the business model provides insight into the creation of financial value. Consequently, the logic of value creation and revenue model overlap because, traditionally, the value created is financial, therefore, business and revenue models are often considered

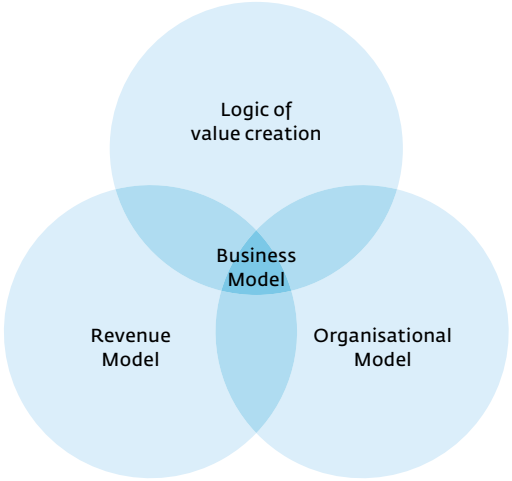


FIGURE 2 *The inter-relationship between Value creation logic, Business, Revenue and Organisational Model*

"I don't feel that we are an isolated unit; you are connected in society with so many strings, with your entire story."

JOLIJN CREUTZBERG (VAN HULLEY)

synonymous with one another. In the CE, it is imperative to separate these concepts from one another and to broaden them. In order to implement the CE, the inter-relationship between value creation logic, revenue, and organisational models and the way these meet in a business model need to be better understood as well as how best to align these three models (see Figure 2).

The CE requires cooperation between businesses and other parties with a view to creating a value cycle organised by several parties. The value chain makes way for the value cycle with a shift occurring from an organisation-centric set-up to a configuration of several parties.

In addition, the concept of value is broadened. Apart from creating financial value, it is also about social and ecological value creation. We call this multiple value creation which may relate to consciously preserving or increasing several types of capital simultaneously. In an ideal-type CE business model, several organisations and parties create several types of value in interdependence. However, as evidenced by our survey findings from the Dutch context, this remains an aspiration at this point in time.

The joint organisation and creation of multiple values will have an impact on an organisation's strategy and revenue models. However, organisations in the Netherlands are in a state of transition and, as a first step, many are trying to disassociate themselves from the dominant linear economy and exploring how they can organise circularly.

The initial step is often to explore this within the boundaries of the individual organisation which is certainly not as grand and gripping as presented in the latter phases of the "Cycles Ladder". Nonetheless, whatever way this transition develops in the years to come, it requires reflection on the usability of existing business, organisational, and revenue models. After all, many products and services that are currently organised linearly will completely change. As we are living in a society that is organised on the basis of an incessant flow of transactions between businesses, citizens, and other stakeholders,

transforming the economy demands that we focus on the core of the matter: circular economy business models.

Classifying business models

A number of classifications of circular business models have emerged over a short period of time[1]. Classifying business models is useful because it gives a better idea of the various ways in which businesses may organise themselves as well as a better understanding of their chosen strategies and the implications this has for their value proposition and revenue model. It thus enables the identification of the most suitable strategy given a specific context and the material flows within - and how to tie this in with viable revenue models. All in all, this supports organisations in developing value propositions based on a circular 'modus operandi'.

'New business models' are often mentioned when discussing the various classifications. In terms of business models, we distinguish three major groups, namely, conventional, community-based, and circular business models[2].

In conventional business models – not surprisingly, the largest group found in practice – everything is dominated by making money; creating other values is subordinate to this. As a result, money usually becomes the objective rather than the means to arrive at value creation. Partly as result of this focus, there is no longer a distinction between the value creating logic underlying the business model and a revenue model – which is why the revenue model is used as the key criterion in some business model classifications. One of these revenue models is a Product-as-service model. The underlying value creation model can be sustainable, but it does not need to be. For example, product-as-a-service models can be good revenue models in the circular economy but only if the business model delivers a contribution to the closing of a material cycle. In the case of bundles, a company that sells "washes" (leasing of washing machines), the business model will only be more sustainable if the firm takes care of the washing machine in a more responsible way after its economic lifetime than a consumer who buys a washing

1 See, for example, but not limited to; Jonker (2012); Bocken et al (2014); Accenture (2014); Lacey & Rutqvist (2015); CIRAIG (2015); Brennan & Blomsma (2017).

2 Jonker & Stegeman (2017)

machine would do. This cannot be inferred only from the earnings model.
The other two business model types, community-based and circular, focus on the creation of more than just the value of 'money'. As a result, it is more logical in these instances to distinguish between the value creation logic of a business model and its revenue model.

Community-based models revolve around the conscious creation of value by a community of people who jointly invest and share in the revenues of a local or regional business model. Specific examples include an energy cooperative, a collective food purchasing combination, or the joint organisation of mobility via some form of car sharing. Even though these are very fascinating and extremely valuable developments, these models do not focus on organising cycles.

Study focus: circular business models

This survey focuses on the third group of circular business models which are geared towards closing (raw) material loops. These can relate to the extension of the lifespan of products, the reuse of raw materials, a better utilisation of products, an alternative design of products, or the use of renewable raw materials. All of these contribute to the closing of material cycles. Parties, including businesses, select a certain mixture of circular activities based on strategic choices with the ambition of cooperatively organising value cycles. Distinguishing between conventional, community-based, and circular business models enables a clearer understanding of the various business models that exist.

> "It is 'People, Planet, Profit', and that is actually the case with us, profit comes third."
>
> RICCARDO DE WAAL (BOANOVA)

However, this classification only partially helps to make a clear-cut distinction between various types of business models given the state of transition in which organisations and society find themselves. For example, it is a mistake to believe that linear production methods will be abolished in the short term – while they may be improved so that they are more sustainable does not mean that they necessarily become circular.

"We are not consciously building a community, but in your enthusiasm, you involve people, and in retrospect they prove excellent ambassadors without exception."

RIK RUIGROK (HERSO)

This raises the question of where a justifiable balance between linear and circular organisation is to be found. Similarly, this could apply to groups of people who co-create a business model. This may have a circular character from the start but not necessarily so. Of course, it is a good outcome when an energy cooperative organises green electricity with a couple of hundred members, but does this make it circular?

We contend that the inability to make a sharp distinction between different types of business models says something about the phase of development of the circular economy and circular business models. This becomes evident when we look at the nature of cycles. Some cycles can be organised in a relatively simple way by a few businesses while others involve a complex organisational task. Another key factor is time. Sometimes, the usage period for a product is a day or even shorter (think of packaging plastic or a can) and sometimes several decades (think of buildings, works of art, or bicycle tunnels).

The duration of the cycle thereby partly determines the associated business and revenue models. This suggests that using a typology of circular organisation over time that is based on the nature and duration of cycles may be beneficial.

Against this backdrop, we decided to look at those elements of business models that contribute to the organisation of value cycles. A first step in this direction is making the distinction between organisational and revenue models. As

This suggests using a typology of circular organisation over time, which is based on the nature and duration of cycles, may be beneficial.

"We live by cooperation."

JOLIJN CREUTZBERG (VAN HULLEY)

indicated above, a business model is understood to refer to the total concept of value creation of which the organisation and revenue models are parts.

The organisational model illustrates which parties work together and how they do so in order to arrive at a value cycle. In contrast, the revenue model provides insight into how the costs and benefits are achieved as well as shared (over time) among the various parties in the value cycle.

However, what is still lacking is know-how in terms of organising closed material cycles. This requires strategic choices – and there are various strategies that could provide insight into the way in which circular value creation is achieved. The pilot study, also based on mixed-methods (a survey followed by a series of interviews) conducted in spring 2016 resulted in the identification of five building blocks of circular business models. In the next chapter, these building blocks are outlined as well as their interrelationships.

CHAPTER 4

Five building blocks of circular business models

During the piloting of this research conducted in spring 2016, we identified the five buildings blocks of circular business models that are required to organise value cycles. These are: 1) the closing of cycles or loops, 2) the creation of more than one value, 3) the selection of an appropriate strategy, 4) the creation of an organisational model between parties, and 5) the development of a coherent revenue model. Combined, these underpin forms of circular organisation.

Pivotal to circular business models – that which marks them out from conventional and community-based business models – is the task of achieving the closing of cycles such that it leads to multiple value creation.
A business model is not circular if no contribution is made towards the closing of material cycles. If a cycle, however, is closed without there being a contribution towards sustainable value creation for people and for society, then this will ultimately not lead to a more sustainable economic system. Achieving a sustainable economic system is precisely the task and ambition of the CE.

An ideal type circular business model requires all five building blocks to be implemented coherently. The five building blocks are briefly explained below.

Building block 1: Cycles

The central idea of the CE is the closing of or contributing towards the closing of (material) cycles across the entire life cycle of a product. We make a distinction here between different strategies that contribute towards the closing of cycles ranging from: (a) reusing waste and raw materials as much as possible, (b) reducing the use of virgin raw materials and energy, (c) manufacturing durable products which may have multiple users and may be repaired as easily as possible, and (d) loaning, fixing, upgrading, and repairing products or their parts. Circular activities may partially be done within an

> "What you need to do is close cycles as far as possible which match in terms of raw materials, products and waste. Avoiding massive waste mountains. And ensuring already in the design that the product or material is usable for reuse."
>
> MARK GEERTS (PAPERFOAM)

individual organisation but are more often conducted with other value cycle partners.

Building block 2: Value creation

A key tenant of the CE is that more than just financial value is to be created. We call this multiple value creation. This creates a number of paradoxes for the current linear economic system. The first paradox being that, on the one hand, it is about reduced use or non-use of natural resources. So less is better – which, at first glance, is at odds with creating financial and social value where more is perceived as better. A second paradox arises from a reduction in the use of materials being an explicit objective of a CE – as it is only possible to achieve this by deriving more value from all of the materials that are used through reuse, prolonging lifespan, and so on. The challenge posed for a CE is creating several values at the same time while the emphasis is predominantly on the creation of ecological value through using materials in a better way. Yet, if value creation in the context of a CE is broadened, it is about contributing to various forms of capital such as social, ecological, institutional, and cultural capital in addition to financial capital[1].

1 This links closely to multi capital theories as proposed by Porritt (2005) and Gleeson-White (2014).

"The better waste is separated at the source, the more value this waste flow will have."

WESLEY DE BIE (MUSHBIN)

Building block 3: Strategy

The CE requires the selection and implementation of a clear strategy that is geared towards the closing of a cycle or multiple cycles. Strategy is about identifying the key steps or activities which will lead to implementation of a business model and actualisation of the desired value creation based on knowledge and insights existing within an organisation at a particular point in time. Combining the conventional strategy literature (Treacy and Wiersema, 1993) suggests that five business strategies are as equally relevant to circular business models as they are to conventional business models. These strategies are: operational excellence (OE), product leadership (PL), customer intimacy (CI), experience (EX), and community-building (CB). The core of operational excellence is maximum process efficiency. Product leadership revolves around excelling at making products, now and in the future. Customer intimacy represents maintaining a relationship with the client throughout the lifespan of

"The Netherlands is not yet ready for this; the majority simply wants to possess. You could be holier than the pope here but in the end ordinary sales is the easiest."

DAVE BAKKER (AND CHEESETRADE)

the product through interactions related to maintaining, repairing, or upgrading the product. Experience focuses on the co-creation of the customer experience in conjunction with the client. The client thereby becomes a co-producer of the product, service, or product-service system. Community-building refers to when groups of stakeholders co-create a business model.

While these strategies surely indicate a strategic direction, they allow for less selection of a specific strategic focus. As there is a rather broad and sometimes even confusing range of strategic typologies for the CE, it seems most appropriate to make reference to the so-called family of R's, namely: reduce, refuse, re-design, re-use, re-furbish, recycle, up-cycle and, ultimately, if all options are faded out, to down-cycle[2].

Building block 4: Organisational model

Implementing the CE requires organising circular activities in value cycles and value networks together with partners as, for the most part, very few organisations are able to close an entire cycle independently. A business can certainly take steps in this direction with the organisation of activities within its organisational boundaries but what is ultimately required is value cycle integration.

Value cycle integration is at odds with classic value chain thinking as the latter is centred around an input-through-put-output model with the individual organisation at the centre. Circular organisation revolves around cooperation aimed at closing the cycle thus parties share an organisational responsibility. What makes organising circularity more difficult is that this is not restricted to one particular transaction moment. Rather, value creation occurs over time. After all, materials are used to manufacture cars, buildings, and bicycle tunnels with some materials becoming 'stuck' as a material

2 This set of strategies is an adoption of the list by RIi (2015).

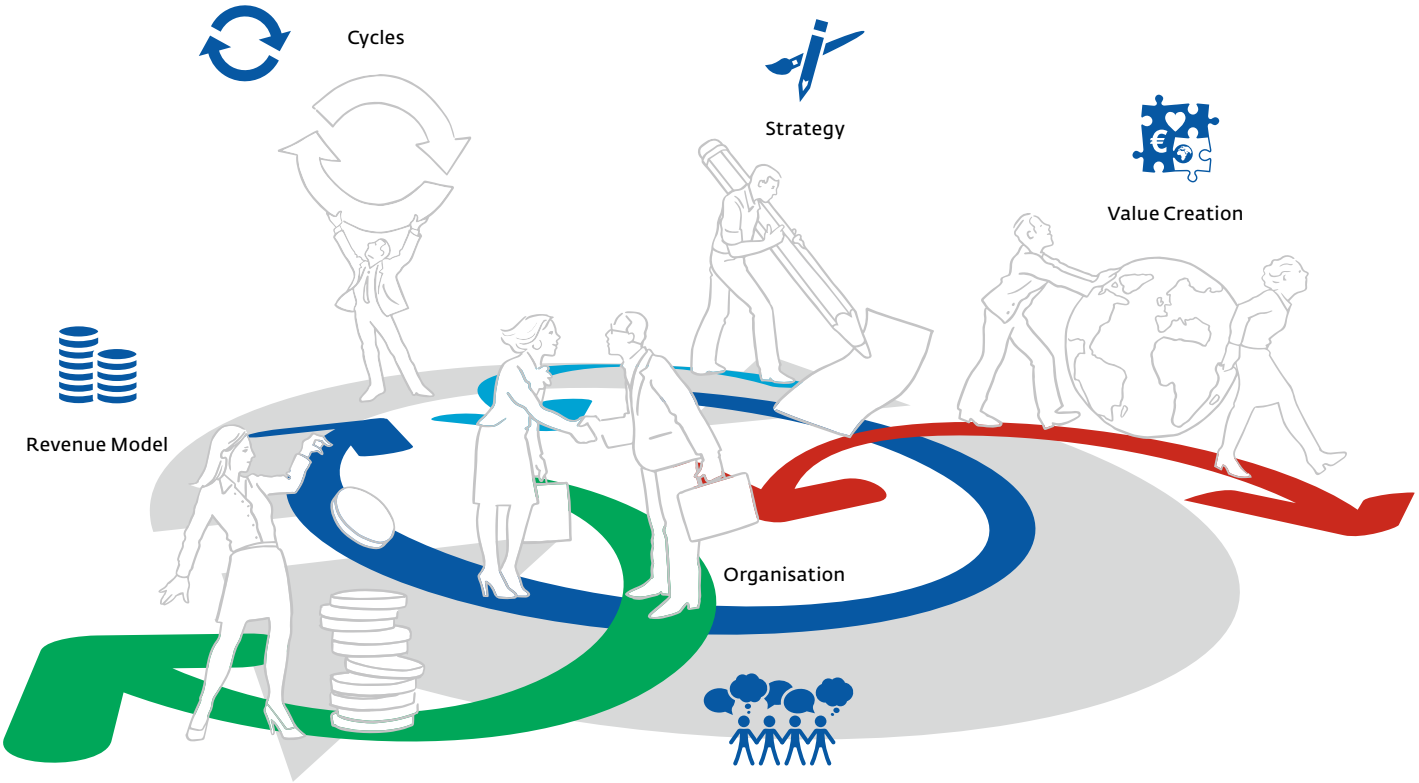


FIGURE 3 *Building Blocks of Business Models for the Circular Economy*

'stock' for varying time-frames depending on the product or resource in question. Once this material is released, the value creation process can begin all over again, however, it remains to be seen what the value of said material will be.

Building block 5: Revenue model

Organising circular activities is likely to cause an organisation and value cycle partners' respective revenue models to change. Turnover is created, among others, over time (lease or performance models) on the basis of, for example, pay-per-view or due to the joint creation of value in a value cycle (so-called cascading). This does mean that costs and revenues will have to be shared over time by the parties involved in a value cycle. This implies that a raw material, a part, or a product's value could change several times at different intervals throughout time in a value cycle. Conventional thinking about revenue models is not coherent with this. After all, revenue models are traditionally based on a single transaction moment supplemented by a range of subscription, maintenance, and lease models. Moreover, mutual dependency is also likely to cause risk issues to change. These insights contribute to the emergence of new questions surrounding how to finance circular value cycles. For example: Who is actually the accountable director of a certain cycle? Who has final responsibility? These are challenging questions that are not yet easily answered.

While not each of these building blocks needs to be present in every circular business model to the same degree, a key condition for a circular business model is that closing cycles forms the basis for creating multiple value.

> "Businesses that invest in the circular economy will always perform better than traditional businesses in the long run."
>
> BAS GEHLEN AND JOS MANDERS (VAN HOUTUM)

CHAPTER 5

Pilot survey and interviews

In the spring of 2016, a pilot research into Business Models for the Circular Economy (BMCEs) was conducted in the provinces of Gelderland and Overijssel[1] in the Netherlands[2]. Over 500 individuals from a range of organisations and initiatives completed the questionnaire of which approximately half were suitable for further analysis. In addition, 40 participants from the survey sample were interviewed.

The pilot offered a broad impression of thinking about the CE in these two provinces. In particular, what was evident was a large-scale willingness and extensive ambition on the part of businesses and other stakeholders to further reflect and work on the implementation of circular activities. Yet, it was also clear that the existence of concepts which facilitate the organisation of circular value cycles between businesses is still very much in its infancy.

While the concept of the CE is widely embraced, the interpretation of it is anything but uniform. It is actually a 'container concept' in which countless activities are grouped together with a view to a higher, often abstract, 'goal'. The almost explosive increase in media attention for the CE within the Netherlands and wider Europe does not seem to go hand in hand with a transition within organisations nor with the search for forms of cooperation between organisations in the pilot provinces. Circular business models that are tightly aligned with a new generation of revenue models are scarce. In other words, there is actually not a great deal of change as of yet in terms of business activities.

"Circularity will come, and remanufacturing is an important part of it."

EDUARD LEBRINK (ACE REUSE TECHNOLOGY)

1 These two provinces where chosen given the high-degree of business and institutional support that was offered to disseminate the survey. These two provinces also offer a balance between production and service organisations. Last, but not least, they represent part of the Dutch economy.

2 This pilot research was made possible thanks to a large number of financial and dissemination partners such as Rabobank, Saxion University of Applies Sciences, Alliander, Engie, the municipality of Zwolle, Windesheim University of Applied Sciences, Arnhem-Nijmegen City Region, Radboud University, OCF Foundation and VNO-NCW Oost (Confederation of Netherlands Industry and Employers).

The analysis of these pilot interviews produced eight cases that revealed how organisations dealt with organising cycles. The circular business models retrieved from these cases, however, mainly fit into a linear environment. They are generally geared towards individual business operations related to the use of raw materials and the design of products and, to a very limited extent, the use of new revenue models.

The key finding from the pilot is that the CE is still in its infancy in the Netherlands–the situation is one of little chain cooperation and few joint business models (consisting of several parties).
An important outcome of the pilot research was the identification of five building blocks that were perceived as being necessary for the organisation of circular business models, namely: the closing of cycles, the pursuit of multiple value creation, the selection of an appropriate strategy, the organisation of cooperation within new value cycles, and the selection of corresponding revenue models.

Another outcome was the observation that material-intensive businesses with a high 'CE potential' in contrast to service companies are mainly found in the Business2Business (B2B) as opposed to the Business2Consumers (B2C) markets.

> "In order to make a success of the circular economy, you will have to touch a chord both with municipalities and with citizens."
>
> RON VAN OMMEREN (MODULO MILIEUSTRATEN)

The data illustrated that there is a difference between organisations from business sectors with high and low 'CE potential'. Organisations with a high material intensity were taking on more circular activities (such as 'reduce', 'reuse', 'recycle') relative to those with low potential. Moreover, organisations with high circular potential are trying to create several values at the same time compared to their low circular potential counterparts.

The pilot survey and interview findings laid the foundation for the national questionnaire as it demonstrated the gaps in our knowledge which consequently underpinned the rationale for the design of the new questionnaire. In particular, the pilot does not provide insight into how businesses arrange circular activities in relation to one another nor how cycles

are closed, how the circular process is kick-started, or how suitable players find one another in order to create circular value cycles. Moreover, it was striking to find that circular cases were often limited in scope with a relatively simple revenue model. Lastly, it was also unclear how the transition from a linear economy to a CE may be shaped - thus, the pilot illustrated what questions needed to be asked.

> "I came up with the idea to make stuff and looked at what was already there in terms of raw materials. (...) I initiated a change in thinking on the basis of waste."
>
> RIK RUIGROK (HERSO)

CHAPTER 6

Set-up of the national study

On Thursday, 6 October 2016, the national survey into the state of the CE was launched across the Netherlands with a particular emphasis on Business Models for the Circular Economy (BMCEs). This survey aimed at gaining an understanding of how businesses use circular ideas and principles in their business processes with a view to developing insights into how to map out circular developments, strategies, and business models. The national study included three main steps: (1) the five building blocks of circular business models identified in the pilot were included in the online survey questionnaire, (2) based on a number of criteria[1], a number of selected organisations were invited to participate in an in-depth interview, and (3) desk research was conducted into public lists of so-called 'sustainable'[2] businesses.

"I actually cannot wait to have my own PaperWise Foundation soon, of which I can say as a human and grandfather that I offered children a better future thanks to PaperWise."

PETER VAN ROSMALEN (PAPERWISE)

Questionnaire

The questionnaire was designed and severely tested[3] on structure, flow, readability, and the time necessary to go through the questions. These were considered important conditions to 'harvest' the best possible number of surveys, thus providing insight into how or whether Dutch businesses

1 Criteria for selection for interviews were that the organisation in question had a demonstrable contribution towards closing a cycle complemented by either an alternative revenue model or a form of value cycle cooperation.

2 In the Netherlands, several lists circulate that enable organisations to profile themselves as being 'sustainable'. By incident or for marketing purposes, the same organisations can be listed simultaneously on different lists. Often, no clear-cut criteria are given to enable determining to what extent a listed company is really 'sustainable'. Furthermore, the distinction between being 'sustainable' and being circular is often not addressed at all. The word 'sustainable' was chosen to collect a rather broad number of companies hoping to be able to identify circularity within.

3 To ensure the quality of the national questionnaire, it was also piloted with thirty respondents prior to launch. Additional feedback on the questionnaire was also requested during in-depth interviews regarding the scope and degree of difficulty of the questions which resulted in simplification of questions and shortening of the questionnaire in places.

incorporate the five building blocks of circular business models in their circular activities.
The questionnaire was promoted in a broad campaign through over thirty networks, databases, newsletters, and bloggers generating a total of over 1.2 million communicative expressions in the form of blogs, columns, newsletters, tweets, et cetera.

Between October 2016 and the end of February 2017, questionnaires were received in response to the call to participate. It resulted in approximately 2,800 reactions (including the people who visited the website). Ultimately, 900 people started filling in the questionnaire but did not always complete the full survey. After exclusion of those that were incomplete, this resulted in roughly a quarter of the questionnaires (N=275) that could be used for further analysis. These form the basis of the results presented here.

Selection of interviews

In order to gain a deeper understanding of how businesses make the transition to a circular business model, interviews were additionally conducted with a selection of respondents. Of the 275 completed national questionnaires, 125 businesses indicated their willingness to participate in an in-depth interview. The following criteria were used to identify suitable case organisations, namely: (1a) does the closing of a cycle occur in the case, (1b) or is the closing of a cycle supported directly or indirectly; (2) is there an innovative revenue model, and (3) is there value cycle cooperation with a view to closing a material loop? This screening process resulted in 22 case study interviews.

In order for an organisation to be selected for an interview, it needed to have a demonstrable contribution towards the closing of a cycle complemented by either an alternative revenue model or a form of value cycle cooperation. These interviews were conducted on the basis of an interview protocol that goes deeper into the case at hand than does the questionnaire. A team of ten researchers monitored by a programme manager conducted the interviews.[4]

4 A written report was created for each interview averaging circa 2,000 words and was provided to interviewees for their feedback. In addition, a quotation file was created featuring statements worthy of note from this set of interviews and contains over 100, sometimes provocative, quotations of which a number are used in this publication.

Desk research

In addition to the questionnaire, desk research was conducted in order to identify as many additional cases as possible. This was achieved by collecting a substantive list of so-called 'sustainable businesses' that appear on the Internet[5] (see Table 4).

5 Keywords used in the search were (in Dutch): 'sustainable, circular, new business model, green business'.

Investigated lists, in chronological order	Number of businesses	Number CE	Number of new businesses	Return
mvonederland.nl/praktijkvoorbeelden	303	15	13	4,29%
www.circulairondernemen.nl/bedrijven	1,980	31	17	0,86%
www.groenezaken.com/5/1	2,117	54	28	1,32%
degroenezaak.com/partners/	161	9	1	0,62%
www.circle-economy.com/our-members/	45	6	0	0,00%
Accenture report CE index	47	4	3	0,00%
www.unitedeconomy.nl/mensen-bedrijven/	134	7	1	0,75%
Questionnaire	109	23	23	21,10%
Totals	4,896	145	83	
Return	100.00%	2.96%	1.7%	

TABLE 4 *Sources of Sustainable Cases*

	Survey responses	Survey responses suitable for analysis/ completed	Organisations willing to participate in in-depth interviews	Case study by in-depth interview	Periods of data collection
Pilot (Gelderland & Overijssel)	500	250	122	40	April 2016 – October 2016
National study	900	275	125	22	October 2016 – May 2017
	Case study lists	De-duping list	Screening of cases based on criteria	Case study by in-depth interview	
Desk-based research	4800	4,000	71	15	March 2017

TABLE 5 *Summary of different phases of study and respondents*

This process resulted in an unordered collection of 4,800 'sustainable' cases. It became apparent that, roughly, a 20% overlap existed between the various lists and, following de-duping the lists, a 'definitive list' of 4,000 organisations emerged. This list was subsequently screened using the same criteria[6] used to select organisations for in-depth interviews. This produced a refined list of only 71 organisations that potentially had a circular business model. All 71 were approached with 15 of these being interviewed. Therefore, the national questionnaire and the desk based research generated 37 in-depth interviews in total. The reports of these 37 interviews produced a manuscript of roughly 74,000 words with an average of 450 words per page. This results in a book of over 210 pages.

6 Three main criteria were used: 1. Is the organization closing a cycle or directly supporting the closing of a cycle? 2. Is the organization using a different revenue model than the common 'sale and rent' models, e.g., buying back used products? 3. Is the organization actively cooperating in closing the cycle with either its customers, suppliers, or both?

Pizza sessions

Step by step, the questionnaire results and the growing collection of interview reports were subjected to intensive debate in three so-called 'pizza sessions'. In these sessions, the entire research team would present the key aspects of the cases with respect to the five building blocks of circular business models. They were examined facilitating the in-depth comparison of the 37 interview cases. The patterns and insights that emerged from these discussions were also systematically captured in the form of written reports. In particular, the links between the various cases and building blocks of the circular business models became clearer. This entire process unfolded over a period of a few months.

Reach

The publicity campaign to recruit national survey participants resulted in a large number of communicative expressions (over 1.2 million). Nonetheless, the number of survey respondents (c.900 of which 275 were usable) does not guarantee that all of the businesses involved in circularity within the Netherlands have actually been reached. It is a possibility that there are excellent cases that did not respond to the call to participate or are not featured on the available public lists. This implies that the national study is likely to have mainly reached businesses to which the subject of the CE appeals and has motivated their participation in the survey or in-depth interviews.

Validity

Of the 1,400 responses to the pilot and national surveys, less than 25% of the questionnaires were fully completed. This may suggest that many respondents found it difficult to complete the questionnaire in full. This is despite every effort being made by the research team during the construction and

> "When you remain the owner of the raw materials in the ultimate circular business model, you also want to know what the stock of raw materials is available with your clients."
>
> WIDO VAN DEN BOSCH (LUNE)

"Not only do you need idealists or technicians but also people who can give shape to market forces and who can substantiate the entire story financially and legally."

JAN FIKKEN (ZUTHPEN ENERGIE)

formulation of the questionnaire, which included piloting; the greatest possible attention being given to comprehensibility, structure, and phrasing; and the questionnaire being kept as concise as possible by limiting it to 27 questions[7]. With regards to the validity of the case studies developed from the 37 in-depth interviews during the national study[8]– all interviews were recorded in full, participants were given the opportunity for feedback on the interview reports, and the case studies developed from these were assessed by multiple members of the research team. Moreover, while every effort was made to recruit a representative sample of participants in the national study and the process of analysis of both the survey and interview data was subject to rigorous monitoring, we do not claim that the results presented in the following chapters provide an exhaustive review of circularity, but we do believe we have established a broad impression of the current state of it in the Netherlands.

Participant profiles

Businesses that have participated in the survey are from across the Netherlands. The map shows all of the questionnaire participants with a known location.

7 These questions translate to 126 variables in the used code book.

8 These 37 interviews are the combined sum of the interviews that resulted from the questionnaire, and those that resulted from the desk research. These numbers exclusively relate to the national survey.

- Amsterdam (47)
- Rotterdam (20)
- Utrecht (20)
- Arnhem (15)
- Groningen (13)
- Amersfoort (11)
- Den Haag (11)
- Nijmegen (11)
- Zwolle (10)
- Enschede (9)
- Eindhoven (8)
- Apeldoorn (8)
- Oss (6)
- Wageningen (6)
- Elst (5)
- Veenendaal (5)
- Zoetermeer (5)
- Alkmaar (4)
- Almere (4)
- Duiven (4)
- <3 per Town (329)

The lower limit for marking is four cases per town in order to maintain an overview. An impression is provided of the CE hotspots in the Netherlands. The legend indicates how many participants have completed the questionnaire in each town. The category 'other' features all the questionnaire participants of which three or fewer are registered per town. An interesting detail is that by far most respondents are from Amsterdam. Or: it is striking that most respondents are from Amsterdam.

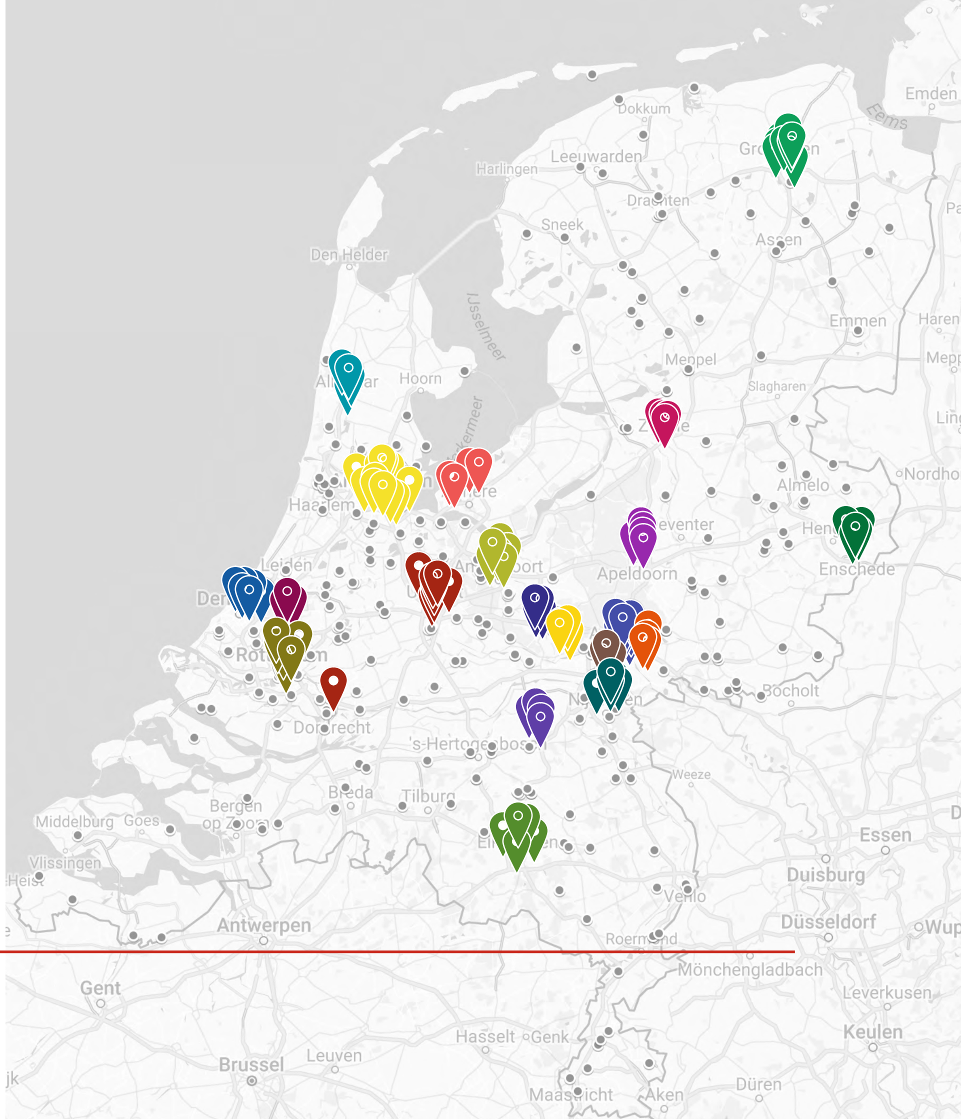


FIGURE 6 *Map of Respondents distributed across the Netherlands*

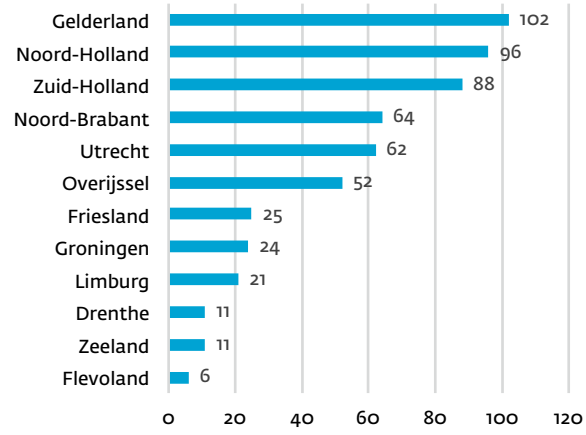


FIGURE 7 *Origin of Respondents per Province*

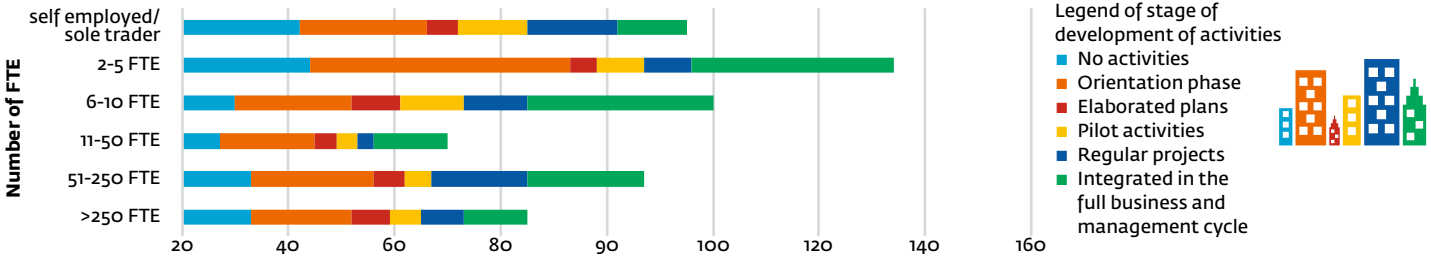


FIGURE 8 *Company Size and Stage of Development regarding the Circular Economy*

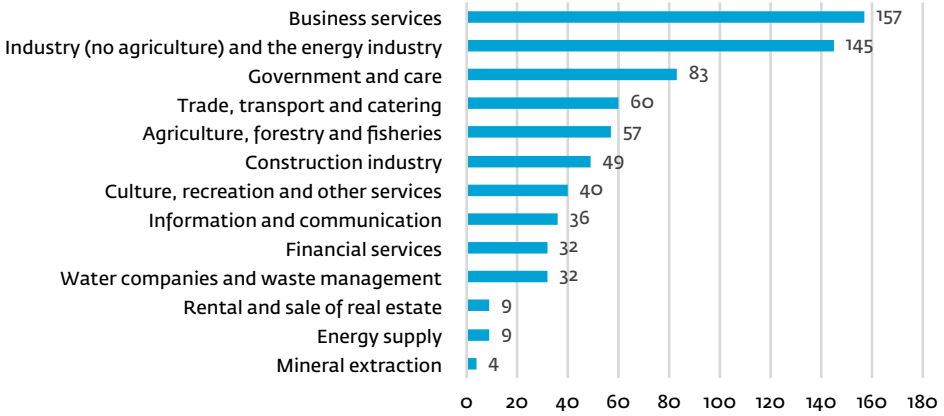


FIGURE 9 *Respondents per Sector*

CHAPTER 7

Building the circular economy

The national study focused on the closing of cycles, the creation of multiple value, and the organisation of this with a suitable strategy and revenue model. The overarching question we sought to answer can be formulated very broadly as 'How are businesses building the CE?'

The national survey produced a rich collection of data on the building blocks of circular business models, and a picture emerged of the organisation of the CE within and between Dutch businesses – which was not available prior to this study[1]. The results from the case studies have complemented this survey data with in-depth insights into how several cases have implemented circularity into their business models.

Within the group of 275 survey respondents, we have classified three subgroups[2], namely: frontrunners, the middle group, and the followers with the latter group consisting of the stragglers.

The group of frontrunners (30 businesses) includes organisations that close a material cycle or demonstrably contribute to the closure of one and apply either an alternative revenue model or a form of value cycle cooperation. The middle group partially complies with these criteria (112 businesses); these organisations focus solely on closing a material cycle. The group of followers (87 businesses) did not comply with any of the criteria.

Our initial focus is on the five building blocks of circular business models as this provides general insights into the state of circularity in the Netherlands as well as stresses the differences and similarities between the frontrunners and the followers[3]. The rationale for choosing these two 'extreme' groups is to discover where similarities and differences between laggards and frontrunners in the realm of circu-

1 As noted in Chapter 7, of the circa 900 respondents, about 275 underpinned the findings presented. It is worth noting that many respondents frequently opted out of the questions related to the five building blocks of circular business models. Potential reasons for this could be that respondents considered the questions to be too difficult, not relevant, or not sufficiently interesting.

2 This classification was informed by the same criteria used to screen case study organisations for in-depth interviews – see p. 38. Added in footnote 28.

3 Focusing on frontrunners and followers provides maximum variance in the analysis of the obtained data. We are interested in understanding what distinguishes actors that have already established a circular business model from those that have just started building theirs. The focus on frontrunners and followers complies with the statistical analysis of 'polar extremes' (Hair, Black, Babin, Anderson, et al., 2006).

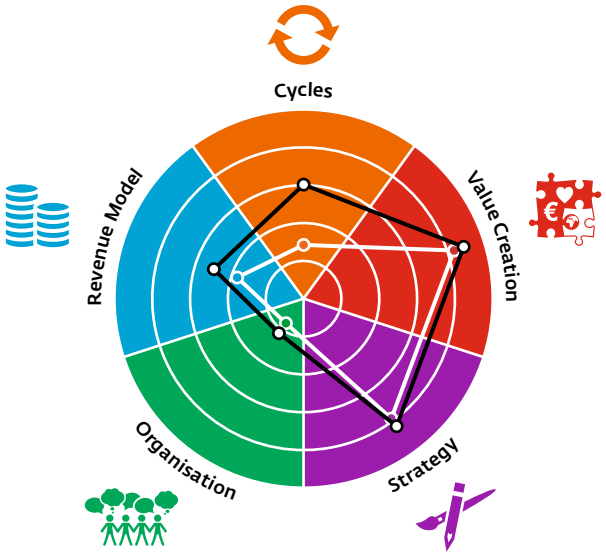


FIGURE 10 *Benchmark for Frontrunners and Followers*

larity lie. In this respect, the middle group is less interesting because this part of the distribution shows less variety. The figure above (Figure 10) indicates a benchmark comparison between the frontrunners and followers in relation to the five building blocks.

Figure 10 shows that the group of frontrunners scores higher than the group of followers on all five building blocks. Thus, the frontrunners seem to have progressed further with the implementation of circular activities than the group of followers. However, the difference between these two groups is not significant for all building blocks. The most significant difference is evident in the crucial building block of cycles where the frontrunners score far higher and thus have made more progress. With regards to further notable differences between frontrunners and followers, frontrunners indicate: 1) They let their network form part of their own organisational model to a greater extent; 2) They seek cooperation with outside parties more often than followers do, and 3) Their circular activities represent a greater proportion of the revenue model.

Based on this comparison, a key conclusion may be drawn: gradations exist in the extent to which business models are circular[4]. While the followers sometimes also have certain elements of circular business models, they are not circular, and even the frontrunners are certainly not fully circular in

4 This empirical finding concurs with the argument outlined in Brennan & Blomsma (2017) that circular business models can be clustered across a spectrum.

all cases, scoring relatively low on average for the building blocks of strategy and value creation.

> "You will only find the shortest route from a linear economy to a circular economy if you work together."
>
> RON VAN OMMEREN (MODULO MILIEUSTRATEN)

In the following paragraphs, we will focus in more detail on the individual building blocks of circular economy business models. We will first zoom in further on the results in the benchmark presented exploring the precise differences between frontrunners and followers. Thereafter, an overview of the full sample of respondents will be outlined in relation to the building blocks in order to provide a broader picture of the actual focus of Dutch organisations in their circular activities.

Cycles

As for the building block 'closing of cycles', questions included the extent to which and the way in which organisations are involved in circular activities. The general picture that emerges shows a clear difference between frontrunners and followers. For the frontrunners, the closing of cycles is an important aspect of their core activities and is likely to explain why they have advanced more in this respect than the followers. In addition, the frontrunners make it clear that 'closing of cycles' is not a 'one man show' to them; rather, it concerns an activity or activities that they perform together with other parties. The data provided by followers show that closing a cycle involves a larger variety of business activities in the value cycle. They indicate to be working on closing business operations simultaneously and thus trying out circular operations on a broad scale in their organisations. In contrast, our data indicates that frontrunners' stringent selection of internal processes and activities involved closing cycles. They are more selective when it comes to determining on which internal processes and activities they focus. It seems that they more carefully select operations for experimentation based on circular principles.

Examining the activities of the total sample, respondents indicate they concentrate the most on (1) a reduction in the use of raw materials and energy and (2) the reuse of waste. The focus is remarkably less on the creation of products with

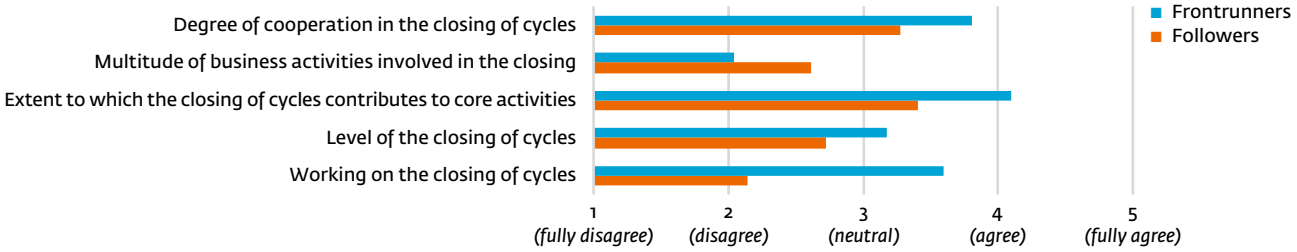


FIGURE 11 *Benchmark for Cycles*

a longer lifespan and a commitment to loaning and/or repairing products.

In short, at this point, the closing of cycles by means of recycling and eco-efficiency represents the most important economic contribution to the CE for Dutch organisations.

This picture is reinforced if we focus on the activities that organisations perform to close their cycles and the way that they cooperate to achieve this. Respondents indicate they mainly apply circular principles for the purchase of (raw) materials and parts. They do so in cooperation with parties within the existing value chain. Cooperation outside their traditional value chains is currently pursued to a lesser extent and, if it occurs, is predominantly focused on the purchase of raw materials and waste recycling.
However, the overall picture is consistent. Cycles are mainly closed within existing networks where recycling and purchase of (raw) materials and parts are central.

"All we have left after construction is two sacks of trash."

HUGO VAN DEN ELZEN (Q-VENTION)

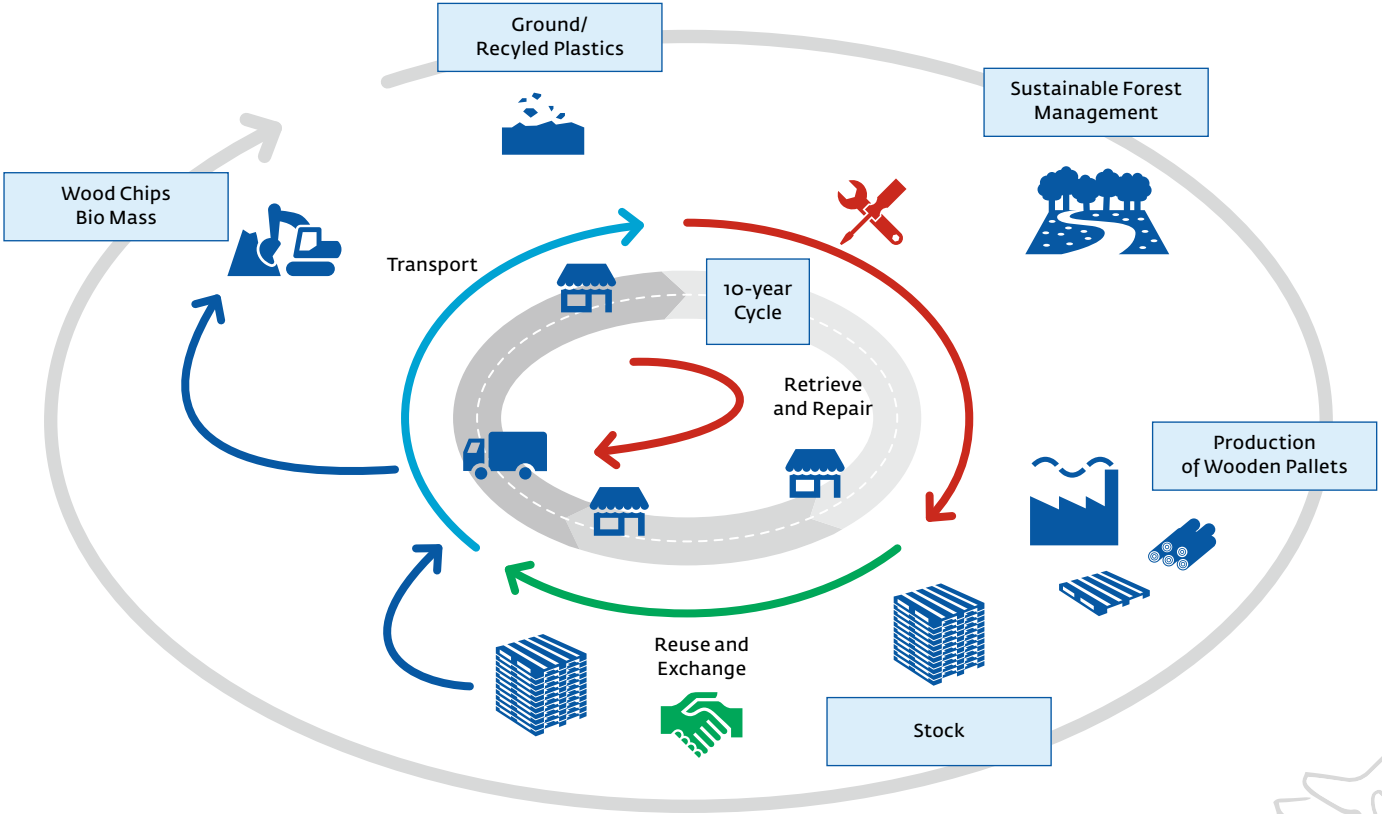


FIGURE 12 *The Circular Economy of Pallets (Pooling Partners)*

Case: Pooling Partners

The business model of Pooling Partners is geared towards the closing of a mono-material cycle, namely, that of (wooden) pallets, facilitated by a pooling system[5]. Pallets are deployed, collected, repaired, and reused. Clients receive their pallets where and when they require them. The pooling system includes pallets that remain the property of Pooling Partners as well as pallets that are the property of clients. Pooling Partners takes care of 'redeployability' of both their own and client-owned pallets. Pooling Partners strives to reuse pallets as much as possible and invest in the repair of the them in order to prolong their lifespan.

When these pallets can no longer be used or repaired, the materials are reused to the greatest possible extent – strategies include shredding the pallets into wood chips which can be used as biomass, as soil cover, or as compost.

Pooling Partners has an annual turnover of over 300 million euros based on a product-as-service model: not only pallets but 'pallet services including logistics' are sold. The pallets represent value for this focal organisation, and their activities are geared towards preserving this value for as long as possible.
From an organisational perspective, a great deal has changed within Pooling Partners in order to facilitate the closing of cycles. Pallets were originally only produced and sold with staffing expertise being aligned with this. However, the organisation of a mono-material closed loop imposes entirely new demands. Currently, the organisational focus is on data analysis, the optimisation of transport movements, and on efforts to prevent leakage; in other words, to avoid losing pallets. The closing of this material cycle has resulted in a considerable change to the role of employees requiring entirely new skills development.

The business model also clashes with existing EU regulations as the current recycling guidelines (European Union, 1994) require 30% of pallets to be recycled with this figure likely to increase to 70% in the years ahead. The reuse of pallets is not currently covered by the recycling guideline which could ironically contribute to the destruction of hundreds of thousands of pallets that are currently used for longer. Thus, well-intentioned regulations created with the old linear economy in

5 Pooling is the grouping together of resources for the purposes of maximising benefits and minimizing risks to users.

mind have the potential to undermine this circular business model. This illustrates that one cannot apply generic regulations to the circular economy without the risk of creating unintended consequences.

Value creation

The building block of 'value creation' included questions regarding what value(s) the business creates and to what extent multiple value is created. Frontrunners and followers generally do not differ significantly in terms of the extent to which they create multiple value. To a slightly greater extent, frontrunners indicate they are committed to achieving ecological and financial value. They do so by means of recycling and reuse. However, followers are mainly committed to reducing the use of raw materials and energy and appear to be slightly more focused on the social value they can achieve with this. However, these differences based on averages of the various groups are minimal and not significant.

However, for all of the respondents, there appears to be a clear connection between the various forms of value creation and circular activities. The organisations who participated in this study are clearly working towards social and ecological objectives and not just trying to achieve profits.

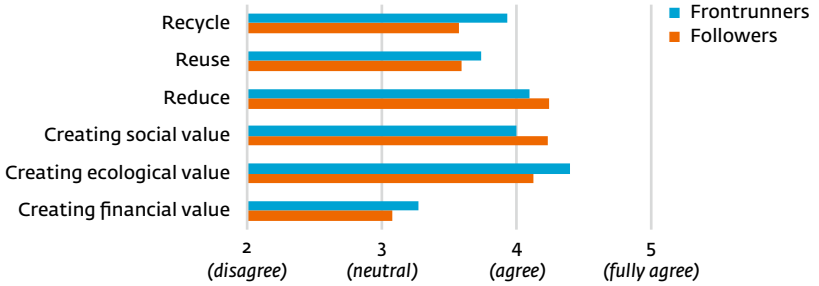


FIGURE 13 *Benchmark for Value Creation*

When it comes to social objectives, it is about gaining more knowledge and developing skills, about cooperating with as many stakeholders as possible, and solving social problems. Improving the environment is the ecological objective to which there is commitment. Financial objectives do play a role but to a far lesser extent. The respondents try to achieve these multiple objectives by committing themselves to a further reduction in their use of materials, and efforts are made towards recycling and giving raw materials another purpose.

We argue that respondents broadly pursue multiple value creation through circular activities. Values seem to be mutually reinforcing for these organisations to a significant extent. Moreover, it is worth noting that the pursuit of various objectives is not equal to pursuing profit. The respondents appear to have disconnected making a profit from the pursuit of ecological and social objectives.

Finally, the closing of cycles (the findings related to the first building block) are strongly connected to achieving ecological values. This is not surprising as the closing of cycles is, first of all, about reducing raw material use and the generation of waste.

"The most important wish is that the majority of the people realise what environmental crime they inflict on the earth because that simply is the case; it really is the case. There should be a cultural change, a change of direction. And start as early as in primary education!"

HUGO VAN DEN ELZEN (Q-VENTION)

In short, the current state of the CE in the Netherlands is basically a combination of a recycling economy and an economy of eco-efficiency with a clear focus on environmental objectives and, to a lesser degree, on profit. The lesser focus on profit may perhaps result from the way in which the survey question related to the building block of value creation was phrased whereby financial value creation was assumed to be a fact virtually irrespective of the questions about circular business models.

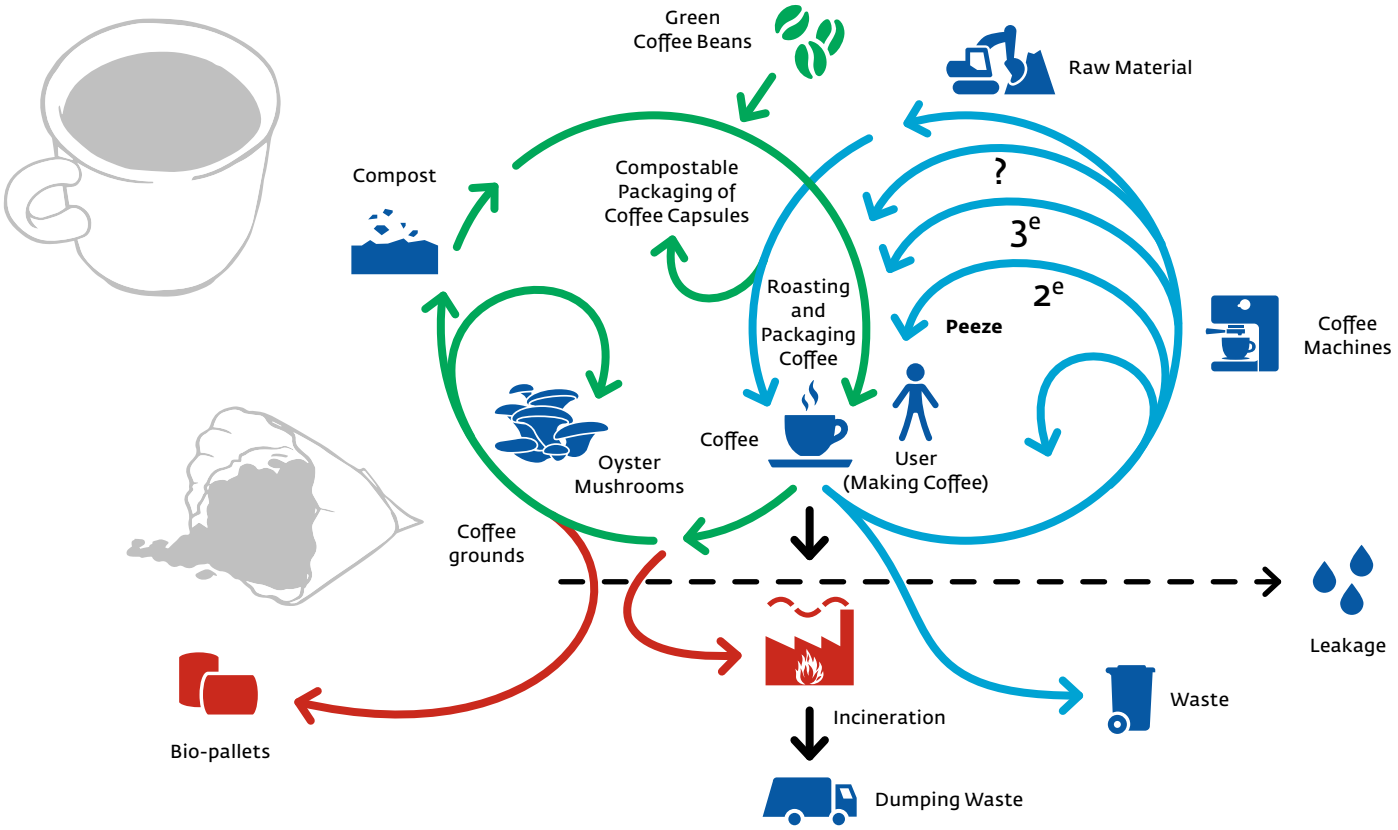


FIGURE 14 *Sustainability throughout the entire Chain (Peeze)*

Case: Peeze

A special example of the creation of multiple value by means of the closing of cycles can be found with Peeze coffee roasters. Social value is achieved in close cooperation with coffee manufacturers in order to guarantee good working conditions on the coffee plantations. The company creates ecological value by exclusively working with coffee from certified plantations that were not built at the expense of the rain forest, by roasting coffee in a climate-neutral manner, and by reducing packaging material or even eliminating it by using renewable and compostable packaging. The financial success of the business to date underlines the creation of financial value.

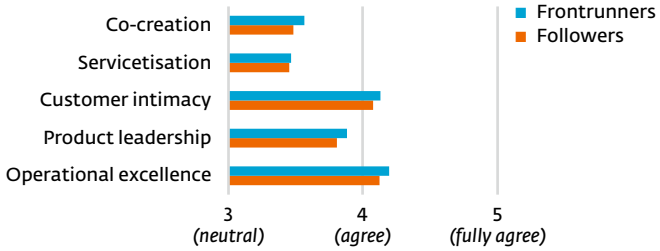


FIGURE 15 *Strategy benchmark*

It is cases such as Peeze that are flagbearers, which persist in spite of the fact that there might be less profit, creating as much multiple value as possible while advancing the circular economy.

Peeze develops ecological value creation in both their technical cycle and in a biological cycle. On the sales side, a technical cycle is closed by not selling coffee machines but offering them as a service – an example of the shift towards services. The biological cycle consists of the ability to decompose the coffee itself. Of greater interest is Peeze's development of compostable packaging of the coffee capsules which means that the separation of materials will no longer be required for the decomposition of materials to occur safely.

Peeze's commitment to operate in a sustainable manner on all fronts illustrates how values can reinforce one another. In a market where competition mainly occurs based on price and a cup of good quality coffee is becoming increasingly

important, this combination of value creation marks Peeze out from other coffee roasters. The long term is at the core of Peeze's corporate strategy, and it is cases such as Peeze that are flagbearers that persist in spite of the fact that there might be less profit in return, creating as much multiple value as possible while advancing the CE.

Strategy

With regard to the 'strategy' building block, respondents were asked to elaborate on their most important strategic commitment within the context of the CE. Overall, we found there to be barely any difference between the strategies adopted by frontrunners versus followers. The frontrunners only use certain circular strategies slightly more often in comparison to followers, but the differences are minimal and not significant. What is striking is that, across all of the respondents in the survey, just a small number appear to only use strategies that could be argued as theoretically aligned within the CE such as co-creation and a shift to services.

As the CE is based on the closing of cycles, it was assumed by the authors that organisations would cooperate more with other parties and would jointly seek solutions to problems they encounter along the way. It follows that this would have to be embedded in the strategies adopted by respondents. In addition, while it is often presumed that the switch from a 'make and sell' business model to a service model could enable the implementation of the CE, neither of these assumptions could be corroborated by the questionnaire results[6]. When we examine all of the results rather than focusing on the subgroups, a similar picture emerges. Respondents clearly preferred the established strategies of customer intimacy and operational excellence to other strategies. We interpreted this as indicating that, where cost-effectiveness is concerned, there is a specific focus on using raw materials more efficiently. It remains unclear whether this is inspired by CE considerations or by the idea of cost reduction. What is clear, however, is that, on average, a shift towards services and co-creation are not strategies that tend to be used by the Dutch participants in this study who have embarked on circular activities. This infers that organisations do not appear to opt for a clear interim-strategic direction in order to arrive at a circular business model.

That said, a cross-comparison between activities related to the closing of cycles and the strategic choices made by respon-

6 See Tukker (2013) for a critique of the strengths and weaknesses of product service based business models in the circular economy.

dents reveals a number of linkages. For example, organisations that engage in repair, reuse activities, and manufactured products with a prolonged lifespan also show a clear strategic commitment to designs which preserve value preservation and designs whereby product components (parts) can be re-used for as long as possible. This link is just as strong as the link between the closing of cycles through recycling and the strategic focus on cost reduction and raw material efficiency. These findings illustrate that, when it comes to organisations that are actively engaging in circularity, at a minimum, their closing of cycles and their strategy are aligned. However, we cannot immediately establish a causal relationship here. Rather, what we observe is strategy-in-practice: an incremental discovery of what works and what does not work for the organisation in the context of the CE without the use of a strategy that was thought through in detail beforehand.

Case: WesterZwam

A good example of a clear circular strategy can be found in the WesterZwam case where oyster mushrooms are grown using the waste coffee grounds from restaurants. The oyster mushrooms are subsequently supplied to these same restaurants as well as other places. This is done on a small scale. The organisation was funded via crowdfunding and maintains close contact with its (WesterZwam) ambassadors, referred to as Zwambassadors - making the organisation itself an example of co-creation. The product – oyster mushrooms – have also been co-created in a collaboration between WesterZwam and the local hospitality industry. Thus, the strategy is not just the company's but also an inspiring collaborative story for the hospitality sector.

WesterZwam's core strategy is focused on circularity as evidenced by their choice to generate revenues from various sources – such as growing oyster mushrooms, giving workshops, organising small-scale events, and providing training in growing oyster mushrooms to customers as well as other organisations similar to Westerzwam.

It is striking that an organisation which is relatively small in size is able to close a mono-material cycle together with its partners in the hospitality sector.

Furthermore, WesterZwam has expanded their product portfolio with material cascading occurring in the form of waste coffee grounds from mushroom growing being used as soil for insect farming. They are also exploring the potential of developing the future turn-key delivery of on-site growing units

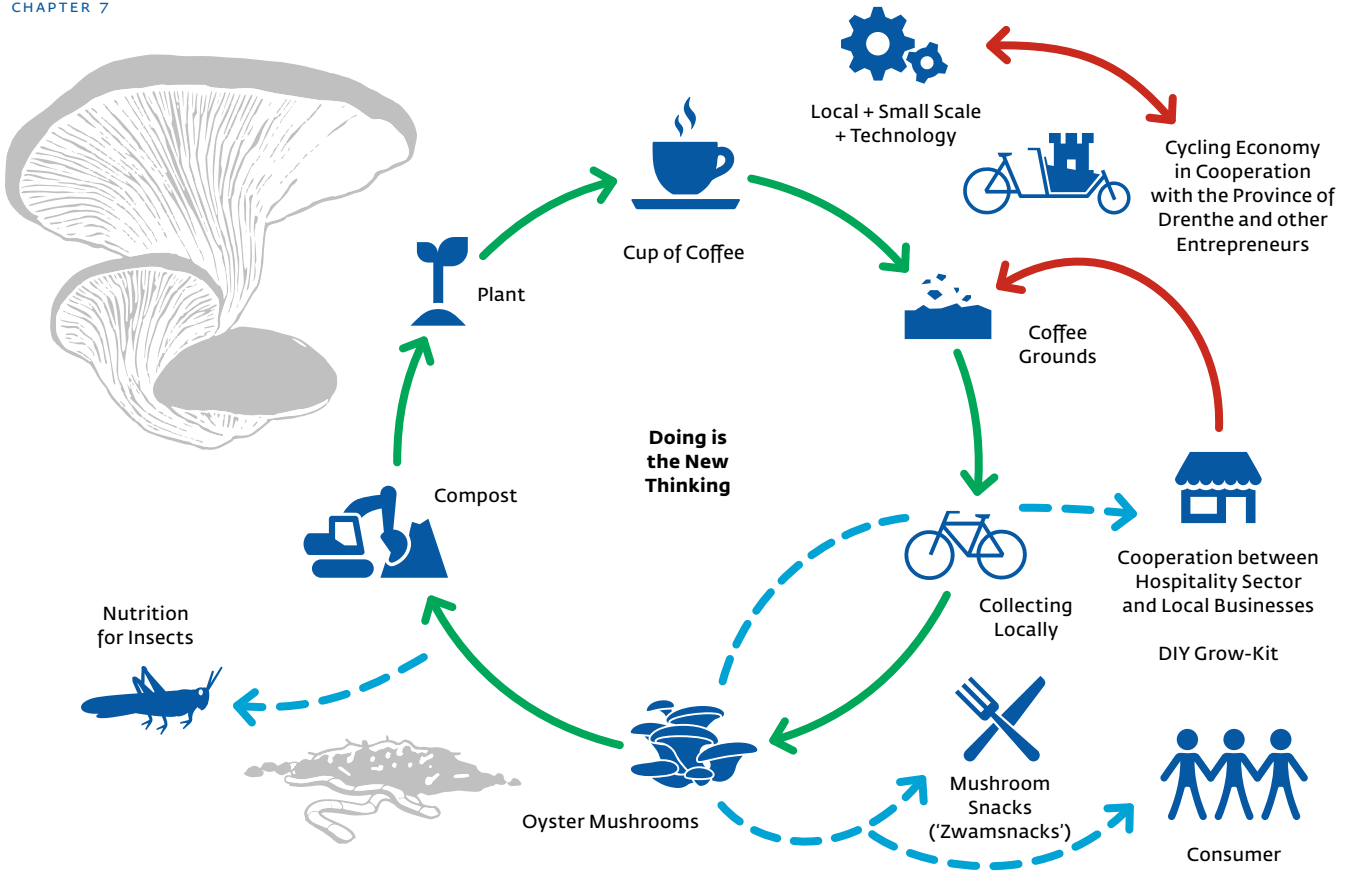


FIGURE 16 *Cooperation instead of Competition (WesterZwam)*

for the hospitality sector. This diversification of their revenue models provides WesterZwam with greater resilience.

When we examine cooperation and dependence, three issues stand out. First of all, a clear agreement was established between WesterZwam and local hospitality entrepreneurs with whom they have both a customer and supplier relationship as they source their key raw material (coffee grounds) and also sell their product (oyster mushrooms). Currently, chain dependence is not seen as a strategic problem. However the possible emergence of other applications that are more commercially attractive of coffee grounds might change this in the future.

Secondly, it is notable that knowledge and skills regarding mushroom growth on coffee grounds are abundantly shared between WesterZwam and similar organisations growing oyster mushrooms. In a way, they are educating their competitors and vice versa. This form of co-creation is a central element of WesterZwam's strategy. Lastly, it is worth mentioning that, contrary to many businesses' strategies, economies of scope at a local scale based on diversification is their main focus rather than developing economies of scale.

WesterZwam has a flexibly designed business strategy whereby, relative to conventional strategy standards, looking ahead occurs in the short term and planning ahead is only done for one year in advance. Given the rapidly changing landscape surrounding the CE in the Netherlands, this could be an indication of an essential but barely explored element of a circular strategy: flexibility and the ability to adapt.

> "We say: 'Let's first grow to ten-thousand users, and then we will see how we can close the cycle'."
>
> TOM LEENDERS (GERRARD STREET)

Organisational models

For the building block 'organisational models', the respondents were asked to reflect on their perceived organisational choices and obstacles for implementing a circular business model. The benchmark comparing the frontrunners with the followers for this building block illustrates two key differences. Unsurprisingly, the frontrunners indicate they experience a lack of knowledge relating to circularity as being less of a problem compared to the followers – as the frontrunners are the only ones with experience in working with circular

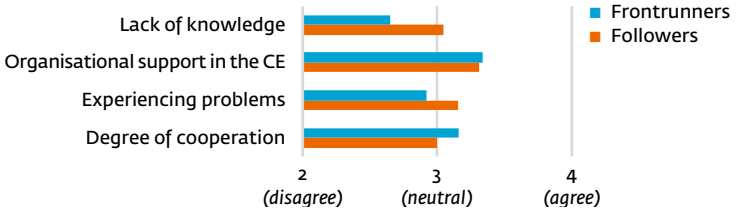


FIGURE 17 *Benchmark for Organisation*

principles. However, the followers tend to experience more problems when it comes to cooperating with others relative to the frontrunners. This finding relates to the earlier observation that the frontrunners close material cycles by working together with other parties. It may be the case that the frontrunners are better able to work together on circular activities; however, further research is required in order to conclusively establish this.

By organising their business model, respondents are likely to be involved in circular activities through further value chain integration or the creation of value cycles. Closer cooperation is sought with suppliers, and there is a commitment to strengthening ties with customers and clients. However, value chain integration itself is not new, rather, it is quite commonplace in the traditional linear economy. In addition to forward and backward chain integration, we also observe cooperation with knowledge institutions[7].

Moreover, it is noteworthy that respondents indicated that cooperation with financiers is currently non-existent. A possible reason for this is that the current method of financing is still insufficiently aligned with circularity. In the traditional economy, value is mainly locked up in assets like produced goods that can be easily traded and claimed by a financial institution for liquidation if necessary. Conversely, in the CE, value is predominantly locked up in (raw) materials and semi-finished products. Within the existing system, the valuation of raw materials and semi-finished products is extremely challenging and thus the associated risks are far higher. Because materials are not easily extracted from products in which these are used or traded as easily as assets, the question is how creditors or financiers will be paid or compensated. In addition to that, the intertemporal way of value creation and changes in cash-flows (for instance, from selling to production as a service revenue models) make financing a

7 Knowledge institutions is a broad term covering universities (including those focusing on applied sciences), institutes for research and applied sciences, vocational schools, and so forth.

bigger challenge.[8] Resolving this challenge is pivotal for the successful transition to a CE.

Case: Vitens

The primary task of Vitens, a public water utility company, is supplying 5.6 million Dutch people with clean drinking water, and their organisation model is a good example of a successful circular partnership. To ensure that they could supply quality drinking water now and in the future, Vitens started exploring solutions that would benefit groundwater reserves, water catchment areas, and the agricultural sector. Vitens recognised that both they and the agricultural sector attach importance to clean and healthy soil.

Vitens relies on the availability of groundwater in order to produce drinking water, and the agricultural sector seeks continued high crop yields. The cooperation between this water utility and the agricultural sector focuses on the deployment of residual flows (such as lime and humic acid) that are released during water purification as natural and high-grade soil improvers. As a result, the demand for pesticides and artificial fertiliser is reduced while crop yields are increased. Simultaneously, groundwater quality is improving along with biodiversity.

Vitens, as a public utility, is bound by the Dutch Drinking Water Act and, because of this, is not allowed to pursue commercial interests. The residual material of the water purification process is sold to agricultural customers, yielding income instead of the costs of disposing the residual flows. Vitens has opted for a market structure independent of subsidy or external financing in order to organise the deployment of its residual flows. Furthermore, Vitens has also invested in certification in order to be able to use its products (i.e., the residuals from water purification) as cattle feed. The investment and costs associated with collecting and deploying the residual flows have become cost-neutral within four years of establishing this strategy.

This partnership, therefore, contributes to soil management that is more sustainable and the protection of groundwater sources in the long term. However, it is not only focused on relationships with farmers – financial partners, landowners, and suppliers in the agricultural value chain also play an important role. Vitens' successful partnerships across multiple levels of society are what make it a unique case – from 5.6

8 See FinanCE (2016) for a more elaborate discussion on financing the circular economy.

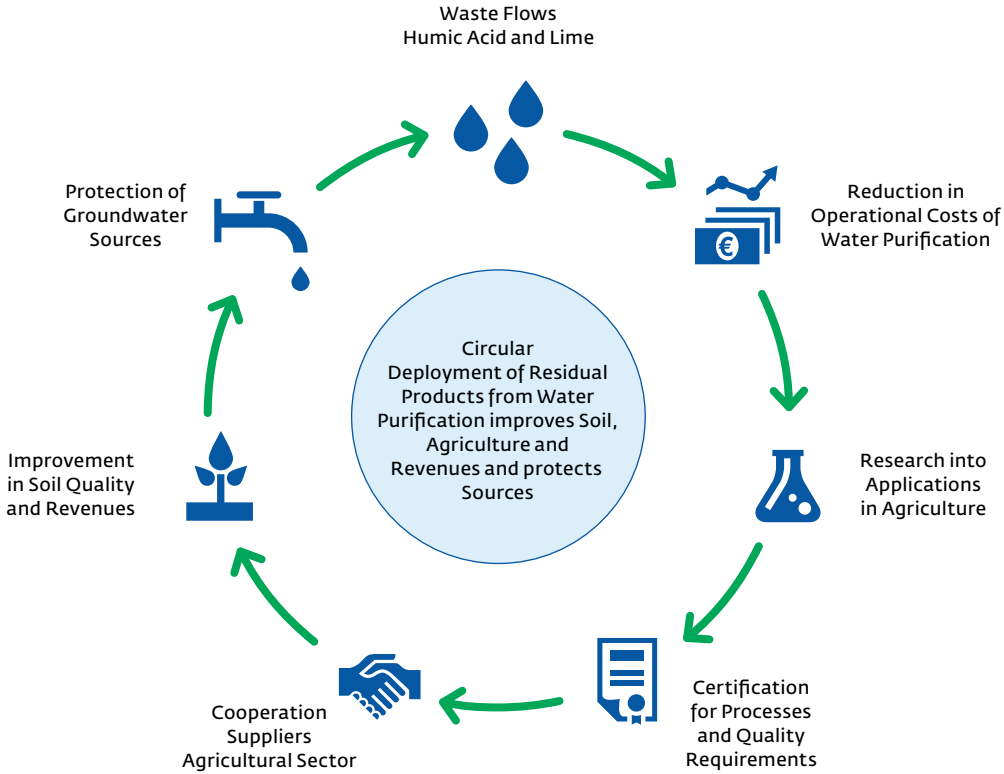


FIGURE 18 *Circular Deployment of Residual Products from Water Purification (Vitens)*

million citizens, farmers, landowners, and local government to Vitens as an organisation: everyone's interests are represented in their partnership-based organisational model.

Revenue models

As for the building block of 'revenue models', respondents were asked to clarify the extent to which they adopted circular revenue models and, if so, what percentage of their total revenue these represented. Revenue from circular activities contributed to a somewhat larger proportion of the total revenue model of frontrunners. Frontrunners also indicated more often than followers that they expect these activities to make up an increasingly important part of their turnover over the next five years. While these differences separated frontrunners from followers, they were not significant within this survey.

What also became evident was that frontrunners achieve their revenues slightly more often from the partnerships within and outside their traditional value chains. That said, followers indicated that they also seek cooperation with others to perform their circular activities, although these are currently somewhat limited relative to the frontrunners.

Moreover, frontrunners manifest a slightly greater variety in terms of the revenue models they use. They indicated that their revenues are generated from a broader mixture comprising asset-sharing, rent revenues, product life extension,

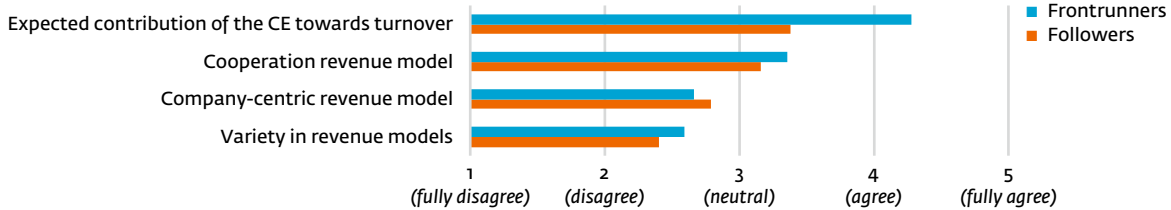


FIGURE 19 *Benchmark for Revenue Models*

subscriptions, recovery of raw materials, and selling the functionality or service that a product provides. However, here too, the difference between the frontrunners and the followers with regards to a variety of revenue models is somewhat minimal. In short, when the share of turnover from circular activities is distinctive, we notice that frontrunners and followers use more or less the same types of revenue models to generate revenues from circular activities.

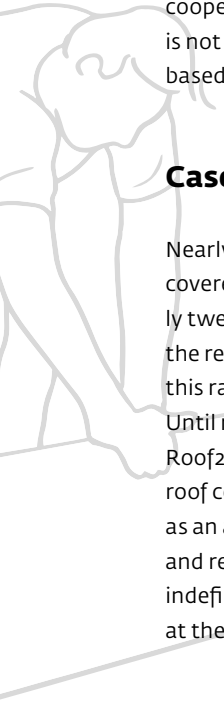
Upon closer examination of the total group of respondents, a previously mentioned phenomenon manifests itself once again. Respondents clearly indicate that they predominantly generate their revenues from the CE through the recovery of raw materials via recycling and upcycling[9]. The second highest source of revenues was generated through activities associated with the extension of the lifespan of products through maintenance and refurbishment, and the third highest source was through facilitating the sharing of assets such as buildings and machinery. With the latter revenue model related to being an intermediary, a platform was offered where supply and demand can meet and reach an agreement on the use of these assets. Respondents indicate that they anticipate the current pattern of revenue models being used is likely to remain consistent in the coming five years.

We found that multiple value creation was embedded in the revenue models used by respondents to only a very limited extent. A number of weak relationships are evident between revenue models based on the recovery of raw materials through recycling and upcycling and the simultaneous achievement of ecological and social objectives. What we conclude from this is that multiple value creation is currently not attached to one revenue model or a series of them. However, the creation of value with partners both inside and outside traditional value chains were associated with the creation of various values such as the development of knowledge and skills. In addition, the pursuit of objectives through cooperation with as many stakeholders as possible can be the basis of a future revenue model as is, for instance, the case with Vitens. Finally, it appears that the businesses that are currently most intensively involved in circular activities (the frontrunners) want to implement a CE-based revenue model relatively

9 Upcycling refers to maintaining and, where possible, increasing the value of materials. This complies with the way upcycling has been used in the work of Braungart and McDonough (2002) as part of their cradle-to-cradle concept. The concept has been refined in McDonough and Braungart (2013). It is not clear if all of the respondents to our questionnaire had the same definition in mind.

quickly and believe this will constitute a major proportion of their turnover in the course of the next five years.

Nonetheless, it appears that organisations are still searching for the best ways to generate revenues from the CE. While cooperation is an important factor in generating revenue, it is not clear how multiple value creation is embedded in CE-based revenue models.



Case: Roof2Roof

Nearly all flat and slightly sloping roofs in the Netherlands are covered with bitumen roofing with a lifespan of approximately twenty years. The revenue model of Roof2Roof is based on the recovery of bitumen roofing and recycling or upcycling this raw material.
Until recently, demolished roof covering was incinerated. Roof2Roof has developed a process in which the old bitumen roof covering is converted into new roof covering or is used as an asphalt improver. As long as the roof covering is applied and removed correctly, the material can be recycled almost indefinitely. The organisation of this mono-material cycle is at the core of Roof2Roof's business model.

Similar to many CE initiatives, a key hurdle that Roof2Roof had to overcome was the fact that the market was not yet ready for recycled bitumen roofing with competitor virgin materials, making it financially challenging to get this model up and running. A combination of a proactive strategy to convince customers of the performance of the substitute product, the rising price of virgin materials, and the fact that the main costs lie in organising the recovery of the bitumen and recycling of this material have enabled Roof2Roof to deliver a successful revenue model.

Moreover, Roof2Roof's journey illustrates that once a profitable method has been found to close a cycle, its development can proceed very rapidly. In the space of three years, Roof-2Roof developed from a pilot project to a nationwide company with two major branches. Growth has been rapid due to the physical services offered by Roof2Roof and also because they have invested in a cooperative network of certified roofers to extend their reach and national coverage.

This illustrates the relationship between the ecological value, financial value, and scale of material recovery: revenues increase as the scale of raw material recovered and recycled increases in a cost-effective way.

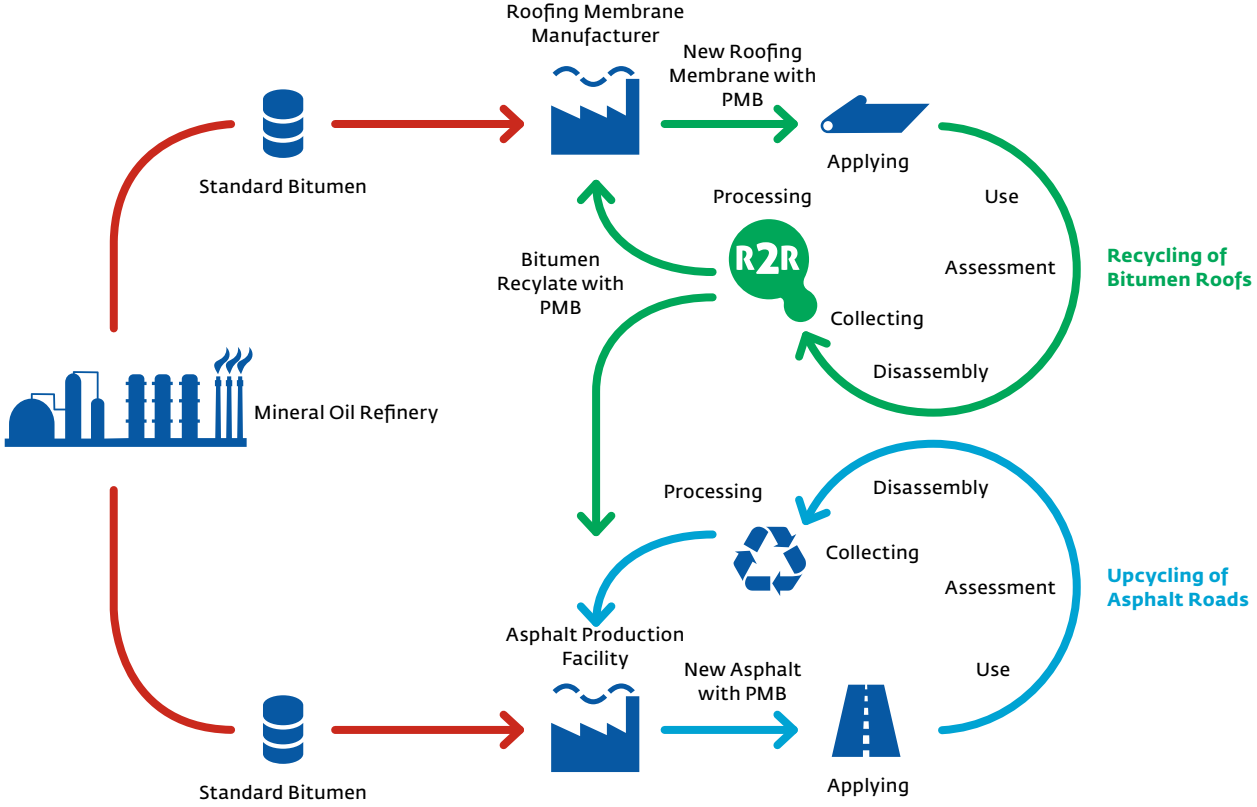


FIGURE 20 *Recycling of Bitumen Roofs (Roof2Roof)*

CHAPTER 8

The circular state of the Netherlands

Key findings of the national research

The CE is advancing. This Dutch national study illustrates that, over the past three years, a large number of businesses (approximately 30% of respondents) have joined and started working on circular activities. In the questionnaire, roughly a quarter of 275 respondents indicated they have been involved in circular organisation for more than five years. The group that has been active within the CE between three and five years constitutes roughly 10% of the sample. These observations cut through the three groups i.e., frontrunners, middle group, and followers identified before.

While these numbers are encouraging, they are still modest in absolute numbers. Hence the title: Early signals make for a very positive forecast ... but not yet summer.

"That it is not possible now is not to say it will not be possible in the future."

BAS GEHLEN AND JOS MANDERS (VAN HOUTUM)

"If you want to progress as a country, you will need a government that takes the initiative to this end. Whether this be a recycling fund, strict laws and regulations, rewards or fiscal incentives, it doesn't matter."

MARTIJN BOELHOUWER (ARN)

An important disclaimer is fitting here: there are substantial differences in terms of the nature, scope, and intensity with which businesses are involved in the CE. We cannot deny that, at this point, circular activities in the Netherlands mainly occur on the first few rungs of the 'Cycles Ladder' introduced in Chapter 2. That said, organisations that have been involved in circular activities for over five years tend to have integrated circularity in their business operations. This is a more or less consistent picture emerging from the pilot, national survey, and in-depth interviews.

The national survey illustrated several clear motives for commencing with the circular enterprise. These are in order

FIGURE 21 *Motives for commencing Circular Organisation*

of priority: (1) ecological and social value creation, (2) the development of an ecologically sustainable business model, and (3) opportunities to innovate – turning traditional value chains into value cycles. This corroborates the findings from the pilot which suggested that organisations predominantly engage in circular activities from the perspective of raw material reduction and the promotion of eco-efficiency. However, the idea that circular activities necessarily lead to social value creation could not be confirmed.

Moreover, the exploration of circularity is perceived by many entrepreneurs as a springboard for creating an adjusted or new business model. This may be indicative of a growing awareness (or desire) to join in the trend to ultimately achieve ecological and economic sustainability. The CE was also perceived as offering various opportunities for improving traditional value chain disruption and innovation. While easily realisable, circular activities tend to concern process optimisation and then varying degrees of chain integration.

This could ultimately result in the joint closing of material cycles and a transformation of value chains into value cycles.

Obstacles to circularity

This study has illuminated a number of obstacles surrounding the closing of cycles. For example, respondents indicated that prices of virgin raw materials are currently (too) low in the present economy. This is considered to be a major impediment to the organisation of a profitable value cycle. This was found to be particularly challenging for respondents from the Dutch construction sector who indicated that the long-lived nature of the products in this sector ('stocks') makes it really challenging to work with CE principles. This does not, however, mean that developing a circular business model is impossible in the construction industry, as has been shown in the case of Roof2Roof.

Many respondents considered the role of the government to be crucial and yet, currently, the Dutch Government is perceived as being too passive so far. This is viewed not only as a missed opportunity but an obstacle to the further development of the CE. Current laws and regulations are experienced as an important decelerating factor in the transition. Within this context, it was commented that many circular initiatives and innovations in the Netherlands are, as a result, developing outside existing legal frameworks (or, to put it slightly stronger, developing illegally).

> "The regulations were created with the old economy, the old linear situation in mind. A circular system requires different dealings, you cannot apply generic regulations to it."
>
> INGRID FABER (POOLING PARTNERS)

More specifically, when it comes to implementing the CE, respondents mentioned the following three key obstacles to the transition (ranked in order of importance):

1 Counterproductive regulations;
2 Value chain parties are not ready for circularity;
3 Lack of financing.

These obstacles infer that legislative frameworks are not yet conducive to creating the CE – the government is perceived as passive and not offering sufficient opportunities for

circular innovation. With regards to collaboration within and between value cycles, existing agreements are viewed as obstructing circular experimentation and thus hindering the transition. In order to overcome this 'lock-in' effect, zones with fewer regulations were viewed as a potential solution. With regards to the lack of financing, we perceive instruments for financing as falling short for entrepreneurs embarking on circular activities because materiality and a shift to services do not align with conventional thinking about risk, assets, and liquidation.

Respondents were also asked what activities they perceived would assist the development of the CE. The following key activities were stated (valued almost equally):

FIGURE 22 *Overview of the Stage of Development of Circular Organisation*

1 Understanding of degree of sustainability of organisation;
2 Support from colleagues in setting up closed material loops;
3 A network for knowledge exchange within a sector.

Businesses that have an understanding of their own degree of sustainability were perceived as better able to develop circular activities. Support from colleagues and knowledge exchange with regards to circular activities within a particular sector were also considered to be of great importance. However, the latter point is at odds with the idea of cooperating with parties outside one's own value cycle as cross-sector collaboration is ultimately a requirement to close loops.

Study limitations

This national study has two key limitations: firstly, the questionnaire was designed to be from a business perspective of the CE and, secondly, the questionnaire did not cater to the consultancy sector nor the perishable goods and consumables sector.

The questionnaire was set up to explore the state of the CE in the Netherlands from the perspective of business. This is the reason why citizens and, somewhat more broadly, the social

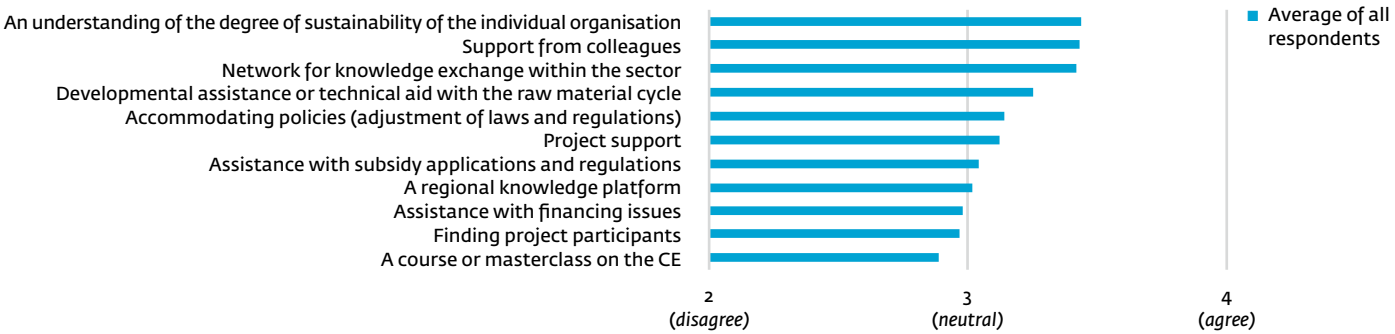


FIGURE 23 *Overview of Requests for Help*

side of the CE were poorly addressed and missing from our findings. A further exploration of the role of citizens and consumers within the CE is justified and recommended particularly with regards to broadening the debate within the CE, discourse related to citizens' and consumers' interpretations of the opportunities, and challenges to implementing the CE as well as implications for labour market developments.

Sectors that were not sufficiently catered to in the questionnaire and effectively outside the scope of this study were the consultancy/business services sector and the perishable goods and consumables sector. Respondents from consultancy work and business services that are geared towards supporting the implementation of circular activities unsurprisingly found it difficult to complete the questionnaire as its focus was on closing material loops and not on service provision. While we recognise that service providers play an important role within the CE, the exact nature of their role as well as obstacles they face were outside our scope. The questionnaire was also not explicitly tailored to the perishable goods and consumables sector (for example, food and drink, fuels, and other elements that are consumed). The exclusion of these sectors raises the questions of where the boundaries lie of what can or should be organised through circular activities, and what are areas recommended for further exploration.

CHAPTER 9

Accelerating the transition

The key question this study sought to answer was "How are businesses building the CE in the Netherlands?" If there is one thing that can be learned from this study, it is that there is no such thing as 'the' CE.

Businesses' circular activities comprise a multi-faceted palette of activities that could all be labelled circular to a greater or lesser degree. Moreover, businesses differ with regards to the nature of the material cycle that they try to close, the degree to which they control this process versus collaboration with partners, and also the scale of material cycling that occurs as a result. To some businesses, the CE is a peripheral phenomenon in their business model (the followers) yet, for other businesses, it represents the core of their value proposition (the frontrunners). A great many businesses are somewhere in between (the middle group).

Our findings make evident that the question – how can the CE in the Netherlands be advanced – has a multi-faceted answer. We contend that, if the CE is to be successfully advanced, it is the task of various actors in society such as businesses, governments, consumers, and citizens to take steps on the "Cycles Ladder" simultaneously and in mutual coordination. Yet, if businesses are positioned on varying rungs of the ladder and potentially on different ladders, co-ordinating collective action that leads to an acceleration of the CE is likely to remain challenging. While the early signals of circular activities increasing in the Netherlands are evident from the exemplar case studies highlighted by our study relative to the linear economy, the CE as an alternative economy is still in its infancy.

The role of business

Our study assumed that organisations are the leading actors in the transition to a CE – stretching beyond the main focus of our survey on commercial business. Non-commercial organisations, incentives, and policies – including community-based initiatives, networks of professionals, unions, quality standards, fiscalisation, amongst others – could also accelerate a transition to a CE, particularly if a long-term perspective is adopted. We found many positive examples of circular business models which illustrates how many Dutch businesses are involved in closing cycles and participating in increasingly integrated value cycles. While these are positive steps towards circularity, it does not necessarily make them circular enterprises. The sobering reality is that many businesses regard themselves as a circular enterprise yet, on closer examination, it becomes

"Decisions we take now must not trap us in the future."

BAS GEHLEN AND JOS MANDERS (VAN HOUTUM)

evident that their activities do not fall under this umbrella. They might have one circular product in a vast portfolio of products or arrange the recycling of a single waste flow while the degree to which the rest of their business operations are circular is disregarded.

Nonetheless, let us interpret the findings from this study in a positive light. If businesses indicate that they are (willing to be) circular, if given the benefit of the doubt, they may still be at the early stage of the transition to becoming a circular enterprise without clarity regarding how they move to the next stages of the process. This interpretation is consistent with a key finding from this study that the organisational task of going from linear to circular is extremely complex for many businesses.
The journey begins with these businesses making their own production process(es), their value proposition, and revenue model circular. Achieving this in collaboration with others is a considerable task with its own set of challenges in and of itself. Our study makes evident that developing a clear circular strategy is usually a step too far for the average business. We argue that the theory that suggests that a circular strategy should be developed before embarking on circular activities is considerably ahead of average business practice in the Netherlands.

Cooperation in the value cycle

One of the key challenges for implementing the CE is cooperation in the chain, or rather in value-cycles. Processing stocks and flows of raw materials in such a way that their use in parts and products are optimised requires multiple parties by definition.

More so than in the linear economy, organisations are bound to one another by material flows. If the waste of one company is the raw material of the other, then there is indeed a market but, with just two participants, not a very resilient one. If one of the two cannot deliver, the business model will fail. The scale-up and/or replication of circular business models will generally be required to prevent good circular initiatives from dying prematurely. At the heart of this is de-

veloping a coherent revenue model between multiple parties ensuring turnover is achieved and costs, revenues, and risks are shared appropriately between those involved.
The lessons learnt in aid of overcoming these difficult challenges include:

- Circular organising starts with the recognition that there is dependence on cycles;
- Circular organising starts with the search for parties with whom a cycle may be closed;
- Circular organising is not a marketing tool; it is about an alternative form of organisation;
- Achieving success requires the targeting of efforts at the appropriate scale: for some business models, a local scale may work best while, for others, only a large-volume oriented scale is viable;
- Sometimes it is possible to develop circular activities with small steps; in other cases, a new business model is required from the outset;

"An earthquake with a magnitude of 11.0 should occur both with the government and the banks."

RIK RUIGROK (HERSO)

- Answer the following strategy question right from the start: Where are your organisational efforts targeted, and is the overarching goal on the horizon actually shared by your partners?
- Accept the predominantly linear environment but think circular. A large proportion of the economy still works in a linear way – which you have to deal with. Seek to stretch the boundaries acknowledging and working from where current reality is;
- If clients do not understand your business model, is it is not a good model or you are not communicating it well. It is not sufficient to simply state that clients fail to grasp it. Present a better plan or product that your clients can get excited about.

The role of the government

Respondents in our study considered the role of the Dutch local, regional, and national government as twofold: on the one hand, they envisage the government as actively stimulating the emergence of a CE through new laws and regulations. On the other hand, they perceive a role for government in removing regulations that stand in their way, for example, those surrounding waste transport and use.

"Practise what you preach!"

WIDO VAN DEN BOSCH (LUNE)

Moreover, respondents indicated that they expect a stable multi-year policy related to the circular economy from the government as well as expecting it to fulfil an exemplary role itself. Structural adjustments of laws and regulations that could stimulate a CE can be broken down into a number of types.

First of all, price incentives such as higher taxation on fossil fuels or subsidies on circular activities could provide a stimulus for an accelerated transition. Secondly, it would help if competition authorities were to engage with the circularity discourse. Sometimes, agreements between producers regarding standards will be required in order to enable the creation of markets and cooperation in value-cycles. This will restrict competition. Allowing these types of agreements (even if only temporarily) would advance the transition to a CE.

Thirdly, above all, the Dutch Government could play a key role as a 'launching customer' by always giving priority to circularity in public procurement. With an annual budget of roughly 60 billion euros to be spent by national, regional, and local governments across the Netherlands, the fulfilment of this role could have significant impact. We recognise that this cannot necessarily be achieved overnight but, in the decade ahead, a great deal could be achieved with the support of a stable policy that is based, for example, on annual doubling of spending in this respect.

The dual role of consumers and citizens

What becomes clear from this survey and from the wider social debate on the CE is that active engagement is not envisaged in terms of (the dual role of) consumers and citizens[1]. This is striking, to say the least, as it results in consumers being given a licence to refrain from participating in the CE. However, consumers play a key role in the closing of many cycles. Whether it is about joint production (prosuming), returning goods for repair, or actually wanting to participate

1 For instance, the Dutch national program Circular Economy (Ministerie van Infrastructuur en Milieu, 2016), which is currently the leading policy document of the Dutch government on the circular economy, recognizes the role of citizens in the circular economy. This is perceived solely from a consumer perspective. The main message is that consumers need to change towards more circular behaviour. Their role is hence a passive one. Furthermore, hardly any direction of what kind of behaviour they should adopt is provided.

"With us it is just in our genes, we were always like that a little."

INGRID FABER (POOLING PARTNERS)

in new revenue models such as product-as-service models, consumer engagement is required everywhere. We also observed that, currently, many businesses regard consumers or citizens as a stumbling block of their business model.

At the same time, current public debate in the Netherlands suggests there are large groups of citizens who plea for an alternative green economy, i.e., a CE. Considering this, perhaps it is also up to citizens in their role as consumers to proactively do something about this and shape the transition – starting with small steps.
For example, if consumers were able to make a better assessment of what a product costs them throughout its lifespan, they might be tempted to buy a circular product simply out of linear financial considerations. This starts with a clear guarantee period for products as well as an understanding of repair costs, options for disassembly, et cetera. In this case, it would be beneficial to have a government that would make this type of consumer information mandatory for manufacturers to provide. Calls for insight into the real costs of a product in terms of manufacture and use are growing ever louder and may contribute towards the transition to a CE.

Transition brokers

In our study, we encountered many parties who were not circular themselves but predominantly provided advice and insights to businesses wanting to become circular. We also identified a distinct group of intermediaries who coordinated supply and demand of material flows at a regional level – organisations we refer to as the 'brokers of the CE'. Such regional organisations, rather than developing markets, perform a social service linking together organisations in a material cycle. This role may be required in contexts where a market is unable to be efficient because a large volume of material flows is required for it, or regulations demand that material flows are handled and processed in a coordinated manner. These regional organisations may not always be required, for example, when markets become suitably mature or the complex organisational task of cycling materials

between multiple parties becomes common practice but, in the meantime, play a key role in facilitating the circular flows of materials and are necessary transition brokers. In addition, such "brokers of the CE" could play a key role in the development of regional and supra-regional material banks and material passports for long-lived products (e.g., buildings, roads, and washing machines).

Reflecting on 'optimal lifespan'

The ambition of the CE is that products last longer, and materials are utilised in the best possible way. That said, at some point in time, technological advances render products economically bereft of value. Thus, while it may be technically feasible to keep products in 'circulation', this is neither economically appealing nor feasible.

So, in some contexts, it is not recommended to keep products in 'circulation' for as long as possible because it can block innovation. The pursuit of a product life extension or 'durability' at all costs could hinder innovations related to energy efficiency, material substitution, and better material (re)use.

This is why a wider reflection on the 'optimal product lifespan'[2] is extremely pertinent particularly in the context of electronics. If it is known that, for example, smartphones are no longer economically relevant after two or three years because they have been overtaken by new, more innovative models, then they should be designed so that it is easy to (re)use the materials and parts of which they consist. An implication of this is that, in addition to 'optimal product lifespan' considerations the optimal lifespan of both parts and materials also need to be considered. This would lead to, in appropriate contexts, a short product cycle combined with a material cycle that is as optimal as possible.

Expanding horizons

All in all, this leads to a society that what we use maintains its value as long as possible. If this national survey shows one thing, it is that we still have a long way to go to achieve this

2 The concept of 'optimal product lifespan' was coined by Bakker et al (2014) who, along with Gutowski et al (2011), argued that durability is not always the best solution from an environmental perspective.

idea. At the same time, this survey also shows a promising start. However, being realistic, the circular economy for now is, at best, complementary to the linear economy. In terms of scope and size, it has hardly taken off. Given an international and European context in which policies and the economy at large discover more and more the importance of circularity, some foundations have been laid. Meanwhile, we do observe that a dominant institutional framework in terms of fiscal and legal structures, supporting policies, market mechanisms, et cetera, is in place still favouring the linear economy.

In the last decade, the European Union has stimulated a variety of challenging issues such as waste management, sustainability, inclusivity and, more recently, the circular economy through a variety of policies and grant schemes. Noteworthy are the Timmer Package "Closing the loop: Circular Economy Package to boost competitiveness, create jobs and generate sustainable growth" (European Union, 2015) and the two-year Work Programme 2018-2020 for Societal Challenge 5 within the EU H2020 Framework programme (European Union, 2017). Especially the latter, with a total grant size of 1 billion Euros, promises to provide a boost in this field. Still, it is in its early days.

At the end of this study, it is appropriate to signal that studying the circular economy within the confines of one single nation is insufficient for addressing many of the interrelated challenges when it comes to closing material cycles. Many of these cycles operate across nations and continents and involve a plethora of stakeholders from different countries and companies operating in totally different legal settings. Ultimately, closing international cycles necessitates an integrated approach despite the complexity it reveals. For starters, this can be observed in coffee, palm-oil, and emerging textile sectors. However, we have to be honest, at this moment, this is just the prelude to a beginning.

During 2016 to early 2017, a national study was conducted exploring the state of circularity in the Netherlands with a particular focus on Business Models for Circular Economy (BMCE). This built on a pilot study conducted in the Dutch provinces of Gelderland and Overijssel. This publication reports our findings. In total, over 900 questionnaires were received of which 275 were rendered suitable for full analysis, 37 interviews were conducted, and over 4,000 business case studies from desk research were subjected to further analysis.

The starting point of the circular economy is organising cycles around raw materials, parts, or products. This is almost always done by several parties. Our research demonstrates several motives for circular activities. In order of importance, these are: (1) the creation of ecological and social value, (2) the development of a circular business model, and (3) opportunities to innovate - turning traditional value chains into value cycles.

Our study demonstrates that many Dutch organisations consider closing cycles to be a complex organisational task for which they are not yet ready. The search for methods of closing loops is conducted primarily in-house and in collaboration with known parties; outsiders are rarely considered. Circular activities mainly take place through recycling, saving energy, and reduction in the use of raw materials. Businesses struggle to create a specific strategy for their circular activities that mostly remain based on existing revenue models. Organisations appear to be clinging to the traditional economy on these two latter elements, inferring that major steps are still required to be taken towards a transition to a circular economy. Moreover, it suggests that the theoretical development of the circular economy concept is far ahead of organisational practice.

Organisations tend to predominantly focus on a recycling-economy and improving eco-efficiency. Respondents cite the following three impediments to circularity: (1) counteracting regulations, (2) value chain parties are not ready for circularity, and (3) a lack of funding. These obstacles illustrate that the frameworks within which organisations operate are still insufficient for the implementation of the circular economy. Ultimately, the transition to a circular economy is about the preservation of value associated with everything we use in society for as long as possible.

In summary, seven key conclusions can be drawn from our findings:

- In practical terms, the circular economy only has a limited foothold in the organisational landscape in the Netherlands which is still a predominantly linear environment despite a well-established and lively debate.
- To many organisations, the closing of cycles is a complicated organisational task for which they are not yet readily equipped; it is about an alternative form of organisation.
- Value creation is predominantly limited to recycling, energy savings, and raw material reduction, the success of which requires targeting efforts on the appropriate scale.
- The dependence within cycles causes businesses to struggle when designing specific strategies for a circular enterprise within their organisation.
- Options to close cycles are primarily sought in-house and in cooperation with familiar parties. Even though outsiders are essential for closing cycles, they tend to remain excluded.
- Circular activities often remain based on existing revenue models, although sometimes a new business and revenue model is required from the outset of circular organising.
- This study shows that thinking about the circular economy is far ahead of organisational practice where the overarching goal of organisational efforts is rarely shared by partners.

As it stands, the circular economy as the primary economy or even as a complementary economy is in its infancy. For a small number of organisations, circularity is their core business while, for the majority, circularity remains a fringe element of their overarching business model. While Dutch businesses are making a promising start and these early signals make for a very positive forecast, the transition has only just begun

CHAPTER 10

Appendices

During the period of October – December 2016, an extensive publicity campaign to recruit national survey participants was rolled out and resulted in a large number of communicative expressions (over 1.2 million). A broad sweeping approach was adopted because it was not clear beforehand where companies would be found that are involved in the CE in the Netherlands. For this reason, a mixture of networks, associated newsletters, and online publishers were used (for example DuurzaamNieuws, DuurzaamOndernemen, MVO Nederland, etcetera). For historical reasons, our focus was predominantly on green/sustainability oriented outlets, however, a broadening towards general management and the financial sector was consciously sought.

As it cannot be verified how potential respondents are connected to several networks, there is, by definition, redundancy inherent in the publicity campaign communications. Thus, potential respondents could receive a call to participate via various channels with all of the associated positive or negative consequences. Nonetheless, the size of the sample (c.900) does not guarantee that all of the businesses involved in circularity within the Netherlands were actually reached. It is possible that there are excellent cases that neither responded to the call to participate nor are featured on the available public lists of circular business models. This implies that the national study is likely to have mainly reached businesses to which the subject of the CE appeals which has motivated their participation in the survey or in-depth interviews. (See Overview of cases of the circular economy in the Netherlands).

Company	Business Location	Interviewee
ACE Re-use Technology	Horst	Eduard Lebbink
AND Cheesetrade BV	Leeuwarden	Dave Bakker
ARN Recycling	Amsterdam	Martijn Boelhouwer
Boanova	Woerden	Riccardo de Waal
Bundles	Amsterdam	Marcel Peters
Canon	Amstelveen	Walter Tobé
Desko	Amsterdam	Tessa van der Meer
Dutch Spirit	Arnhem	Erik Toenhake
Dutchawearness	Nijmegen	Rien Otto
Faber Halbertsma Groep	Eck en Wiel	Ingrid Faber
Foenix	Apeldoorn	Arjin Jans
Gerrard Street	Utrecht	Tom Leenders
Gispen	Culemborg	Rick Veenendaal

Company	Business Location	Interviewee
Hermeta	Asperen	Estéban van Zeijl
Herso	Loosbroek	Rik Ruigrok
ITC BV	Amsterdam	Paul Jacobs
Logge	Nieuwegijn	Jaap Logge
Lune	Hoogeveen	Wido van den Bosch
Modulo Milieustraten	Soest	Ron van Ommeren
Mushbin	Amsterdam	Wesley de Bie
Paperfoam BV	Barneveld	Mark Geerts
PaperWise	Aarle-Rixel	Peter van Rosmalen
Peeze Koffiebranderij	Arnhem	Timmo Terpstra
Philips	Eindhoven	Mirjam van Laarhoven
Q-vention	Uden	Hugo vd Elzen
Recover-e	Nijmegen	Jan-Paul Kimmel
Refood	o.a. Almelo	Johan Nobbe

Company	Business Location	Interviewee
SNEW	Vught	Martijn van Engelen
Sugar Tray	Almelo	Carina Zwaga
Tshared	Zutphen	Jeroen van der Heide
Ubbink	Doesburg	Jasper Klomps
Van Gansewinkel	Eindhoven	Hanneke Agterhuis
Van Houtum	Swalmen	Bas Gehlen / Secr. Marleen Gommans
Van Hulley	Groningen	Jolijn Creutzberg
Velto	Zoeterwoude	Sven Bodegraven
VlakglasRecycling-Nederland	Zoetermeer	Cor Wittekoek
WesterZwam	Wapserveen	Eva Flendrie
Ynova Innovation Company BV	Sneek	Jacqueline Hofstede
ZutphenEnergie	Zutphen	Jan Fikken

This study attempted to create an overview of the most relevant CE businesses in the Netherlands with the greatest possible care. The list of questionnaire respondents was used as well as the publicly available lists and lists made available to us featuring businesses that indicate they are involved in various forms of sustainability.

As reflected in this overview (approximately 100 companies compared to the more than 4,800 companies in the initial inventory), it appears that there is still a gap between a large group of 'CE shouters' and a small group of 'CE doers'. We also suspect there are many 'CE doers' outside the aforementioned sources who do not shout out loud but just do it. We would, therefore, like to invite all of these CEs that are not currently reflected in this overview to come forward and make themselves known by adding themselves to our online database on our website (https://www.circulairebusiness-modellen.nl).

Name	Location	Website
A green story	Zoetermeer	www.agreenstory.nl
A van Liempd	St. Oedenrode	www.avanliempd.nl
ACE Re-use Technology	Horst	www.acewikkeltechniek.nl
Akoestiek Fabriek	Rotterdam	www.akoestiekfabriek.nl
AND Cheesetrade	Leeuwarden	www.andcheesetrade.nl
Arn	Tiel	www.arn.nl
Attero	Bergen op Zoom	www.attero.nl
Auping	Deventer	www.auping.com
Awearness Fashion	Arnhem	www.awearness-fashion.nl
Benthem Trade	Vollenhove	www.vbvoer.nl
Binbang	Utrecht	www.binbang.nl
Bio 4 life	Bleiswijk	www.bio4life.nl
Biofutura	Rotterdam	www.biofutura.nl

Name	Location	Website
BlackbearCarbon	Nederweert	www.blackbearcarbon.com
BMA ergonomics	Zwolle	www.bma-ergonomics.com
Boanova	Woerden	www.boanova.eu
Bundels	Amsterdam	www.bundles.nl
By Mölle	Dalfsen	www.bymolle.com
Canon	Amstelveen	www.canon.nl
Capeshield	Amsterdam	www.capeshield.nl
Cartridge Europe	Breda	www.cartridge-europe.com
Cementbouw	Cruquius	www.cementbouw.nl
Circuwear	Gorinchem	www.outfit.nl
Closing the Loop	Amsterdam	www.closingtheloop.eu
Coolrec	Eindhoven	www.coolrec.com
Desko	Amsterdam	www.desko.nl
Desso	Waalwijk	www.desso-businesscarpets.com
Dijkhuis aannemers-bedrijf	Hardenberg	www.dijkhuis.nu
DSM	Heerlen	www.dsm.com
Dutchawearness	Nijmegen	www.dutchawearness.com
Dutchspirit	Arnhem	www.dutchspirit.com
Duurzame Bedrijfskleding	Leeuwarden	www.duurzame-bedrijfskleding.nl
Eeko group	Deventer	www.eeko.com
Elvis and Kresse	Amsterdam	www.elvisandkresse.nl
Pooling Partners	Eck en Wiel	www.poolingpartners.com/nl-nl/
Fairphone	Amsterdam	www.fairphone.com/nl/
Fiberplast	Drachten	www.fiberplast.nl
Foenix	Apeldoorn	www.foenix.nl
Gampet	Goor	www.gampet.nl
GBN	Utrecht	www.gbn.nl
Gerrardstreet	Utrecht	www.gerrardst.nl
Gispen	Culemborg	www.gispen.com/nl/
Green Mobile	Bodegraven	www.telgagroep.nl
GSR	Amsterdam	www.gs-recycling.nl

Name	Location	Website
Hermeta	Asperen	www.hermeta.nl
Herso	Loosbroek	www.herso.nl
Ikea	Amsterdam	www.ikea.com/duurzaam
Indusigns	Amsterdam	www.indusigns.nl
Inspire Work-wear	Arnhem	www.inspire-workwear.com
Interface	Scherpenzeel	www.interface.com/EU/nl-NL/
ITC	Amsterdam	www.itc-accessories.com
Logge Circulair	Nieuwegein	www.loggecirculair.nl
Lune	Hoogeveen	www.lune.nl
Modulo Milieus-traten	Soest	www.modulo-beton.nl
Mosa	Maastricht	www.mosa.com/nl-nl
Mudjeans	Almere	www.mudjeans.eu
Mushbin	Amsterdam	www.mushbin.nl
Natural Plastics	Heemskerk	www.naturalplastics.nl
Natuurkeukens	Driebergen-Rijsenburg	www.natuurkeukens.nl

Name	Location	Website
NS	Utrecht	www.ns.nl
Paperfoam	Barneveld	www.paperfoam.com
PaperWise	Aarle-Rixtel	www.paperwise.eu
Peeze	Arnhem	www.peeze.nl
Pennings	Uden	www.pennings-itrecycling.nl
Philips	Eindhoven	www.philips.com
Plastic & Product Recycling	Swalmen	www.pp-recycling.nl
Proludic	Mill	www.proludic.nl
QCP	Geleen	www.qcpolymers.com
Q-vention	Uden	www.q-vention.nl
Reborn	Amsterdam	www.re-born.nu
Recover-e	Nijmegen	www.recover-e.nl
Refood	Emmen	www.refood.nl
Roelofs	Den Ham	www.roelofsgroep.nl
Roetz Bikes	Amsterdam	www.roetz-bikes.com
Roof2Roof	Borger	www.roof2roof.nl

Name	Location	Website
RotterZwam	Rotterdam	www.rotterzwam.nl
Saneral	Amsterdam	www.saneral.com
SmartCrusher	Oss	www.slimbreker.nl
Smateria	Amsterdam	www.smateria.nl
Snew	Vught	www.snew.eu
Solidpack	Loenen	www.solidpack.eu
Stonecycling	Amsterdam	www.stonecycling.com
Sugartray	Almelo	www.sugartray.com
Teleplan	Schiphol	www.teleplan.com
The Waste Transformers	Hoofddorp	www.thewastetransformers.com
Tshared	Zutphen	www.tshared.eu
Turntoo	Amsterdam	www.turntoo.com
Ubbink	Doesburg	www.ubbink.nl
Renewi	Eindhoven	www.renewi.com/nl/welcome
Van Houtum	Swalmen	www.vanhoutum.nl
Van Hulley	Groningen	www.vanhulley.nl

Name	Location	Website
Velto	Zoeterwoude	www.velto.nl
Vitens	Zwolle	www.vitens.nl
VlakglasRecyclingNederland	Zoetermeer	www.vlakglasrecycling.nl
Waste 2 wear	Abcoude	www.waste2wear.com
Webo	Rijssen	www.webo.nl
Wecycle	Zoetermeer	www.wecycle.nl
Weder	Harderwijk	www.weder.nu
WesterZwam	Wapserveen	www.westerzwam.nl
Ynova Innovation Company	Leeuwarden	http://leaninnovationnetwork.yip.community/nl/p/

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Early signals make for a very positive forecast

There is a keen interest in the Circular Economy as evidenced by the many reports and meetings taking place in the Netherlands and the wider EU. At the core of this economy is the closing of cycles with a view to value creation. Efforts are geared towards preserving the value of raw materials and prolonging the lifespan of products, parts, and materials. This requires an alternative form of cooperation – transforming value chains into value cycles. To implement circularity, a new generation of circular business models will have to emerge. This publication reports on a national Dutch study into the circular practice – seeking to provide insights into the questions: 1) How are businesses building the CE, and 2) How can circularity in the Netherlands be advanced? The result is a business model canvas based on five building blocks for circular business models illustrated with examples of circular exemplars.

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