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From rhetoric to reality

The Circular Economy Index of Dutch businesses

Contents

Foreword **4**

Preface **5**

Executive summary **6**

The case for The Circular Economy Index **8**

Strategy **10**

Philips' Light as a Service reforms strategy

Procurement & Collaboration **13**

Example-setting circular projects in railway collaboration

Design & Production **16**

You can only be circular if you know what is in your products

HP on the circular economy and the 3D revolution

Waste management **20**

Landal GreenParks and Van Gansewinkel cooperate on innovation and waste management

Conclusions and recommendations **23**

Where to start? **26**

Acknowledgements **30**

Foreword

The realisation of a circular economy is important for the Netherlands and the rest of the world. Climate change and the impending shortage of raw materials demand a shift from linear to zero-waste circular cycles. This shift will be accompanied by significant changes in the areas of product development, industrial processes and cooperation in the value chain. The opportunities for leaders in this segment are significant.

The Netherlands is a circular hotspot. Dutch businesses are showing the way in the development of innovative circular business models: our recycling infrastructure and technologies are advanced, Dutch entrepreneurs are innovative and committed to circular transformation, and our solutions are not only durable, they are economically viable. This bodes well for the sustainability of Dutch businesses. But we need to do more.

While circular solutions are emerging, the research presented in this report indicates that we should continue to ask ourselves how we can initiate more circular business cases. Collaboration is key: congregate, share knowledge and experiences, make arrangements with partner organisations and help each other, and make use of the specialised institutions that are already present.

MVO Nederland, an important partner of Confederation of Netherlands Industry and Employers (known as VNO-NCW) the Dutch employers' federation, is a valuable platform for entrepreneurs, providing access to a large body of information on sustainable economic development. Or be inspired by the eight Dutch multinationals, which together form the Dutch Sustainable Growth Coalition, provide insight into viable business cases in their publication, Circular Economy.

The Netherlands is taking a leadership position in the establishment of circular principles. As a circular hotspot, we need to continue to expand our efforts, providing proof points to support our proposal for Next Level investment to the new Dutch cabinet. Our progress will also provide concrete support to the European policy for the development of a circular economy. And the ultimate prize: **when we succeed in the realisation of more circular business cases, our exports will get a boost** – that creates jobs and a future for all Dutch people that we can be proud of!

Hans de Boer
Chairman VNO-NCW

Preface

As the global economic system has evolved over the last 150 years, technical innovation, during the second half of the 20th century, has helped to drive down the cost of resources and significantly improve our society's welfare. However, the predictions of the 1972 Club of Rome "Limits to growth" report became reality early in the 21st century. Economic growth no longer outpaces the increase of material cost, and with the acceleration of digital technologies new revenue models have emerged.

Leading businesses in the Netherlands, are taking up the challenges these growth limitations have created. Businesses, collaborative platforms, innovators, governments and joint initiatives throughout the country, see the circular economy as the next business opportunity. The Netherlands now claims the title of "Circular Hotspot" due to the fact that these key economic players have set their focus on creating circular awareness.

To understand the current status of the circular economy within the Netherlands' largest organisations, as well as to trigger awareness and educate companies on the economic advantages of this new way of thinking, Accenture, Circle Economy, have initiated the Circular Economy Index. As the first index of its kind, we aim to conduct this research on a regular basis, continually improving, and using it to drive awareness and document our collaborative progression towards a circular economy. **Because what is not measured, is not managed.**

We invite you to read the report and become inspired to discover your own circular advantages!

On behalf of the Circular Economy Index Research Group,

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Country Managing Director Accenture

Maria van der Heijden
Director MVO Nederland

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Executive summary

To get a better understanding of the maturity of circular economy strategies and the initiatives undertaken by large Dutch organisations, Accenture, Circle Economy, MVO Nederland and DuurzaamBedrijfsleven joined forces to develop the Circular Economy Index. Our research provided some insight into the progress being made, as well as the challenges companies are experiencing and opportunities they are discovering.

The principles of the circular economy are broadly understood by the 50 companies participating in the Circular Economy Index. These 50 can be considered leaders as a majority of them, 87 percent, are beginning to integrate circular economy principles into multiple facets of their business strategy. Most have done so because circular economy principles align to their core business. This will help them mitigate risks that may arise from future policy changes and industry shocks, and enable them to explore the creation of new revenue streams. But challenges remain. **Respondents highlight the difficulties of creating a viable business case as the primary barrier to realising their circular economy initiatives.**

Partnerships are a core element of the circular economy initiatives of Dutch business, as illustrated in the "Circular Rail" initiative [page 14]. Yet value chain cooperation is far from the norm. Only one third of participating companies already have formal agreements with supply chain partners to support a circular economy model. Significant improvement is also possible in the procurement process: only 6 percent of respondents work exclusively with suppliers that meet minimum requirements for circular economy performance.

Dutch companies are also struggling to translate their strategic circular ambitions into action. Only 15 percent of respondents say they have analysed the implications of adopting circular economy principles on all aspects of their business. The lag in moving to action is most apparent in the areas of product design and production, where introducing circular principles is a key step in shifting the core business towards a circular approach. While the majority of respondents (53 percent) are already considering circular economy principles in product development, this is not yet done at scale. Only a fifth of the participants indicate that over 80 percent of their products are designed using circular principles.

Waste management, on the other end of the value chain, is among the more mature elements of the circular economy initiatives of participating Dutch companies. More than half have clear policies and targets, as well as concrete implementation plans for waste management. Reverse logistics is the most complex element in this area: **38 percent of companies see it as a responsibility to provide reverse logistic, yet only 17 percent manage to provide this service to a significant extent.** Here too, partnerships are a common approach, as illustrated by the cooperation between Landal and Van Gansewinkel [page 21].

Our conclusion is that the circular economy still early days. While front runners have formulated ambitious strategies and are making progress in the implementa-

tion of circular economy principles, current initiatives have yet to achieve scale. And, with only a 20 percent response rate to invitations to participate in the Circular Economy Index, there still is a circular world to be won.

The starting point for any organisation looking to adopt circular economy approaches is understanding where the shift to becoming more circular will destroy and create value in their value chain. It is important to find the proper business model, ensure the right capabilities and technologies are in place, and to properly time a circular implementation.

For those making the transition to a circular business, the learning process continues. Full scale implementation requires greater cooperation within value chains, as well as collaboration to break down regulatory and practical barriers. Working together will broaden the circular business community and increase the impact of circular economy initiatives, making the Netherlands the undisputed hotspot for circular business!

Circular Economy Index

The case for The Circular Economy Index

We are rapidly approaching a point where linear economic growth models are no longer viable for companies. Global affluence is rising and non-renewable resources are struggling to keep up with demand, the regenerative capacity of renewable resources is strained and planetary ecosystems are increasingly threatened. For businesses and the executives responsible for setting the direction of their firms, this raises an unavoidable question: does continued dependence on scarce natural resources for growth expose a company's tangible and intangible value to serious risks?

We believe it does and that the solution lies in the development of a circular economy, where growth is decoupled from the use of scarce resources through disruptive technology, and business models are based on longevity, renewability, reuse, refurbishment, capacity sharing and dematerialisation. This will give companies a circular advantage, putting both resource efficiency and customer value at the heart of a company's strategy, technology and operations. Research performed by TNO, the Netherlands organisation for applied scientific research, in 2013 shows that the advantages of a circular economy could reach as high as €7.3 billion a year for the Netherlands, creating approximately 54,000 new jobs.

More recently, the Ellen MacArthur Foundation presented the results of a major new study at the European Commission's stakeholder conference on the circular economy. The study found that embracing a circular economy could result in overall benefits of €1.8 trillion for Europe by 2030. By adopting circular economy principles, Europe can take advantage of the technology revolution and increase average disposable income for EU households by €3,000. This could further translate into an 11 percent GDP increase by 2030 for the EU countries versus the 4 percent growth expected on the current development path. In addition, in a circular economy, carbon dioxide emissions would halve by 2030 and resource consumption by cars, construction materials, real estate land, synthetic fertilizer, pesticides, water use, fuels and non-renewable electricity could drop by 32 percent by 2030 and 53 percent by 2050, compared with today.

The EU Circular Economy Package motivates EU members in achieving the full benefits of a circular economy. This legislative package aims to maintain the value of products, materials and resources for as long as possible by minimising the generation of waste and boosting the secondary materials and recycling market. Among others, it targets a 65 percent reduction of municipal waste, 75 percent reduction in packaging waste with a special focus on plastics, and a 90 percent reduction in landfilling–all to be achieved by 2030.

Goal and approach of The Circular Economy Index

The circular economy is one of the guiding principles of the Netherlands' presidency of the Council of the European Union, a position it holds through the first half of 2016. As one of the EU member states pioneering adoption of circular economy principles, the Netherlands has significant potential to become an international hotspot – a live national laboratory – for the circular economy. This could benefit other nations through knowledge sharing.

To get a better understanding of the maturity of circular economy strategies and the initiatives undertaken by large Dutch organisations, Accenture, Circle Economy, MVO Nederland and DuurzaamBedrijfsleven have joined forces to develop the Circular Economy Index. Since the transition to a circular economy will take time, the partners aim to make this a recurring research.

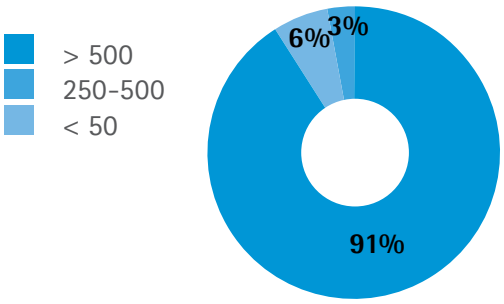
Fifty companies participated, out of 250 invited, in an online survey containing 28 self-assessment questions. The participants were primarily large, established multinationals which we consider to be leaders in circular economy. The survey focused on the circular economy and its different elements:

- strategy
- procurement and collaboration
- design and production
- waste management

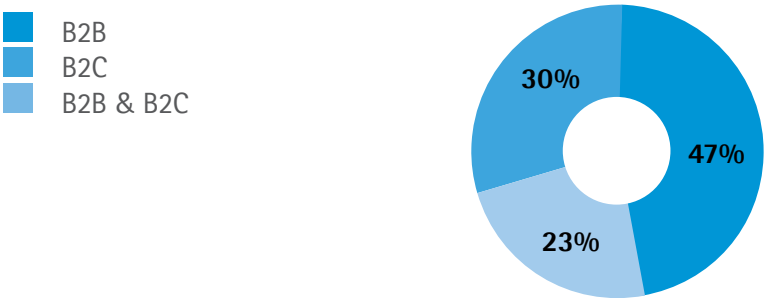
In addition, five interviews were conducted with companies who engage with circular economy principles to test results and gain insight into their approach, successes and challenges.

An overview of the participating companies

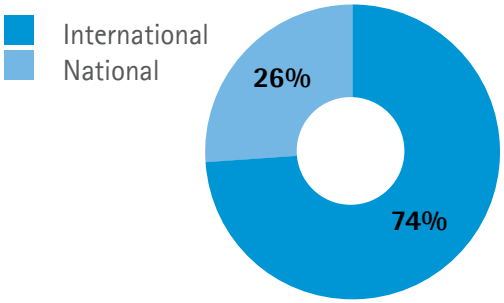
Company size (FTE):



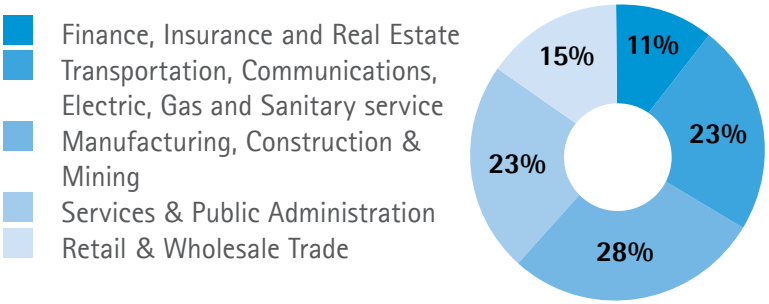
To which markets does your company deliver?



Where does your company operate?



In what industry does your company operate?



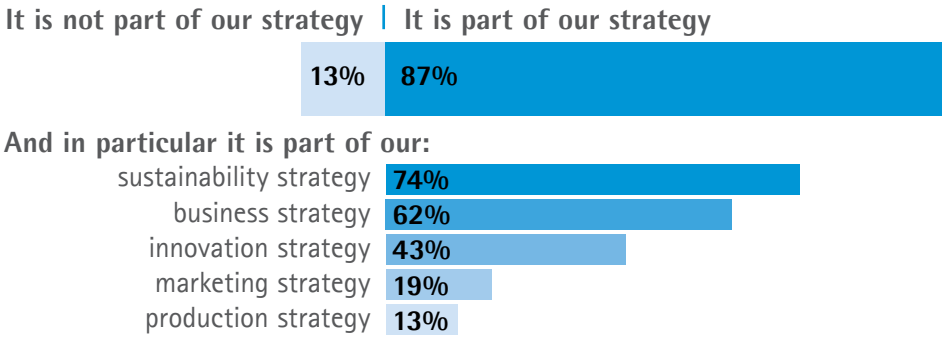
Strategy

At the highest level, operating in a circular economy requires a significant change in business planning and strategy. It means shifting from a focus on maximising throughput and sales margins to participating in continuous product and service loops to boost revenue. Doing this requires not only a full understanding of, and concentration on core business, but also participating in collaborative circular networks, engaging suppliers, manufacturers, retailers, service suppliers and customers. It is vital to engage the full circular chain to understand where and how value is really created in order to leverage emerging opportunities.

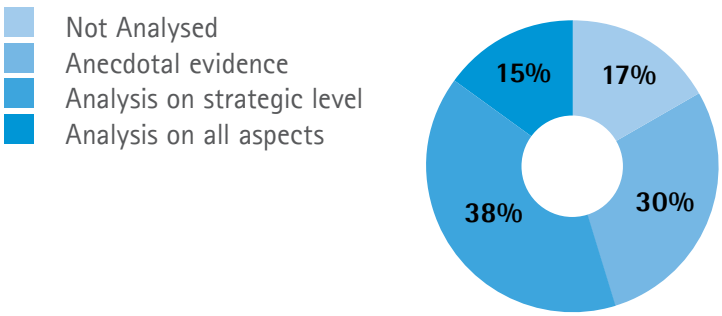
Everything starts with ambition, and companies can only move towards a more circular business when they recognise the beneficial role of the circular economy in their strategy. The majority of respondents to the Circular Economy Index survey, 87 percent, have done so and integrated circular economy principles into multiple facets of their company strategy.

Companies integrate circular principles into their strategies for different reasons. Most companies find that the circular principles are in line with their core business. Other motivators are mitigating risks that may arise from future policy changes and industry shocks, and the creation of new revenue streams.

To what extent is the circular economy part of your strategy?



Does your company know what the circular economy means for their business?



Respondents also said that reducing their impact on the environment, and the need to optimise the use of materials to improve cost efficiencies were strong motivators. 74 percent of respondents have already integrated circular principles in their sustainability strategy. In addition, stakeholder relationships are enhanced by implementing circular business principles that are also are profitable.

Delivering on the ambition to adopt circular economy principles remains challenging, however. Only 15 percent of responding companies say they have analysed the implications of the circular economy on all aspects of their business. So what is holding them back?

Over 30 percent of respondents highlight creating a viable business case as the main challenge. Other barriers to adopting a circular strategy include a lack of awareness and a lack of a sense of urgency among stakeholders. Respondents also indicate that vested interests further inhibit the development of circular activities, as does the need for high initial investments (e.g., in finance, time, people and resources). In addition, respondents note that there is a lack of structure to facilitate efficient collaboration, that existing laws and regulations inhibit the development of circular activities, and that a lack of circular economy skills, knowledge and innovation makes it harder for circular principles to become embedded in practice.

Philips' Light as a Service reforms strategy

The development of the concept of "Light as a Service" has changed the way Philips Lighting looks at its own role in the value chain. "It changes the way we work, but also the skills we need," says Philips' General Manager – Lighting Benelux, Frank van der Vloed.

Rapid technological developments have turned the lighting market on its head in just a few years. Fluorescent lights in offices have been replaced by energy-efficient and intelligent LED fixtures. This is the start of a sustainable transition in lighting, according to Philips. "Philips has become a different company," says Van der Vloed. "When we still mainly produced lamps, we focused on employing smart people to develop the technology. Within our new circular revenue model, the added value is in providing the service. That requires different skills, such as managing logistics and building relationships with clients."

What is Philips Lighting's "circular" model?

Over the last four years, the company has developed revenue models for lighting as a service, not a product. Philips owns and takes back equipment for recycling. The resource conservation provides additional cost savings for the customer. According to Van der Vloed, circular lights are between 5 and 20 percent cheaper.

"Philips has been supplying lighting with fixtures and controls for many years, but we wanted to reflect our customers' needs and wishes in a better way. With Light as a Service the customer does not pay for the purchase of the fixture, but for its use. Pay per lux, in other words. Philips retains ownership of the product and that brings along a responsibility. Our fixtures are durable and we recycle them at the end of the lifecycle. All the products we withdraw, we intend to recirculate, whether that is through recycling or with partners who recover the resources."

What does circularity mean for future product design?

"Previously, we focused on the initial cost in the design of products. Now it is all about total costs over the lifetime, or even several lifetimes of the product. The majority of raw materials are used to produce individual fixtures—everything needed around the lamp. When a luminaire has worked 30,000 hours, a new light source with a new driver is enough to use it again. You can also reuse individual components. Fixtures should therefore be easy to take apart. Parts that do not wear out much must be reclaimed. Thinking about design in this way completely changes the product."

How close is Philips to value chain closure?

"It will take a few years before we will have the first completely circular product. Luminaires are already being given a second life, and we are currently taking big steps in the reuse of other parts. Partners are very important for chain closure and circularity. Philips is working with different partners on both the front and back end of the business. We work with Thomas Rau, who challenges and inspires us as our first client for Light as a Service. Another party we work with is LightRec, an organisation focused on collecting fixtures for reuse. There is a lot of innovation from a financial perspective as well. Philips continues to own the fixtures, but allow room for investment, they are withheld from the company balance sheet. Philips Capital and its partners work together to maintain this structure."

What is your ambition for the circular business model of Philips?

"It's very important that everything we do is focused on the development of Light as a Service. The current impact on sales is still limited but in 10 years' time, we want 30 to 40 percent of our business to come from our circular business model."

Frank van der Vloed
Lighting Benelux

Procurement & Collaboration

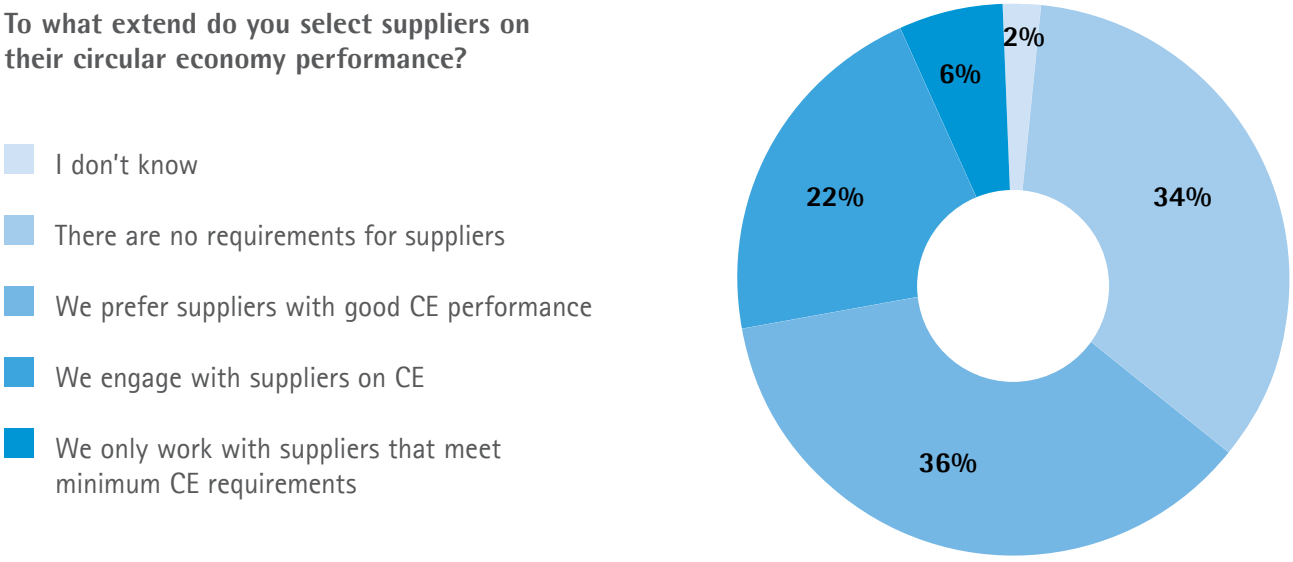
Circular procurement starts with asking suppliers different questions. In a traditional procurement process, a contractor provides a comprehensive set of requirements, primarily focusing on costs. Circular procurement, however, goes beyond financial value, considering factors such as durability and recyclability of products, components and materials.

The first step with circular procurement is understanding the company's internal need. Important factors to consider include: what does the user actually want--what is the functional requirement; and is a product required for this purpose or would a service suffice? Once this is clarified the company can engage with suppliers, setting requirements for circular economy principles to be met. Initial questions about circular procurement addressed to suppliers may include: what is the current status of circular applications within your sector and within your company; and what is your vision of the impact these applications will have in your sector? Through this kind of engagement with suppliers the company can control its own circularity performance and stimulate circular awareness in the value chain.

With circular procurement, producers, suppliers, buyers and users need to cooperate to establish joint steps towards a circular economy. This not only requires a different attitude from suppliers, but also a different interpretation of procurement and collaboration from companies.

Value chain collaboration is varied among respondents of this study. A third of the companies surveyed already had formal circular economy agreements in place with

To what extend do you select suppliers on their circular economy performance?



partners in the supply chain. Forty percent indicated that they were not part of circular economy collaboration in the value chain. However, of this group, about half are planning to develop such supply chain partnerships.

We also found that 92 percent of the participating companies do not have minimum circular economy requirements for their suppliers, but **approximately 30 percent are starting to engage with suppliers on the topic of circular economy.** Thirty-four percent of participating companies have set no requirements at all.

Example-setting circular projects in railway collaboration

There is more than 7,000 kilometres of railway infrastructure in the Netherlands that must be constantly maintained, refurbished and expanded. This infrastructure is a potential goldmine of reclaimable and reusable materials such as copper, steel, aluminium and concrete. According to Circular Rail—an initiative of ProRail, Royal HaskoningDHV, BAM Group, voestalpine Railpro and Asset Rail focussed on the development of circular models in the sector—there are millions up for grabs if the rail sector has the willpower to realise the opportunity.

NS Dutch Railways and ProRail, the main train operator and rail infrastructure companies in the Netherlands, together with the Ministry of Infrastructure and Environment, signed the CO_2 vision "Spoor" to lower the railway's CO_2 emissions and shrink its ecological footprint. Spoor's goal: a climate neutral track by 2050. In addition, 100 percent of all railway infrastructure materials extracted from the system for whatever reason must by then be re-used. "It's an ambitious goal, given the long life cycle of most of our assets" according to Dimitri Kruik, Chief Procurement Officer at ProRail, "but developments are moving so fast that we must be ambitious."

How is the rail sector positioned to achieve its circular economy ambition?

"The rail sector can save an estimated €15 to €35 million per annum by applying circular principles" says Hermen Jan van Ree, who is involved in the Circular Rail initiative on behalf of Royal HaskoningDHV, an international engineering and project management consultancy. "There are opportunities, for example, to make use of modular and demountable sleepers, rails and clamps."

According to Kruik, the railway sector is traditionally open to ideas for recycling and lifetime extension. "The asset base is one of recycled materials," he says. "Rails are made of high quality steel and it's a shame to throw it away when cracks appear. It is already common practice to return used components to furnaces and make new steel."

Other features of the sector also make it a fertile ground for the introduction of a circular economy. The sector comprises a small number of financiers and customers, so sector transition requires only a small number of leaders.

Can you elaborate on the Circular Rail initiative?

The Circular Rail initiative partners focus on establishing example-setting circular projects, such as the redevelopment of the railway yard in Groningen. "We aim for 100 percent recycling of material," says Van Ree. "And it's viable."

The success of circular rail projects depends on proper incentives in the procurement process, which motivate contractors to make the extra effort. Van Ree offers an example: "Contractors operate under extreme time pressure. Where contractual arrangements specify that they need to replace a switch within four hours, old switches are often cut into pieces, making it impossible to refurbish and reuse them. With the right incentives we can prevent this loss."

Sustainability has been part of the procurement process for some time. The CO_2 Performance Ladder stimulates contractors to reduce their CO_2 emissions. Amongst others by selecting low CO_2 materials for their projects.

The Circular Rail initiative has been testing ways to integrate circular economy principles into material selection and procurement. "One way to do that is with DuboCalc, a calculator that measures the environmental impacts of a material used within a project over its entire lifecycle," explains Van Ree. "The first projects using DuboCalc illustrate the value it delivers. In Bunnik, for example, the method was used in the construction of underpasses and has led to a 20 percent CO_2 reduction."

Dimitri Kruik
ProRail

Hermen Jan van Ree
Royal Haskoning DHV

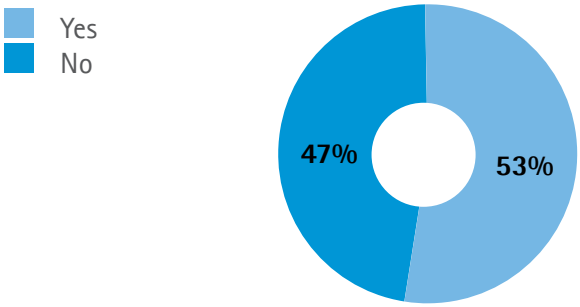
Design & Production

Circular design seeks to create products that are durable, are easy to maintain, that minimise material usage and waste, and that make use of materials that can be reused, recycled or upcycled. The spread of advanced production methods, such as 3D printing and laser cutting, allow a small series of items and custom products to be made. This creates a powerful foundation for linking value chains as it enables customised production and generates zero to no waste through the product lifecycle, boosting resource efficiency.

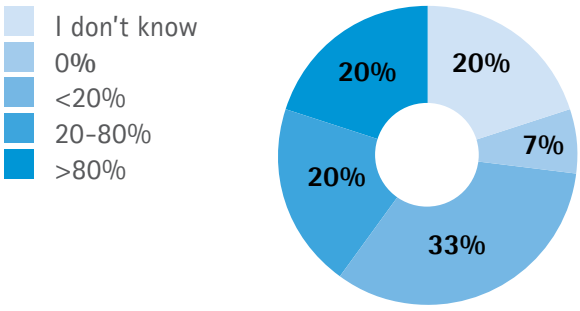
Innovation and product development are different in a circular economy. **In a circular economy, the focus shifts from designing for single use to designing for many life cycles and users while minimising the environmental effects of the materials used.** Key circular design elements include adapting products to generate revenues not only at the point of sale but also during use (e.g., maintain, upgrade and share), and implementing a low-cost return chain and reprocessing (e.g., by including elements such as modularity, traceability and standardisation).

In production, companies need to consider whether material inputs for product designs are renewable or fully restorable, as well as determine the environmental footprint and toxicity of all production materials and waste products. They will also have to make sure that production is efficient and that no resources are lost during the process that cannot be recovered for reuse in the production process or elsewhere.

Are Circular Economy principles part of the design in your product development?



What percentage of the your products are designed on circular economy principles?



About 53 percent of companies say that circular economy principles are part of product development. However, only 20 percent indicated that more than 80 percent of their products are designed on the basis of circular principles.

A similar gap between ambition and practice is visible in production where just 15 percent of companies have fully analysed the implications of the circular economy on their production process. Moreover, 45 percent do not know what percentage of their revenue streams come from circular economy designed products. Only a few leaders, just 4 percent of respondents, realise more than 80 percent of their revenue streams through circular designed products.

You can only be circular if you know what is in your products

Family business Brabantia is known for its bins and ironing tables, among others. It aims to reach 100 percent recyclability by 2020, and achieve 100 percent use of its recycled materials in 2030. "To get there, we need to understand what's in our products" says Jolanda Wijers, whose responsibilities include sustainability at Brabantia.

Brabantia was founded in 1919 in Waalre, just under Eindhoven." The fourth generation of the family has been leading the business since 2012. Their focus is on producing goods and running the company in a sustainable way. The company has embraced the idea of sustainability for a long time. "In the beginning, everything was designed to last a long time," says Wijers. "Now products need to both look good and be durable. The new sustainability strategy enables the user to dispose of Brabantia products via recycling or conventional ways, knowing they are almost fully recyclable." Brabantia currently supplies more than 100 products with a bronze Cradle to Cradle certificate, a product standard which is administered by Cradle to Cradle Products Innovation Institute and validates a company's commitment to sustainability. Brabantia is aiming for 100 percent recycling, an ambitious target. Says Wijers: "What matters is that we aim for a good spot on the horizon and do what is possible."

What does circularity mean for Brabantia's product design and the choice for materials?

"Circular economy principles and the Cradle-to-Cradle standards are becoming an integral part of product development. At the conception of a new product, we talk about the materials, as well as the design," says Wijers.

Many of Brabantia's current products, such as its metal bins, are already over 98 percent recyclable. **A 'Sustainability Scan' assesses the environmental impact of manufacturing and logistics for every product. "We know the footprint of a product before it is produced,"** says Wijers.

How are the design and production processes controlled?

"From the beginning of the design process we consult with suppliers of materials and components," says Wijers. "At the end of the chain we have also started working with waste processing companies. Unfortunately we have little influence on waste management in other countries, but we do try to promote sustainable processing."

The focus on content and material performance can be a challenge, especially for complex products. "Ironing

boards for example, have 50 different parts made of different types of plastic, metal, textiles and coatings," explains Wijers. "The company works closely with suppliers to obtain full insight into the composition of all components. Even the smallest parts are examined. For example, it is important to avoid bringing in unwanted coatings when the screws are purchased from a new supplier, so suppliers are asked to reveal the full composition of their products.

The company does not flaunt its sustainability performance. "Sustainability is a priority in our strategy, but we have not really used it as a marketing tool, nor are we planning to," says Wijers. "Some of our competitors are less modest. We are wary of 'greenwashing' and will look for ways to tell our story fairly and clearly."

Jolanda Wijers
Brabantia

HP on the circular economy and the 3D revolution

"HP focusses heavily on additive manufacturing, or 3D printing. This relatively new technology will open new markets, drive rapid innovation and give the circular economy a major boost." This is according to HP's sustainability manager for Europe, Middle East and Africa, Jason Ord, and HP sustainability specialist, Benelux, Manuel Sosa.

Not long ago, newspapers and books were printed using analogue methods, namely lithography plates and ink. This process was very expensive. The transition to digital printing has been a quiet revolution. According to HP, the emergence of 3D printing will have a similar impact in manufacturing. Says Ord: **"3D printing will not replace traditional methods of production in the manufacturing industry, but it has the potential to reduce many fixed costs.** Take inventory management, for example: companies no longer need to produce or acquire spare parts in advance if these can easily be printed when they are needed. Rapid availability of spare parts also helps extend the lifespan of devices and other products. There is an obvious link to the circular economy. "

How does HP realise circular principles in practice?

Ord notes: "HP started recycling 25 years ago. In the beginning, it was a hygiene issue: the aim was to pollute as little as possible. Now we have the additional opportunity to join chains." Sosa adds: "The best results are seen in our closed-loop program for ink cartridges. Since 1987, we have recovered 1.3 million tons of plastic from the collection of old cartridges. We mix the recycled plastic with plastic from PET bottles to make new cartridges. At present, HP processes approximately one million PET bottles per day."

What about hardware recycling?

Ord: "That is the next challenge. The number of reuse initiatives in the hardware industry is very low. Still, hardware contains significant material value. It is important that we continue to strive for collaboration with other manufacturers like Dell, Lenovo and Intel. All laptops contain parts from the same manufacturers, so we share a supply chain with our competitors. Together, we will take steps to encourage our suppliers to implement sustainable and circular principles. This starts by being transparent. HP was among the first to map and share its entire CO_2 footprint and water

usage. This kind of transparency provides the basis for developing business cases for circularity."

Is the future of 3D printing in the industry or service sector?

"Both," says Ord. "Currently, 3D printing is most common in industry. It has become very important in a short time for prototyping and one-off items—architects, for instance, use it to print scale models, and hospitals can use 3D printed models to determine treatment methods and prepare for complicated operations. In the Netherlands, for example, VU University Medical Innovation Lab works with 3D printed human prosthetics.

"When the technology matures, we will be able to fabricate new parts—parts that are better than those we use today. Aircraft manufacturers, for example, have been working with 3D printers to create components from scratch. Often, these components have better performance than the ones they replace and they are lighter, which lowers aircraft fuel consumption.

"With the emergence of 3D printing, business models are shifting. Open source collaboration is a growing trend. With 3D printing, new role players and even individuals will be able to make parts for products. That opens up a whole new set of competitive models."

Manuel Sosa
HP Nederland

Jason Ord
HP Nederland

Waste management

In coming years the EU will, as part of the EU Circular Economy Package it has adopted, implement multiple directives to accelerate the transition to a circular economy. This includes legislation that extends producer responsibility, the minimisation of waste streams, and impacts product design and resource usage. These measures will require that companies gain a comprehensive perspective on how to reduce waste resulting from their core activities and the use of their products.

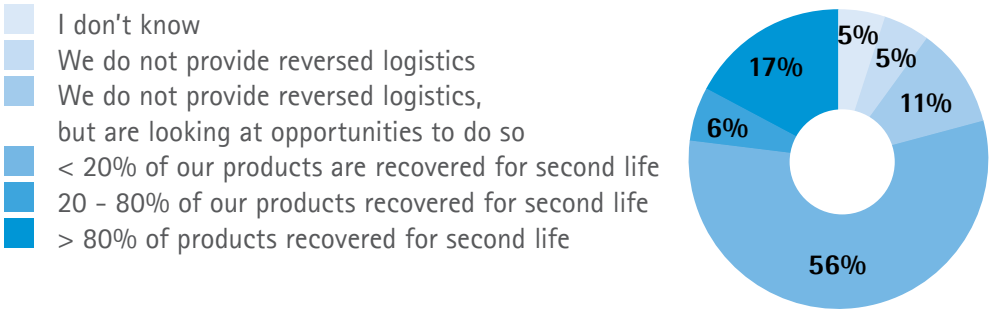
With the increasing scarcity of essential resources, opportunities to recover valuable resources from waste are attractive. New waste separation and processing technologies make this easier to do.

More than half of the companies participating in the survey, 54 percent, indicate that they have clear policies, targets and implementation plans for waste management. Forty percent of companies say they reduce waste generation and report waste, but do not have clear targets. Just 4 percent have no insight into the amount of waste they produce.

Reverse logistics is one of the prominent circular principles for waste management. It is an essential step, creating the infrastructure to recover waste. Among respondents, 38 percent see it as their responsibility to provide reverse logistics. However, only 17 percent manage to provide this service to a significant extent.

Does your company see it as their responsibility to provide reverse logistics?

To what extend does your company provide the service of reversed logistics



Landal GreenParks and Van Gansewinkel cooperate on innovation and waste management

With nearly 13,000 bungalows across more than 75 parks, each Landal GreenPark is comparable to a small town. Along with waste service provider Van Gansewinkel, Landal aims to reduce material consumption in the parks.

Three years ago, Landal GreenParks started to actively incorporate sustainability in its strategy. It aims to achieve a zero CO_2 footprint from energy use and mobility by 2030. In addition, the company wants to reduce its impact on water pollution and reduce resource consumption by focusing on 100 percent waste separation and circular procurement.

Collaborating on waste management? How does that work?

This year, Landal has signed a renewed cooperation agreement with Van Gansewinkel, the largest waste and recycling company in the Netherlands. Together these companies face a significant waste management challenge. With 12 million overnight stays per year, there is a lot of waste. "Guests throw everything away at the end of their stay, often in one bin," says Tanja Roeleveld, Manager Sustainability, at Landal GreenParks.

Within the gates of the parks, only 25 percent of the waste is separated for recycling. "It is not easy to get our guests to separate their garbage," says Roeleveld. "We are dealing with large amounts of food waste: from half-empty milk packs to bags of onions and jars of jam—it all goes into the trash."

"This means there is great potential to contribute to the circular economy," says Florens Slob, Business Development Director at Van Gansewinkel. Both companies are looking into cooperative opportunities to experiment with ways to raise the recycling rate.

Is there a viable business case for implementing circular waste management?

As a private company, Landal needs a viable business case for the initiative. Unlike municipalities, that demand consumers separate plastic or metal and drink cartons, the company cannot claim compensation from the country's Waste Fund, created by producers of packaging, for implementing the system.

Landal has started to collect plastic, metal and beverage cartons separately from residual waste at its parks. Van Gansewinkel and Landal have also set up a collection system for diapers. "We need to invest," says Roeleveld, "but for the investment to be viable we must be able to recoup it through the value obtained from recycling the waste. **A positive business case gives us a very strong story to tell to franchisees, it adds value to the experience of the guests and we simultaneously reduce our environmental impact."**

In procurement, Landal is also working on introducing circular economy principles. The snack bars at the parks offer a good example of how this is being done. Explains Roeleveld: "All the packaging materials we purchase for use by the snack bars eventually become waste. That offers us a huge opportunity. For the fries, for instance, we have a choice between bioplastics or paper trays, or packaging based on sugarcane. All are durable, but choosing the right option requires a complex analysis of the entire value chain. We do that together with Van Gansewinkel to build circular chains."

What other circular principles are used in waste management?

Landal is considering other options, like leasing matrasses. **"Buying sleeping hours from a manufacturer instead of mattresses is an interesting concept,"** says Roeleveld. "For circularity, it is not important that Landal owns the mattresses, as long as we can provide sleeping comfort to our guests."

Van Gansewinkel itself has no mattress recycling plants, but it supports Dutch bed manufacturer Auping's return system. "For the recycling industry, mattresses are complex to process," says Roeleveld. "They are large, difficult to handle and contain many materials that catch fire easily, but the materials used are of high quality and can be brought back into the value chain. If Landal does not need to own the matrasses, it will not need to deal with these recycling challenges."

With the right partners, you can connect all kinds for material chains. Roeleveld has no objection to cooperation with competitors on these type of projects. "It depends how you define competition," she says. "Landal has a sufficiently distinctive proposition--some people first choose a place and then decide on a park or a hotel, but other guests choose Landal because of the experience we offer. Sustainability contributes to that experience."

What is the key to successful collaboration?

"For this type of collaboration, conversation is key," says Van Gansewinkel's Slob. "If a particular stream of waste collection does not work, we have to be able to converse openly and collaborate to find a solution. If you put several parties from the front and the back end of the value chain at the table, you will find out with whom you can take steps. Once you do, do not hesitate to take them. Landal dares to make a clear choice for sustainability. That's impressive, because it requires a real investment in the future."

Tanja Roeleveld
Landal GreenParks

Florens Slob
Van Gansewinkel

Conclusions and recommendations

Here we present our conclusions through highlighting five important bullets to check when engaging with the circular economy.

- **Opportunity**
- **Value**
- **Capabilities**
- **Technology**
- **Timing**

Opportunity

Where are the opportunities to adopt circular economy approaches in our value chains and what can be done to shape our company's journey?

The starting point for any organisation looking to adopt circular economy strategies needs to be understanding where the shift to circular economy will destroy and create value throughout the value chain. The primary catalysts for creating a case for change differ in every country and industry. They range from resource supply scarcity to technological disruption and changing consumer behaviour.

Questions companies should ask themselves include: what future risk are we exposed to if we continue to operate in a linear fashion; what percentage of our cost base is resource related; and how big are the inefficiencies in the circular value chain? Combined with a view of whether their competitors have begun to move toward circular, the answers to these questions will help companies build an understanding of how their journey can be shaped.

Strategic options range from input substitution and resource efficiency and recycling, to addressing product longevity, transforming products into services and using digital to enable customers to go circular. Depending on the path chosen, there are operational issues to consider. Should the primary focus be on engaging the supply chain and operations to deliver on goals? Or in building new alliances with customers to launch initiatives in selected markets?

Value

What is the real core value and essence of what we deliver to customers, and how can circular business models help us rethink how we deliver that value?

It is common for circular economy pioneers to see their customers as users rather than consumers of products and services. Switching perspectives requires a focus on what functionality the company provides that truly brings value to the customer. It implies a continuous multi-lifecycle view of the customer relationship. This often requires taking an unconventional view of the commercial and ownership model.

Accenture developed five new circular economy business models that offer unique ways to protect

embedded value in a product, component, material or process. These models are discussed on page 27. Each represents a differentiated strategic option with implications for the product development path and the businesses' future core customer value proposition. One of the first choices to be made is whether to adopt a pure play option, blend two or more of the business models or operate as an enabler that helps other companies take their circular offerings to market.

Capabilities

What improvements will we need to make to our operating model and capabilities to support a circular economy business model and customer proposition?

To function optimally, each circular business model requires a specific configuration of existing and new capabilities. Which of the key capabilities discussed in this paper—business planning and strategy, innovation and product development, sourcing and manufacturing, sales and marketing and return chains—should your business prioritise? What corresponding key activities, partners, cost drivers, revenue streams and customer relations need to be managed in line with that prioritisation?

Another key decision is choosing what part of the circular value chain stays in-house and what is outsourced? Piloting and learning new approaches along each link of the value chain will work best for some businesses—from design to manufacturing, retail and reverse logistics. For others, the optimal strategy will be to focus on, and master, a limited set of capabilities. Building capabilities inevitably takes time and costs money. Companies that cannot manage this investment up front must find short-term revenue streams to finance the change while moving in the right direction. This means that your business model will likely need to evolve over time as capabilities are built and the right market conditions mature.

Technology

What are the technology trends in science, engineering and digital that really matter to our business when it comes to circular economy, and what is their potential to disrupt the value chain?

When a value chain moves toward circular practices, the dynamics of competitiveness are transformed through disruptive technologies such as analytics, mobile and advanced recycling technology. Value chains will converge and in some industries traditional upstream and downstream activities will merge. In others, customers will become significantly more powerful, more mobile and more demanding; manufacturers will become retailers and retailers will become digital social communities.

When choosing the right positioning and technology infrastructure amidst this disruption it's vital to define the technology set that best suits your strategy and circular business model. Once decided there are a number of strategic options for securing technological capabilities, including: buying them through mergers and acquisitions, or through joint ventures; building them through organic investments; and "borrowing" them through collaboration with other partner companies. In driving change it is vital to ensure that there is a link between the technology roadmap put forward by the chief technology officer (CTO) and the requirements that come with your circular business model.

Ensuring collaboration between technology, sustainability and marketing departments is crucial to allow for the right type of innovation.

Timing

How do we time our initiation and adoption rates, and set the ambition of our circular economy approaches to create a portfolio that gives us options and agility?

Some of the most attractive circular opportunities will take time and resources to pursue. Quick wins may not create sustained advantage. The move to a circular economy is so profound that once the "platform is burning" it might already be too late. This is why it's important to lay the groundwork for future possibilities before they're realities.

Timing your move is all about striking the delicate balance between first mover advantage—namely technology leadership, securing scarce resource supply, creating switching costs and addressing undiscovered customer needs, etc.—and disadvantage, which comes with the free rider effect, betting on the wrong technology, failing to build capabilities and being caught out by policy changes, among others.

Key strategic options are phased building of a dedicated circular customer base versus working with the entire existing base from the start; striking an investment strategy balance between organic and inorganic growth and partnerships; and choosing when to hedge bets in a portfolio versus when to transform the core business altogether. Often you'll need to work on parallel tracks: gradually improving the circularity of your business while testing selectively where to go "all-in" at speed and scale.

Where to start?

This report shows both the value and the current status of the circular economy and we do not ntend to leave you empty handed. In this chapter we provide an overview of initiatives as well as tools to start aligning your company to the circular economy.

Value Chain Collaboration

No company can reach circularity on its own. It requires constant interaction with customers and suppliers, often reaching several tiers. MVO Nederland supports these interactions with its neutral position through market dialogues and the online platform www.circulairondernemen.nl, as part of the national program Nederland Circulair! In the end any successful interaction ends in some form of contract, whether it is a purchasing agreement or the acquiring of a service. MVO Nederland has therefore initiated the Green Deal Circular purchasing with a number of partners. In this Green Deal we explore the challenges and possibilities of circular purchasing together with over 40 private and public organizations. We share the lessons learned in a publically accessible Circular Procurement Guide.

www.gdci.nl

The Circulars

The Circulars, an initiative of the World Economic Forum and the Forum of Young Global Leaders, is the world's premier circular economy awards program. The awards are open to individuals and organisations from commerce and civil society in seven distinct categories. The awards are designed to recognise and celebrate, on a prestigious global stage, all facets of the circular economy movement. In its third year, the awards ceremony will take place at the World Economic Forum Annual Meeting in Davos in January 2017. Last year over 200 entrants from 36 countries entered, ranging from some of the world's largest multinationals to the most innovative start-ups. Entries for the 2017 program are now open. Visit The Circulars website for more information and to apply for this year's program!

www.thecirculars.org

Five circular business models

To understand the winning business models of the future, Accenture has done extensive research among circular leaders. Based on over 120 cases five circular business models are defined.

Circular supplies: Provides fully renewable, recyclable or biodegradable resource inputs that underpin circular production and consumption systems.

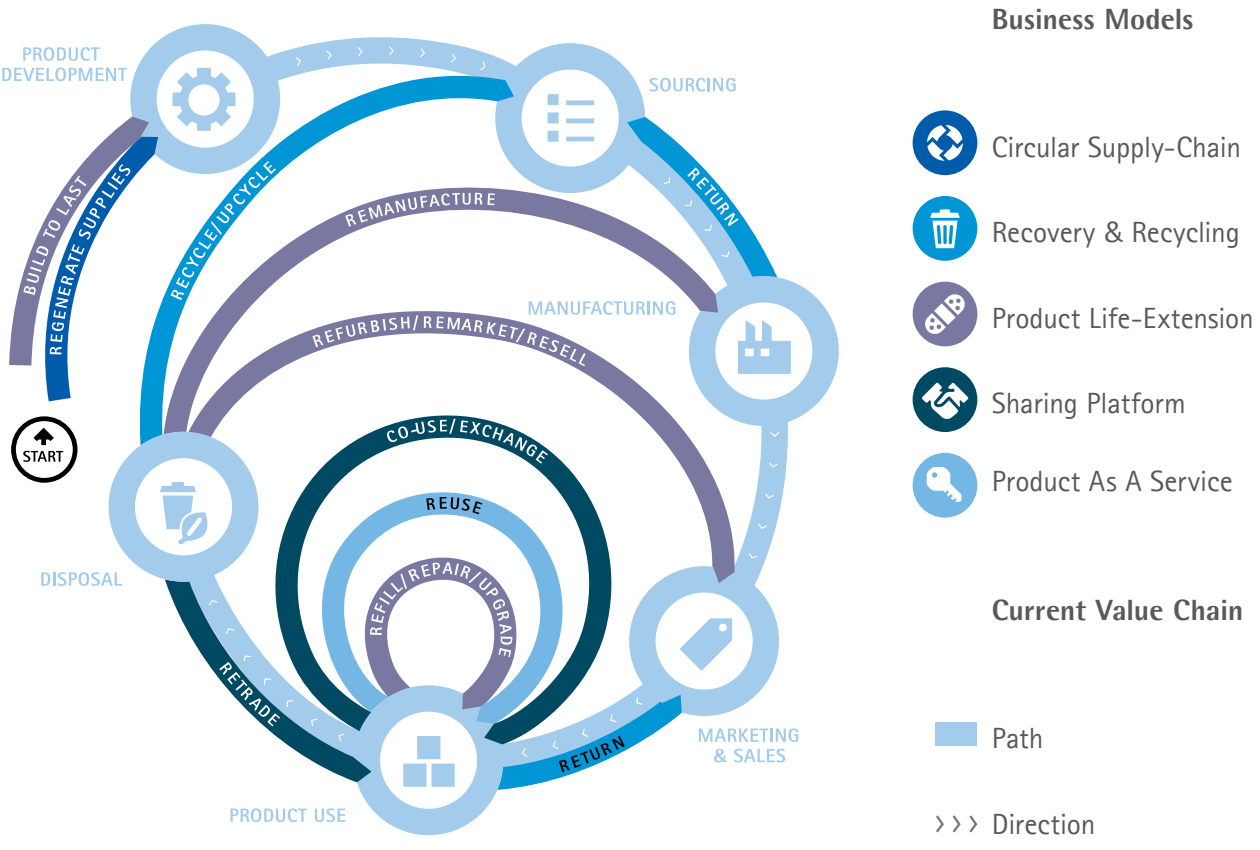
Resources recovery: Enables a company to eliminate material leakage and maximise the economic value of product return flows.

Sharing platforms: Promotes a platform for collaboration among product users, either individuals or organisations.

Product life extension: Allows companies to extend the lifecycle of products and assets. Value that would otherwise be lost through wasted materials are instead maintained or even improved by repairing, upgrading, remanufacturing or remarketing products.

Product as a service: Provides an alternative to the traditional model of "buy and own." Products are used by one or many customers through a lease or pay-for-use arrangement. This business model turns incentives for product durability and upgradability upside down, shifting them from volume to performance.

Find out more on circular economy through the study Waste to Wealth; Creating advantage in a circular economy, written by Peter Lacey and Jakob Rutqvist.



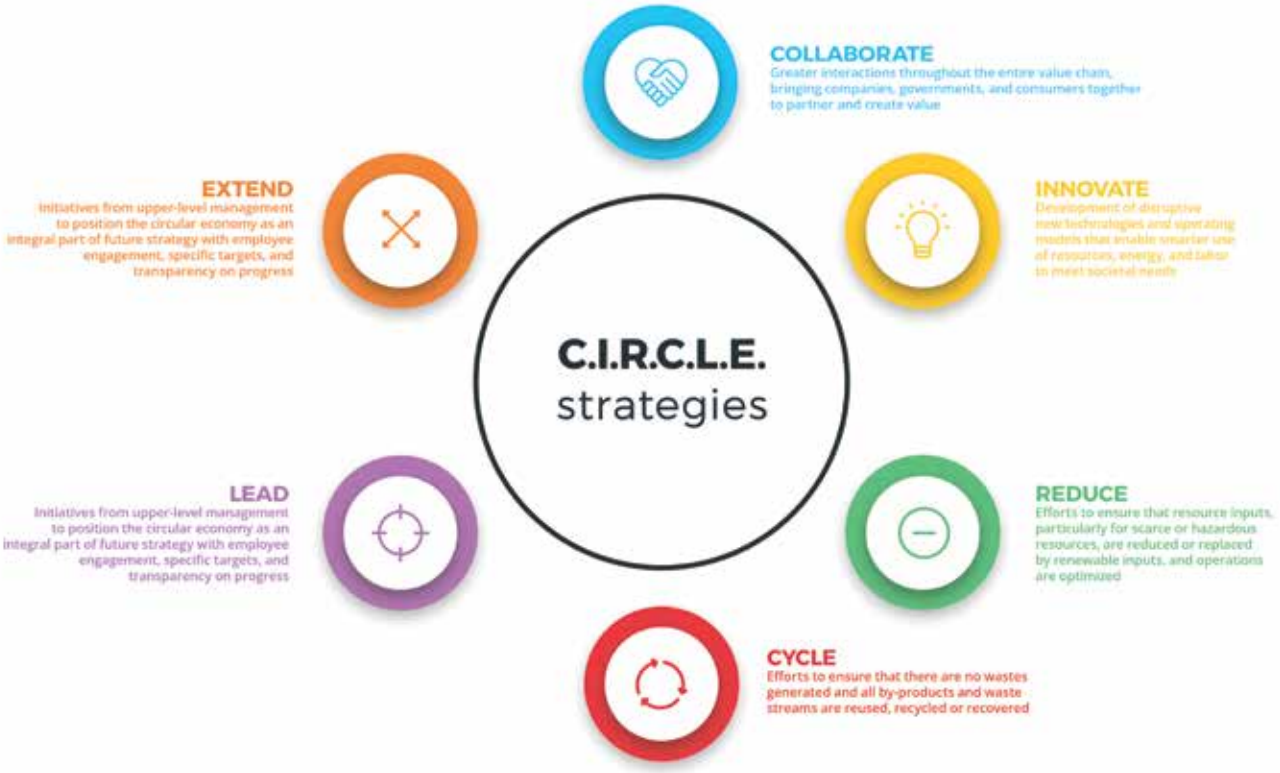
Circle Assessment

Whether your company has already started to implement circular business strategies, or has just begun its transformation to circularity, Circle Economy has created a simple way to diagnose how your current practices align with circular objectives.

The Circle Assessment is an online survey that measures a company's current practices based on the six key areas illustrated in the graphic above. Once completed the survey provides recommendations for a how a company can improve their overall circularity performance to create long-term value and reduce their exposure to long-term risks.

Over time, the survey can be used to track the progress of a company's journey to circularity, and serve as a way to showcase their efforts to investors and external stakeholders.

Find out more about the Circle Assessment at:
http://www.circle-economy.com/tool/circleassessment/



DuboCalc

DuboCalc is a Sustainable Construction Calculator developed by Rijkswaterstaat, the Dutch public works company, to calculate and compare the sustainability and environmental costs of tenders. DuboCalc calculates the environmental impacts of material and energy over their lifetime, from extraction to demolition and recycling. All these factors are expressed in a Euro-based rating using the Environmental Indicator (MKI), which makes use of the Life Cycle Analysis (LCA) methodology, the ISO 14040 standards and the Environmental Assessment Method for Buildings and Construction.

The purpose of DuboCalc is to build significant environmental benefits into the design and implementation of proposals for civil engineering works. To achieve this, the MKI is integrated into the economics of a tender. DuboCalc is therefore particularly interesting for tenders based on most economically advantageous tender (MEAT) criteria. It enables potential contractors and third-parties to compare the environmental costs of different design and configuration options and possibly improve their proposals.

http://www.dubocalc.nl/

CO_2 Performance ladder

The CO_2 Performance Ladder is a tool that helps companies reduce their CO_2 output. The ladder seeks to:

- Motivate companies to know their own CO_2 emissions and that of their suppliers, and
- Continuously search for new options to reduce the emissions as a result of company processes and projects.

The ladder subsequently encourages companies to:

- Perform emission reducing measures;
- Share newfound knowledge in a transparent manner; and
- Together with co-workers, knowledge institutes, social organisations and governments, actively search for ways to collectively reduce CO_2 output even further.

The CO_2 Performance Ladder encourages companies to actively reduce CO_2 levels using fictitious awards for a tender. The tool is used by contractors and clients during tenders to reward company efforts. A higher score on the ladder is rewarded with a real advantage in the tendering procedure in the form of a discount on the registration fee. Any step on the ladder reached by a company translates into an advantage. The higher the step or level reached on the certificate, the more advantages the company enjoys during the award decision. The client launching the tender decides on the award advantage per step on the ladder.

http://www.skao.nl/

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About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world's largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With more than 375,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

About Circle Economy

Circle Economy's mission is the practical, scalable, implementation of the circular economy. An Amsterdam based social enterprise, organised as a cooperative, Circle Economy accelerates the transition to circularity through on the ground, action focused, development of practical and scalable solutions and international campaigns, communications, and engagement, focused on spreading the circular message. Its home page is www.circle-economy.com.

About DuurzaamBedrijfsleven

DuurzaamBedrijfsleven is the main source of news about sustainability, innovation and clean tech for Dutch businesses. It provides an overview of news and background about sustainability opportunities on a daily basis. It also demonstrates technological breakthroughs and the business case for corporate social responsibility. Its homepage is www.duurzaambedrijfsleven.nl

About MVO Nederland

MVO (CSR) Netherlands is a Centre of Excellence for Dutch companies that are striving towards corporate social responsibility (CSR). Working towards circular business models and value propositions is rapidly becoming an integral part of futureproof CSR. More than 2,400 companies are affiliated with this networking organisation. It has a dynamic and fast-growing business network comprised of diverse members from beginners to advanced users and leaders, and small and medium-sized enterprises and corporate giants. CSR Netherlands shows the market opportunities that CSR offers, facilitates mutual collaboration and provides useful information on applying CSR in practice. It inspires, connects and supports companies and sectors in their efforts to make great strides in corporate social responsibility. Its homepage is www.mvonederland.nl

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