



THE NEW BIG CIRCLE

Achieving growth and business model innovation
through circular economy implementation





A joint report from the **World Business Council for Sustainable Development** and **The Boston Consulting Group**



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1. Executive summary

State of current circular trends and practices in companies

Corporate leaders are increasingly seeing the business and societal value of strategies to re-use and recycle resources—and are moving toward what's commonly known as a "circular economy." This approach rethinks the traditional "take-make-dispose" economic model, and envisions a new model that is regenerative by design.

The business benefits are expansive. Innovations that foster resource reuse can, for example, make companies less dependent on scarce inputs, increase operational efficiency and enable new offerings that attract customers and deepen existing relationships. It's been estimated that the transition to the circular economy could unlock USD \$4.5 trillion of GDP growth worldwide by 2030.¹ The societal benefits are also numerous—making it easier to shelter, feed and clothe the 8.5 billion people expected to inhabit the planet by 2030.

This report is the result of research which included a survey of 78 managers from a variety of industries around the world, and one-on-one interviews with leaders to understand best practices.

97%

of respondents said that the circular economy drives innovation to help make the company more efficient and competitive in areas such as sourcing, product development and production processes

96%

of respondents believe that the circular economy is important for their company's future success

61%

of the surveyed companies fund their circular projects internally

51%

of respondents state that circular economy activities already add to company profits

50%

of respondents stated that customers are the most influential external group

Practical recommendations to successfully transition towards a circular economy

We learned that circular implementation involves various stakeholders at different stages of the journey and calls for strong collaboration all along the value cycle. While each company is different, with its own unique challenges, we distilled 10 recommendations for putting circular initiatives in place.

10 recommendations for implementation of circular initiatives

1. Engage with external stakeholders
2. Ensure consistent and strong top management support
3. Define "circular" and communicate the vision
4. Quantify specific ambitions and develop a business case
5. Educate your employees
6. Engage and empower business units
7. Start with process innovation, then move to product innovation and business model innovation
8. Collaborate with external partners
9. Define and align KPIs for goals and accountability
10. Do good and talk about it

¹ Lacy, Peter; Rutqvist, Jakob (2015): Waste to Wealth – The Circular Economy Advantage, New York/London: Palgrave Macmillan.

Circular economy activities along the value cycle*

* Percentages below show the share of surveyed companies that are active and successful in each area.

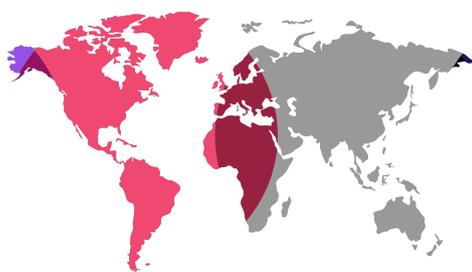


2. Introduction



As the global population surges and more consumers enter the middle class, the demand for commodities and raw materials has dramatically increased. And the situation will only get more challenging.

The United Nations estimates that the world's population will reach 8.5 billion in 2030, an increase of 16% since 2015. Without more sustainable agricultural and production practices, housing, feeding and clothing so many people will severely strain the planet's natural resources.



The world's population will reach 8.5 billion by 2030

This impending resource scarcity is just one reason that sustainable development is at the top of the agenda among many governments, private companies and nonprofit organizations.

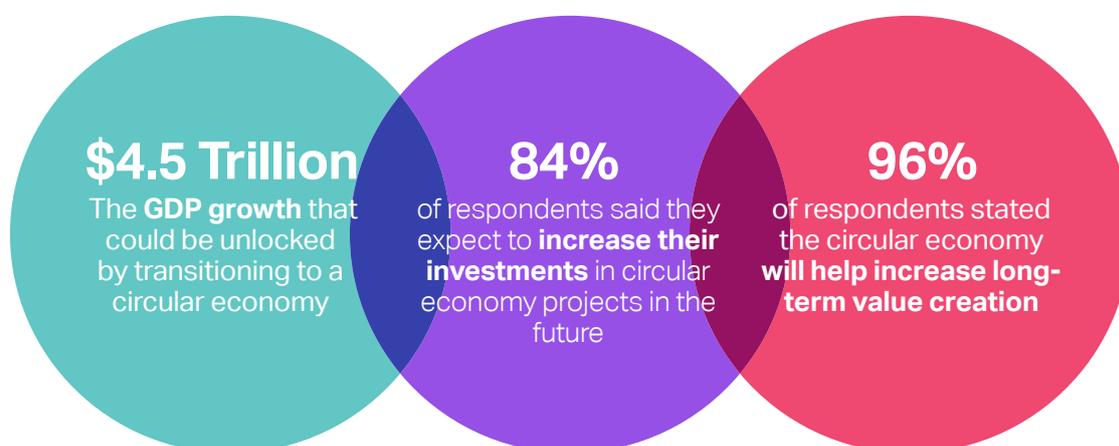
There's also the growing pressure to reduce the environmental impact to benefit society at large by improving reusability, lowering energy consumption and reducing pollution. For private companies, that pressure is coming in the form of increased government regulations, consumer demands and costs.

Pressure is also growing internationally, evidenced by the U.N.'s Sustainable Development Goals, the first globally agreed to framework for sustainability.

Reducing worldwide resource use by only 1% could save approximately 840 million tons of metals, fossil fuels, minerals and biomass annually—as well as 39.2 trillion liters of water. We estimate that could translate into potential savings of approximately \$80 billion for the global economy.²

At the same time, corporate leaders have realized that a sustainability focus can drive innovation and improve competitiveness on many fronts. With this in mind, we believe leaders should embrace the circular economy as perhaps the most promising way to accelerate their own organizations and society as whole toward a sustainable future.

As noted in WBCSD's [CEO Guide to the Circular Economy](#), transition to the circular economy could unlock USD \$4.5 trillion of GDP growth worldwide by 2030, and those kinds of numbers are catching the attention of corporate leaders. This is mirrored by survey results, in which 84% of respondents stated they expect to increase their investments in circular economy projects in the future, and 96% said the circular economy will help increase long-term value creation (for more about our survey please see Section 7 "About the research").



² <https://www.bcg.com/publications/2017/sustainability-operations-urgency-opportunity-smart-resource-management.aspx>

The circular economy is a new way of looking at the relationships between markets, customers and natural resources. It moves away from the traditional “take-make-dispose” economic model to one that is regenerative by design. The goal is to retain as much value as possible from resources, products, parts and materials to create a system that allows for long life, optimal reuse, refurbishment, re-manufacturing and recycling.³

For this reason, we discuss the circular economy in terms of how it effects the value “cycle” instead of the value “chain.” The circular economy requires an evolution from linear thinking to one of cycles. It’s a shift in mindset and business practices that will disrupt industries and business models, significantly reshape customer demand and could prove to be the biggest opportunity to transform production and consumption since the first Industrial Revolution 250 years ago.⁴

“We see the value and future potential of the circular economy. This is why we endeavor to ‘disrupt ourselves’ – rather than be disrupted by others. Over the next decade the circular economy will become even more important for all businesses,” said Markus Laubscher, a director in the Sustainability Department at Philips, a Netherlands-based health technology company.

By unleashing circular innovation, companies can act now to boost the global economy’s resilience, support people and communities around the world and help fulfill the Paris Agreement and the UN Sustainable Development Goals. Without immediate action, the consequences of today’s “take-make-dispose” mindset will be dire. By 2025, for example, it’s estimated that two-thirds of the world’s population could face water shortages.⁵

“The circular economy has the potential to change the way we create value, and relations with our customers and other partners — for the better. Thinking circular strengthens our innovation capabilities to further develop more sustainable solutions that unlock Solvay’s business growth while doing good for the planet,” said Jean-Pierre Clamadieu, CEO of Solvay, a global chemical company.



³ Kenniskaarten: <https://kenniskaarten.Hetgroenebrein.nl/en/knowledge-map/circular-economy/definition-circulareconomy/>

⁴ Lacy, Peter; Rutqvist, Jakob (2015): Waste to Wealth – The Circular Economy Advantage, New York/London: Palgrave Macmillan.

⁵ Source: <https://www.worldwildlife.org/threats/water-scarcity>



3. Circular economy benefits and performance



At the individual company level, implementing circular solutions involves rethinking products and services using principles based on durability, renewability, reuse, repair, replacement, upgrades, refurbishment and reduced material use. By applying these principles, companies can design out waste, increase resource productivity and decouple growth from natural resource consumption.

In our study, 96% of respondents believe that the circular economy is important for their company's future success, and 51% of respondents state that circular economy activities add to profits. Given this strong positive sentiment, we wanted to better understand how moving towards the circular economy can help business capture significant benefits, including:

- increased growth from new customers and deeper relationship;
- innovation and competitive advantage cost reduction;
- lower material and production costs;
- reduced energy consumption and CO2 emissions; and,
- risk mitigation by improving supply chain and resource security.

In addition, we wanted to learn the extent to which adopting circular economy principles could help companies get ahead of government policies and regulations, pricing externalities and shifts in tax rules.

Our findings were enlightening, tying real-world benefits and performance to specific circular economy projects. Respondents clearly stated that engaging in the circular economy is one way to address our serious natural resource challenges and mitigate business risk (93% consider it), as well as reduce GHG emissions (96%) and water pollution (83%).

Respondents also said that the circular economy drives innovation (97%) to help make the company more efficient and competitive in areas such as sourcing, product development and production processes.

These findings around costs, business risk and innovation help explain why sustainability and circular economy principles are moving so decisively to the top of the corporate agenda and are attracting greater investment.

Akzo Nobel's CEO Thierry Vanlancker aptly sums it up: "The circular economy is a key element of the necessary route towards a sustainable society. At AkzoNobel, we use circular principles to achieve radical resource efficiency and to design out negative externalities. This approach offers clear benefits for the environment, for our customers and for ourselves."

Respondents' optimism and strong commitment to the circular economy is no doubt influenced by the benefits they've already seen. Among respondents, 51% stated that their circular economy-related decisions and actions added to profits while only 6% reported a negative impact on their profits.

What makes these results even more impressive, is that consumers are mostly unwilling to pay a premium for more sustainable and circular products, and so companies are not using circular initiatives to raise prices. In our survey, only 10% of the companies stated that they are selling their circular products at higher margins.

This means that companies are reaping the financial rewards through better operational efficiency (96% of survey participants cited this as a factor) and increased revenue by deepening relationships with current customers, winning new customers who are attracted to circular products/solutions (93% cited this as factor). Financial rewards also take the form of reduced risk, easier financing and access to new markets. The overall effect is a more robust business. The circular economy helps to "transform customer relations from transaction-based contacts to strategic, long-term partnerships," said Nikhil Hirdaramani, a member of the Board of Directors of Hirdaramani Group, an apparel manufacturer based in Sri Lanka.

Figure 1: Effect of circular economy on profitability

How do your company's circular economy-related actions/decisions affect its profitability?

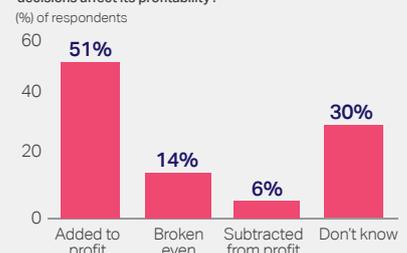
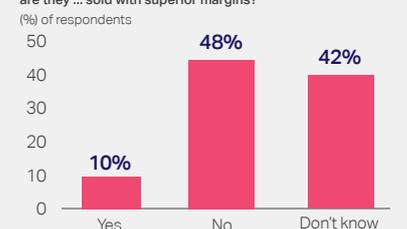
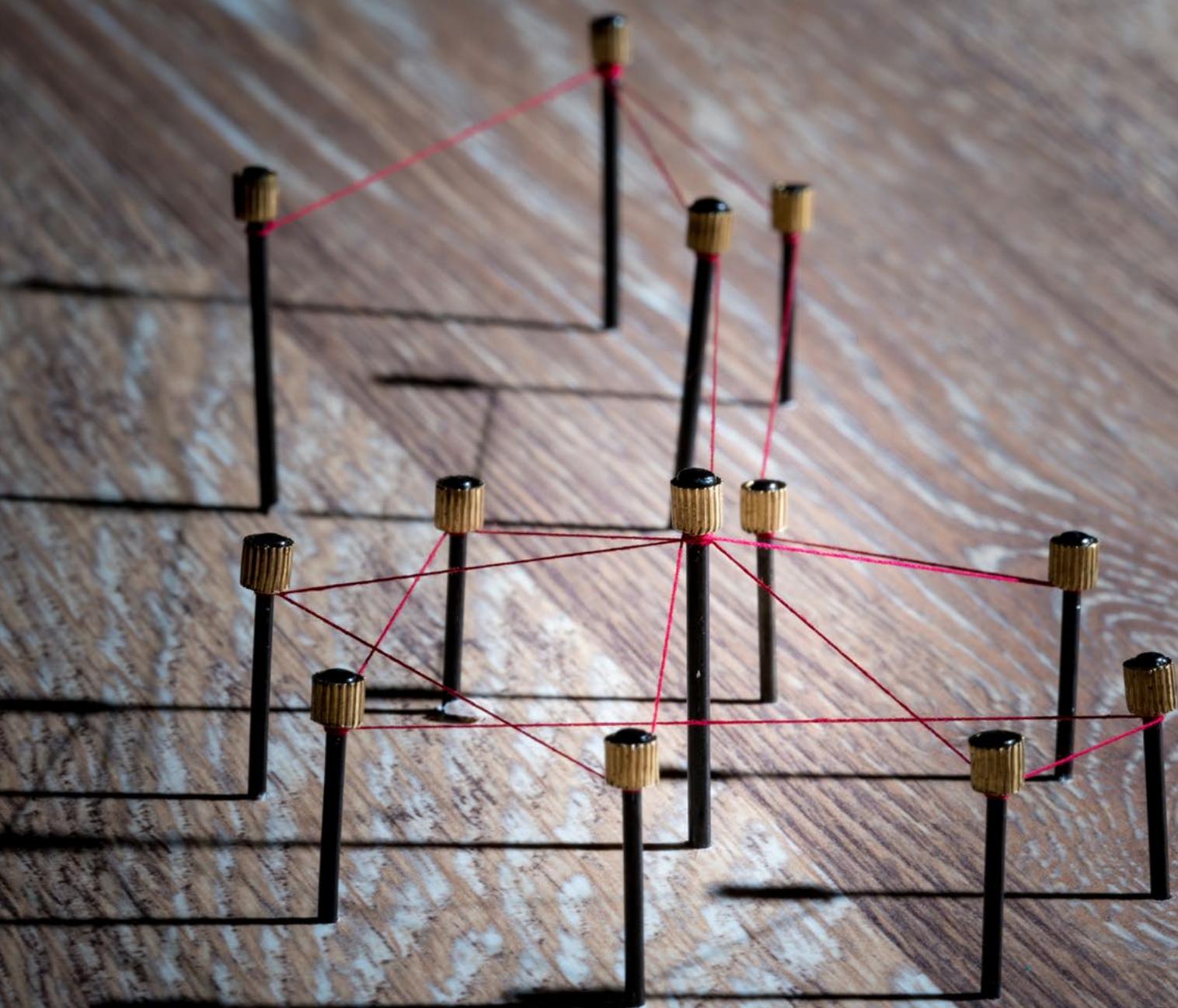


Figure 2: Margins of circular economy products

If your company develops circular economy-specific products, are they ... sold with superior margins?

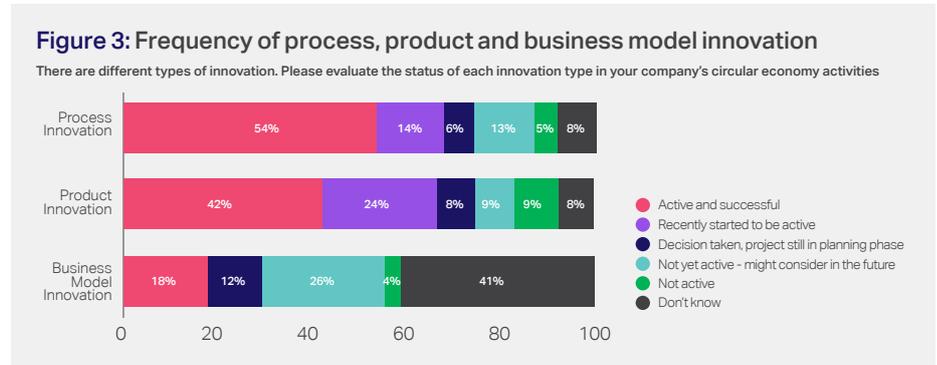


4. Three types of circular innovation



To start their circular economy journey, companies need to innovate with circular principles in mind from the outset.

There are three types of circular innovations with progressing degrees of complexity that should be tackled in stages. "Start with circular economy as early as possible in the project or process," suggests Jenny Adholm, Sustainability Lead at Skanska.



1

Process innovation

is generally the easiest since most companies have always been engaged in traditional process innovations. It involves the development and implementation of new or significantly improved production, logistic or recycling methods.



2

Product innovation

is somewhat more difficult because it touches more areas of the organization. It involves the development and introduction of new or significantly improved goods or services.



3

Business model innovation

is the most challenging because it involves significant changes and/or the creation of a new logic around how a company generates value.



Taken together, these three types of innovation touch all aspects of the value cycle. Below we will share how companies are pursuing innovation in each stage of the value cycle.

Figure 4: Circular economy activities along the value cycle

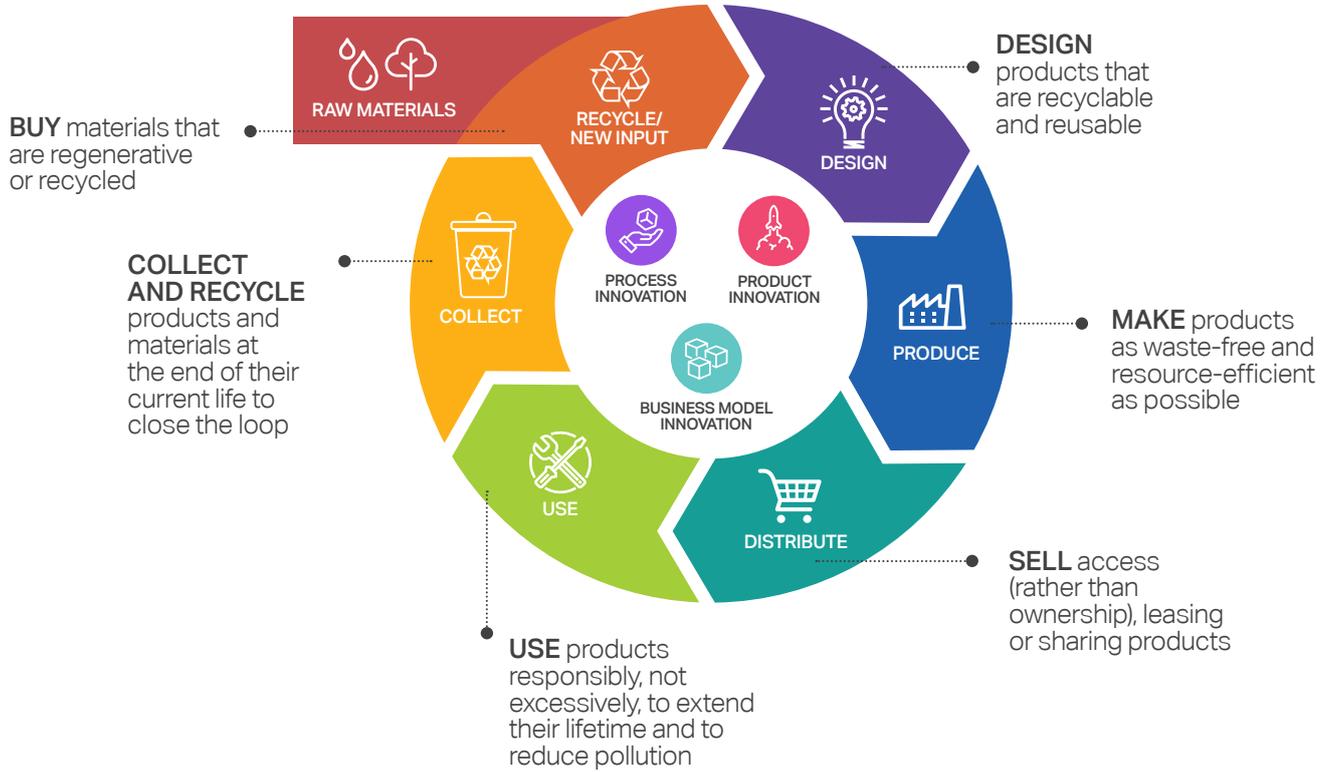


Figure 5: Frequency of circular economy projects along the value cycle

Please select in which of the steps your company actively performs circular economy



1. Process innovation

For several reasons many companies moving towards the circular economy start with process innovation. Generally process innovation involves the operations areas of the business and therefore is considered within the direct control of the business. Many employees are also familiar with adjusting to new production processes. And since customers are not directly affected by changes in production processes, these innovations often pose less risk.

Among our survey respondents, 54% said they are active and successful in process innovation, which primarily involves production (i.e., "make") as well as collecting and recycling the waste created during production processes.

54%

of all respondents said they are **active and successful in process innovation**

47%

of respondents said they are **active and successful in the collecting and recycling stage of the value cycle**

100%

of respondents from the **pulp and paper industry are active and successful in the collecting and recycling stage**



Sri Lankan apparel manufacturer Hirdaramani constructed its Hirdaramani Knit – Agalawatta ('Mihila') plant with four sustainability focus areas in mind - energy consumption, water consumption, waste reduction and improving biodiversity. From the very start, the company thought in terms of sustainability, even the location of the factory was selected considering the rainwater-harvesting requirement for running operations at the factory. Hirdaramani then focused on the operation of low energy ventilation and cooling systems, while also seeking out circular technologies to reduce water consumption, such as rainwater harvesting and waste water recycling.

The plant, which opened in 2008, has a production area of approximately 96,000 square feet, a capacity of up to 70,000 standard hours, and employs more than 1,000 people. Although it was costly to build — 30-40% higher than a conventional plant — the investment has paid off in many ways. Energy use is 48% less than a conventional plant, water consumption is 70% less and the plant sends zero waste to landfills. As a result, the Mihila plant has earned international certifications and awards such as the LEED Gold Certification.

Survey respondents said they were somewhat more successful with the "collecting and recycling" stage of the value cycle: 47% said they were active and successful in this area, although activity in this area varied significantly among industries. The most active was pulp and paper. In the survey, 100% said they are active and successful in this field.

CMPC is a Chilean pulp and paper company that turned waste treatment from a cost into a profit. Maintaining the commitment to local community, when CMPC acquired the Brazilian pulp operations, and as a way to continue treating and recycling solid waste the company kept the association with Vida. In a conventional plant, only 22% of the waste can be reused (in agriculture); 25% is incinerated and 53% go to landfill.

But thanks to its circular economy efforts, the mill in Brazil now has recycling rates of 99%, which means almost 600,000 tons of industrial waste is not going into landfills. What's more, Vida earned US\$1 million in the last five years by selling products from recycled waste that once created costs. In fact, the project has been so successful that CMPC plans to expand these processes to all its plants in Latin America.

"At CMPC, circular solutions are not only a means to do good for the environment by establishing sustainable processes, but also a means to make our company more valuable. By changing our recycling practices, we were able to turn production waste - that created a financial loss before - into profit," said Hernán Rodríguez Wilson.

2. Product innovation

Product innovation is more complicated than process innovation given its broad impact on the value cycle: procurement (i.e., “buy”), product development (i.e., “design”), how customers use the product (i.e., “use”) and how the company can “collect and recycle” finished goods.

Innovative thinking is critical, which often requires recruiting and training employees, cooperation among employees with different skills from various departments (e.g., R&D/design, procurement, operations) and the inclusion of external partners with different skills and/or resources to produce circular products. Customer demand may drive product innovation, or the company might use product innovation as a testing ground—a means to constantly learn about customer needs and develop new markets.

42%

of respondents are **active and successful in product innovation**

Among those seeing themselves as industry leaders in the circular economy, this percentage increases to 62%; while among those who see themselves as average, only 33% describe themselves as active and successful. A closer look at the value cycle finds that procurement, or “buy,” is relatively easy to accomplish: 44% of companies from the survey are active and successful in the buying stage, even though it often means finding new suppliers and forging new partnerships.

A second part of the value cycle touched by product innovation is “design.” To be successful with design, companies need to educate and train employees about circular principles and practices. It can prove quite a challenge. Only 32% of the companies in our survey say they are active and successful in the design stage of the

value cycle, though some have made progress. “If products were designed with their next use in mind, people could more easily reuse and recycle those products,” said David Rachelson, Vice President of Sustainability at Rubicon Global.

South Africa-based **GREEN HOME** produces and sells plant-based, biodegradable food packaging using raw material such as sugarcane, plant starch, wood and wood fiber. Founder Catherine Morris got the idea for “circular packaging” during a trip to Thailand where she saw packaging made from organic material. She started her business less than a year later, at first doing research on potential raw materials by herself and eventually hiring designers to develop the products.

“Circularity is at the core of our corporate strategy. When I founded the company, still a lot of education of customers had to be done. This has changed a lot in recent years. Both business and private customers are more aware of sustainability and the circular economy today and demand for recyclable products,” Morris said.

44%

of respondents are **active and successful in the buying stage of the value cycle**

IKEA has introduced new design principles that can be bundled together to extend the product life. “It’s about seeing products as ‘material banks’ for the future. And from the very beginning design them so they can be repurposed, repaired, reused, resold and recycled in any other way,” says Malin Nordin, Development Leader for Circular IKEA. To this end, IKEA is constantly developing, testing and implementing new offerings with different solutions that deliver true value for the money. For example, with IKEA’s Modular VIMLE sofas customers can create their own combinations, removing or adding modules if their needs change (e.g., moving to a smaller or bigger apartment). IKEA also offers a wide selection of cover styles to change the look of the sofa or replace covers that are worn out or dirty.

Finally, there is the “use” part of the value cycle—how customers actually use the product. Under circular economy principles customers should be able to use products responsibly, not excessively, in order to extend their lifetime and reduce pollution. According to our survey, 42% of companies are active and successful in this stage of the value cycle.

32%

of respondents say that their **companies are active and successful in the design stage of the value cycle**

C&A is a family-owned, Dutch business. The companies’ circularity journey started when the company asked William McDonough, founder of Cradle to Cradle (C2C), to speak about C2C at C&A’s annual shareholder meeting. His presentation sparked excitement for how fashion could contribute to sustainability, and the company created a task force (including BCG and others) to assess potential circular activities and create an “ecosystem” of internal and external stakeholders to pursue these activities.

The C&A’s first circular product innovation was a C2C-certified, fully bio-degradable t-shirt. Even though a t-shirt is one of the easiest products to design and produce, meeting C2C standards was challenging. C&A needed to find alternatives for polyester or nylon stitching, new care labels, as well as dyestuffs by innovating within the existing value chain. Despite these challenges, employees were enthusiastic and proud to participate in the sustainability effort alongside management and in close cooperation with new and existing partners.

Ultimately, C&A launched a mass market, price-competitive C2C t-shirt in the early summer of 2017 in its retail stores in Europe. It was one of the best-selling products in the company’s history and enjoyed margins on par with conventional products. Furthermore, the t-shirt helped attract new customers and increase the value of the average shopping basket. With this pioneering work, C&A proved existing products can be redesigned with CE principles at affordable prices for the mass market.

3. Business model innovation

Business model innovation is the most challenging concept towards a more circular economy because it can change the entire value cycle, including how products are marketed and sold to customers. Thus, business model innovation is more difficult to accomplish, especially for large corporations in conservative industries.

Only 18% of the companies from our sample are successfully engaged in business model innovation. Even among the circular leaders, only about one-third are successful with business model innovation.

18%

of companies are **active and successful in business model innovation**

“Process innovation is always tough to implement but we have been doing it for decades and have gained valuable experience. Product innovation requires new ways of thinking from designers and collaboration with new partners and suppliers and is thus more difficult. We are in the process incorporating circular ingredients into products, such as recycled and renewable content in plastic products and making spare parts available for repairs. In contrast, business model innovation is an even greater challenge. We are testing and piloting circular initiatives, but still struggle to find scalable solutions,” says Nordin of IKEA.

Unlike process or product innovation, business model innovation also touches on how the product is being sold—the “sell” stage of the value cycle. To make the transition, companies often need to devote a lot of time and resources to educating customers, trying to change consumption habits that are deeply ingrained (e.g., leasing or sharing instead of buying). Only 12% of the companies are active in this stage of the value cycle, though some companies are making inroads.

Cohealo is a US-based technology company founded in 2012 that developed a cloud-based platform, which allows healthcare systems to schedule, track and share medical equipment. That’s a big deal in the industry because health systems usually spend millions of dollars on purchasing and renting equipment, yet utilization rates for owned equipment is often below 50%.

Because hospitals have limited resources and can’t afford to buy all available equipment, they will often rent equipment on a case-by-case basis. This can result in astronomical rental costs. Additionally, hospitals don’t have hard data on equipment utilization, making it difficult to determine whether the patient case volume exists to justify the purchase for new, cutting edge technology.

From the beginning, Cohealo’s founders believed technology-supported collaboration among hospitals could help to facilitate positive clinical outcomes and lower costs. Today, the company is growing by over 1000% year-over-year.

Michelin, the French manufacturer of tires, is pressing forward with innovations such as selling tires as a service. Trucking, airline and mining companies can choose to be charged based on the number of kilometers travelled, the number of landings made or the weight transported using the Michelin tires.

As part of the service, the company takes care of every aspect of tire management, including selection, mounting, maintenance, assistance, retreading and end-of-life recycling.

These solutions use onboard pressure monitoring systems to optimize preventive maintenance and reduce vehicle downtime. Well-maintained tires last longer, which is good for the planet and good for customers’ business.

Because transportation customers are very price sensitive, Michelin has spent significant time educating them about the benefits of tires-as-a-service. By 2017, Michelin solutions managed the tires of more than 400,000 trucks and light trucks in 18 countries. The goal is to double revenue from their services and solutions businesses by 2020.

“Circularity has an impact on every aspect of our product’s lifecycle - from the design of our cycles to recovery and recycling. Our sustainable growth strategy particularly relies on circular economy levers which help us to develop innovative processes and products,” said Michelin CEO Jean-Dominique Senard.

5. Success factors and recommendations



Each company is different, of course, with its own unique challenges. But in our discussions with managers, especially those who consider themselves leaders in the circular economy, we have identified several common success factors and best practices that every company should bear in mind as it initiates, implements and markets circular solutions to customers.

Here are **10 recommendations** to implement circular economy principles into any business:

#1: Engage with external stakeholders

External stakeholders often play an important role in pushing the circular economy to the top of the corporate agenda so it makes sense to be proactive. Customers have their own sustainability goals. Government agencies and regulators are setting requirements. NGOs and local communities are embracing sustainability to improve local quality of life. Investors are prioritizing sustainability and will divest from industries/companies that are not sustainable; meanwhile, suppliers and contractors face similar pressures, as well as from the media, public opinion and opinion leaders.

More than 50% of survey respondents said customers were one of the most influential external groups.

50%

of respondents **stated that customers are the most influential external group**

For example, customers are encouraging AkzoNobel and Solvay to develop chemical products that are more sustainable.

And LafargeHolcim, a construction materials company, conducted focus groups to better understand customers' needs and concerns around the circular economy, an approach that is still remarkably rare.

While survey respondents said that media, suppliers and local communities generally play a minor role in bringing circular to the agenda, our survey found that the influence of stakeholders varies a lot from industry to industry. For example, regulations are strongly influencing circular adoption in construction and pulp and paper. "It is important not to rely on the market, but to enforce the change by regulation," stated Dr. Dirk A. Schwede former manager at the consulting firm energy design in Shanghai and currently Robert Bosch Junior Professor for Sustainable Building at the University of Stuttgart.

#2: Ensure consistent and strong top management support

Respondents cited management as the most important internal stakeholder for driving circular initiatives. Without leadership from top management, the organization will not deploy the necessary financial and human resources. Most circular projects are financed internally: almost 61% of the companies in our survey fund their circular projects internally, while 21% receive grants or public support for their circular activities.

61%

of the surveyed companies **fund their circular projects internally**

21%

of the surveyed companies **receive grants or public support for their circular activities**

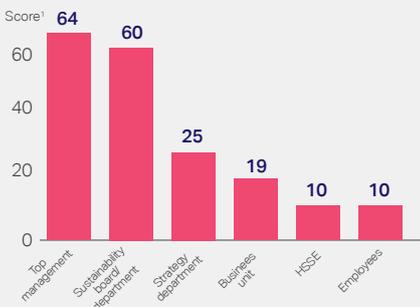


In half of the surveyed companies, top management made the decision to engage. This vocal and visible support is also vital to maintain momentum and build enthusiasm for the circular initiatives among the rank-and-file. Engaged leadership understands the potential relationship of circular initiatives—that decrease costs or unlock new profit pools—and competitive advantage.

For example, Solvay’s top management brought sustainability to the agenda, emphasized its importance and secured executive committee support to drive implementation. “Our senior executives wanted to unlock new business potential by closing the loops,” stated Dominique Debecker, Deputy CSO at Solvay.

Figure 6: Internal stakeholder groups giving impulse to bring circular economy to the agenda

Which internal stakeholder groups were the most important to give the initial impulse to bring circular economy to your company’s agenda?



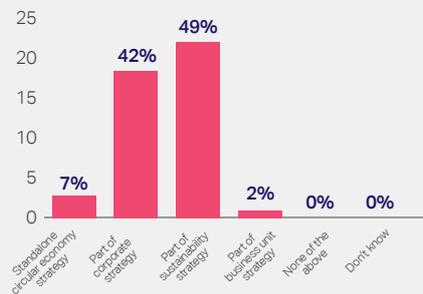
¹ Calculated based on survey results: For each “top 1” rating, 3 points were given, 2 points for each “top 2” and 1 point for each “top 3”

#3: Define “circular” and communicate the vision

As basic as it might sound, management must take the time at the outset to clearly define what “circular” means for the company—both strategically and operationally. This will ground the circular concept and make it easier for management to communicate with employees. The definition is unique for every company and helps to foster a common view internally. According to Malin Nordin, Development Leader for Circular IKEA: “From the beginning, we had clear communication of what the circular economy means to IKEA.”

Figure 7: Incorporation of circular economy strategy into other corporate strategies

Where is your company’s circular economy strategy incorporated?
of respondents



Management also needs to explain the strategy and rationale. In most cases, the circular strategy is incorporated in companies’ overall sustainability strategy (49%) or corporate strategy (42%). Only 7% have a standalone circular strategy.

#4: Quantify specific ambitions and develop a business case

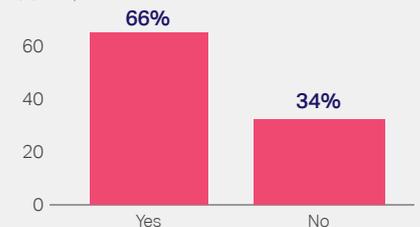
According to our survey findings, 81% of companies with a circular strategy also have a clear business case underlying it. Among those companies who do not have a circular strategy, only 39% have a circular business case. Given the higher costs often associated with circular activities compared to traditional activities, the business case for circularity is usually strongly linked to acquiring new customers, strengthening existing customer relationships (increasing volumes, cross-selling, long-term contracts, etc.) or opening new markets.

81%
of companies with a circular strategy also have a clear circular business case

To build enthusiasm and focus among employees to pursue this business case, leaders should quantify their ambitions and set goals to get the organization moving. Ambitious, measurable goals drive action, create accountability and emphasize the need for change. “We endeavor to disrupt ourselves—rather than be disrupted by others,” said Markus Laubscher, a director in the Sustainability Department at Philips.

Figure 8: Frequency of sustainability and circular economy strategy

Overall, has your company developed a clear business case of proven value proposition for its approach to CE?
(%) of respondents



#5: Educate your employees

Particularly in the first year of change, leadership should consistently reinforce the importance of the circular idea with employees—who must bring the circular vision to life.

These communications should aim to change the mindset of employees from thinking in value chains to thinking in value cycles. It's a transformation that in all likelihood will require the corporate culture to change. It's never too early for this indoctrination. At GREEN HOME, for example, the importance of sustainability is put front and center during the recruiting and interviewing process.

And companies need to back up talk with training. For example, those in operations need education in dematerialization and remanufacturing, while those in design need to be trained in practices to extend product lifetime, eco-design (including the consequences of using certain materials in the design) and recyclability. Companies must also train employees on the merits and the practice of cooperation. As noted earlier, product and business model innovation in particular require cooperation between different functions and departments.

An open culture that supports internal cooperation is needed so skills and competences from various backgrounds can be combined to deliver new, sustainable solutions and implement circular economy projects. This is something that many companies struggle with. Only 16% of survey respondents said that it's easy for employees to suggest specific circular activities or projects.

Philips has developed training materials and tools to educate business leaders on design for reuse, recycling and refurbishment. This spurs them to generate their own ideas for sustainable products and services. After all, education and training are not just about developing "technical" skill, they are also about encouraging creativity and out-of-the-box-thinking. "Flexibility in thinking and the way you do things is required," said Martijn van Loon, RD&I Operations Manager at AkzoNobel.

16%
of survey respondents say
it's easy for employees to suggest specific circular activities or projects

Many of the leaders surveyed noted how receptive employees are to being educated about the circular economy, how much they enjoy being involved in circular economy projects, and their cooperation in adapting the corporate culture accordingly. "Our employees are very proud to work at 'Mihila'" said Nikhil Hirdaramani. "They were highly involved in the circular economy activities right from the start and very motivated to develop sustainable solutions."



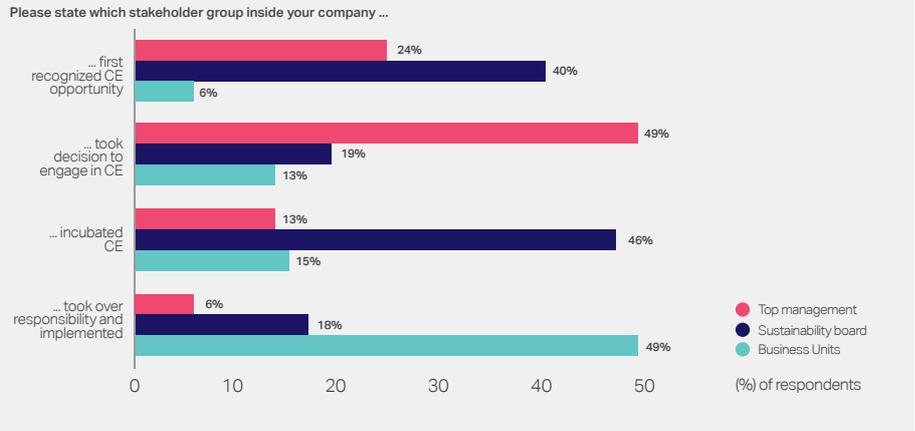
#6: Engage and empower business units

Although sustainability departments may initiate and incubate circular economy projects (46% do so), the core business is responsible for implementing and scaling these initiatives. This is smart because sustainability is not an isolated competency, but a mindset that potentially impacts all types of business activity.

Almost half of the companies in the survey said business units ultimately take over project responsibility and drive the change, while only 18% of the sustainability departments took responsibility for implementation. For this handoff to succeed, top management must make certain that sustainability departments involve the business units early.

This handoff is made smoother when circular principles are integrated into the project teams. And, indeed, most companies in our survey (54%) have integrated circular economy principles into existing project teams within the business units. For example, at Solvay, circular principles are embedded into daily business: "We do not have a standalone sustainability roadmap but rather embed sustainability and circularity in each business unit and into our 'normal customer relation,'" stated Dominique Debecker. "The circular economy is not a change process anymore but an integral part of our core business activities."

Figure 9: Transformation of circular economy activities from top-down to bottom-up



#7: Start with process innovation, then move to product innovation and business model innovation

Given the previous section's discussion on product, process and business model innovation, this recommendation needs the least explanation. It suffices to say that it makes sense to start with the least disruptive change first. Then based on that foundation of early success, it's easier to explore new product opportunities. Only after circular thinking is well-established, does it make sense to consider the big step of business model innovation—an area where even many circular leaders are struggling.



#8: Collaborate with external partners

It takes an array of skills and new ways of thinking to develop circular products and processes. The most successful companies do not try to develop or acquire all of these skills internally—a probably fruitless task. Instead they collaborate with a variety of external partners, from suppliers to research institutions to NGOs, which has the added benefit of expediting circular projects. Sometimes this collaboration can even span across industries. After all, one industry's waste could be another industry's raw material.

Time and again, managers at leading circular companies extolled the value of collaboration. Nordin at IKEA said: "You can't do it on your own!" At C&A, Donald Brenninkmeijer said: "Finding the right partners and suppliers and having the ability to bring those partners together was a key success factor to develop the C2C t-shirt."

A further example is AkzoNobel's effort to turn waste into chemicals. The project, which started in 2014, is investigating the feasibility of using waste as a feedstock to make chemicals. A consortium of partners with different backgrounds and competences aims to establish a functioning plant in the Netherlands in the near future, which would be the first such facility in Europe.

#9: Define and align KPIs for goals and accountability

The circular economy promises improved sustainability, competitiveness and profitability. In our survey, two-thirds of the companies had a clear business case or proven value proposition; among circular leaders, 95% reported having a business case. However, the only way a company can prove a business case is by having the right KPIs in place to measure progress. Regular reporting both internally and externally (to customers, investors, public, etc.) is also important to maintain accountability. Among companies in our survey, about half have KPIs in place to measure circular progress, but only a third regularly report those KPIs.

KPIs do not necessarily need to be circular specific, especially not at first since they are often measured against traditional projects with traditional metrics such as ROI or NPV. Today most companies use general KPIs such as ROI (51% from our survey), amortization rate (41%) or net present value (31%) to track their circular journey. At the moment, there are no generally accepted circular KPIs, though some leaders are working to develop them. And some companies are trying to track the “true costs” of their goods or services to society (e.g., by applying internal carbon pricing to quantify the cost of pollution).

One company active in the development and use of circular-specific KPIs is Solvay, which has created the Sustainable Portfolio Management tool (SPM) that links strategy and sustainability. The tool assesses two aspects of Solvay’s portfolio: (1) the monetized risk of its environmental impact (i.e. Where is Solvay “part of the problem?”) and (2) the extent to which it helps consumers to address their own sustainable development concerns (i.e. Where is Solvay “part of the solution?”). Today, an internal team analyzes the entire portfolio with the SPM tool on a yearly basis; then each business unit and the company’s sustainable development function discusses next steps. According to Dominique Debecker, “measuring environmental and social impacts is key and a means to detect potential next challenges and opportunities. It makes our strategy more robust. Solving a problem here while creating another problem somewhere else isn’t good enough.”

Solvay and other circular leaders are also starting to align their annual reporting with Global Reporting Initiative (GRI) standards to bring greater transparency to their circular efforts. GRI is an international independent standards organization that helps businesses, governments and other organizations understand and communicate how their activities and supply cycles impact climate change, human rights and corruption.

#10: Do good and talk about it

When circular initiatives are pursued correctly, they create tangible business and social benefits: among them, more efficient processes, compelling new products and services, adjacent growth and enhanced brand equity. Circular products and services generally don’t support a price premium over traditional offerings; however, sharing information about circular initiatives can attract new customers, strengthen existing relationships and satisfy investors.

Today, just 42% of the companies specifically market their circular products as such. But given that circular initiatives can translate into greater profits (although there is not a green price premium), promoting a company’s circular projects is well-worth the effort. Moreover, as noted, investors increasingly consider sustainability when making investment decisions and will divest from companies if they consider a company’s non-sustainable practices too risky. The bottom line is that companies who “do good” should talk about their efforts.

42%
of companies specifically market their circular products



6. Case Studies

Overview of Case Studies:

INNOVATION TYPE MENTIONED IN CASE STUDY						BUSINESS CASE				
INDUSTRY	COMPANY	VALUE CHAIN	PROCESS	PRODUCT	BUSINESS MODEL	ROLE OF TOP MANAGEMENT	KPI SYSTEM	COST-RELATED	GROWTH RELATED	COLLABORATION
Chemicals	AkzoNobel		✓	✓					✓	✓
Textiles	C&A		✓	✓					✓	✓
Wood & Packaging	CMPC		✓					✓		✓
HealthCare	Cohealo			✓	✓				✓	
Wood & Packaging	GreenHome		✓	✓					✓	
Textiles	Hirdaramani		✓						✓	✓
Wood & Packaging	IKEA		✓	✓	✓			✓	✓	✓
Construction	LafargeHolcim		✓					✓	✓	
Transport	Michelin		✓	✓	✓			✓	✓	✓
HealthCare	Philips				✓				✓	
Transport	Rubicon				✓			✓	✓	✓
Construction	Skanska		✓					✓	✓	✓
Chemicals	Solvay		✓	✓	✓				✓	

ATTRIBUTE	SCALE					
Value Chain						
Role of Top Management						
KPI System						



AkzoNobel is a global leader in coatings and specialty chemicals. Sustainability is well embedded in the organization and is a core operational principle, with the CEO as a high-profile ambassador, AkzoNobel dubbed its sustainability strategy “Planet Possible” and set ambitious goals.

These included improving resource efficiency across the value cycle by, for example, reusing packaging to reduce waste, and increasing revenues from downstream eco-premium solutions to 20% of total revenue by 2020. The long-term goal is to eliminate carbon emissions.

20%
of AkzoNobel's total revenue to come from eco-premium solutions by 2020

After senior management put the topic on top of the agenda, it tasked the individual BUs with driving the implementation and encouraged a strong sense of ownership for sustainability initiatives across the organization. To track progress, the company settled on a set of KPIs and incorporated a sustainability report into the annual corporate report.

Today, people from different departments collaborate to develop circular solutions, and the company cooperates with external partners to access the necessary expertise for sustainability innovations. “Flexibility in thinking and the way you do things is required,” states Martijn van Loon, RD&I Operations Manager at AkzoNobel.

One example of flexible thinking and strong collaboration with external partners is AkzoNobel's effort to turn waste into chemicals. The project, which started in 2014, is investigating the feasibility of using waste as a feedstock to make chemicals. A consortium of partners with different backgrounds and competences aims to establish a functioning plant in the Netherlands in the near future, which would be the first such facility in Europe.

Additionally, AkzoNobel develops new sustainable products in close cooperation with customers and suppliers who are trying to meet their own customers' demands for sustainable products. For example, it introduced the first fully compostable and recyclable coating for paper cups.



“The circular economy is a key element of the necessary route towards a sustainable society. At AkzoNobel, we use circular principles to achieve radical resource efficiency and to design out negative externalities. This approach offers clear benefits for the environment, for our customers and for ourselves.”

Thierry Vanlancker
CEO, Akzo Nobel



Credit: Hummel Fotografie



Founded more than 170 years ago as a Dutch textiles company, C&A is a family-owned business that today is at the forefront of circularity in the fashion industry.

The company’s recent circularity journey started when the Brenninkmeijer family asked William McDonough, founder of Cradle to Cradle (C2C), to speak about C2C at C&A’s annual shareholder meeting. His presentation sparked excitement for how fashion could contribute to sustainability, and the company created a task force to assess potential circular activities and create an “ecosystem” of internal and external stakeholders to pursue these activities.

The task force created the “Fashion for Good” initiative based in Amsterdam. It aims to encourage and help those in the fashion industry adapt good circular practices in five areas: materials, economy, energy, water and lives. Fashion for Good embodies C&A’s belief that the fashion industry must work together toward circularity. “We cannot roll the stone all the way up by ourselves,” Donald Brenninkmeijer said.

The C&A’s first circular product innovation was a C2C-certified t-shirt. Even though a t-shirt is one of the easiest products to design and produce, meeting C2C standards was challenging. C&A needed to find alternatives for polyester or nylon stitching, new care labels, as well as dyestuffs. Despite these challenges, employees were enthusiastic and proud to participate in the sustainability effort alongside management and in close cooperation with new and existing partners (e.g., suppliers, manufacturers, Fashion for Good).

Ultimately, C&A launched a mass market, price-competitive C2C t-shirt in the summer of 2017 in its retail stores in Europe. It proved immensely popular—indeed it was one of the best-selling products in the company’s history—and enjoyed margins on par with conventional products. Furthermore, the t-shirt helped attract new customers and increase the value of the average shopping basket. It all added up to a very powerful business case that will pave the way for more CE products.

2017
The year in which C&A launched their first mass market, price competitive C2C t-shirt

To help other fashion brands with their sustainability efforts, C&A published a “how-to guide” and shared insights and lessons learned. On an industry-level, it is a first step towards more “good” fashion.



“The journey towards circularity is a change that we should make for future generations. It is a journey that requires strong collaboration within and across industries. We as C&A can be a leader and that’s our clear ambition. But we cannot do it on our own. The more stakeholders join forces, the more of a change can be achieved.”

Alain Caparros
 CEO, C&A



Empresas CMPC is a Chilean-based producer of solid wood products, pulp, paper, packaging and tissue with customers in 45 different countries across the world.

The company has been incorporating circular principles into its strategy by, for instance, using recycled fibers and efficiently consuming raw materials and water.

Last year, CMPC created a corporate sustainability area and one of the main goals is to support the circular economy efforts on both the corporate and the BU level. Every BU has one dedicated sustainability manager.

While CMPC does not market its circular products explicitly as such, and cannot pass along higher prices, it considers these projects necessary as a way to attain sustainability. For example, its partnership with Vida has given the company the possibility of creating 180 local jobs.



“At CMPC, circular solutions are not only a mean to do good for the environment by establishing sustainable processes but also a mean to make our company more valuable. By changing our recycling practices, we were able to turn production waste - that created a financial loss before - into profit.”

Hernán Rodríguez
CEO, CMPC





Cohealo is a US-based technology company founded in 2012 that developed a cloud-based platform, which allows healthcare systems to schedule, track and share medical equipment.

That's a big deal in the industry because health systems usually spend millions of dollars on purchasing and renting equipment, yet utilization rates for owned equipment is often below 50%. Because hospitals have limited resources and cannot afford to buy all available equipment, they will often rent equipment on a case-by-case basis. This can result in astronomical rental costs.

Additionally, hospitals do not have hard data on equipment utilization, making it difficult to determine whether the patient case volume exists to justify the purchase for new, cutting edge technology.

From the beginning, Cohealo's founders believed that technology-supported collaboration among hospitals could help to facilitate positive clinical outcomes and lower costs: "Our hospital partners are always working on ways that they can do more and better, with less," explained Brett Reed, co-founder and CEO at Cohealo. Besides offering technological support to facilitate sharing, Cohealo works closely with customers on using the analytics generated from the platform for smarter, data-driven capital expense planning. With sharing in place, hospitals can collectively purchase a single piece of equipment, or make fewer purchases overall, because what

a hospital might need is already in the network and has excess capacity.

Cohealo's model has a clear business case for itself and its customers, helping to push the industry towards more sustainable solutions. "Cohealo partners with hospitals to help solve for one of the most overlooked challenges in healthcare: how hospitals can make the most of their medical equipment. By allowing hospitals to share equipment between facilities, we've been able to deliver significant cost savings to our clients. Our sharing capabilities, as well as the resulting equipment utilization data, has been attractive to investors," said Reed.



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Brett Reed
CEO, Cohealo



Established in 2007 in South Africa, GREEN HOME produces and sells plant-based, biodegradable food packaging using raw material such as sugarcane, plant starch, wood and wood fiber.

Founder Catherine Morris got the idea for “circular packaging” during a trip to Thailand where she saw packaging made from organic material. She started her business less than a year later, at first doing research on potential raw materials by herself and eventually hiring designers to develop the products.

Early on there was little demand for biodegradable food packaging in South Africa, but Morris worked to educate potential customers and has helped to make biodegradable products more mainstream. Today, B2B and end customers generally know what biodegradable and compostable mean and companies advertise their use of such materials.

Some of GREEN HOME’s customers purchase the products to meet their clients’ growing demand for sustainable solutions (e.g., cafés, restaurants, and corporate canteens). Other customers are not motivated by sustainability per se but by the efficiencies of composting. For example, mines that can compost green waste on-site instead of shipping it elsewhere.

GREEN HOME’s commitment to education extends to its recruitment and training process. Most new employees don’t arrive with a deep environmental awareness, so educating them about the importance of sustainability and circularity has proven crucial to the company’s success.

Given the comparably higher cost for the raw materials that go into GREEN HOME’s products, the margins are a bit smaller than conventional, high quality plastic packaging. Even so, they are priced competitively, and the business case is strong given the growing demand for sustainable packaging solutions. Indeed, growth has not been limited by demand, but by the company’s own production capacity.



“Circularity is at the core of our corporate strategy. When I founded the company, still a lot of education of customers had to be done. This has changed a lot in recent years and both business and private customers are more aware of sustainability and circular economy today and demand for recyclable products.”

Catherine Morris
CEO, Green Home



Hirdaramani was founded in the early 1900s as a tailor and retail store in Colombo, Sri Lanka. Today, it partners with many leading international apparel brands including Levi's, Patagonia and Tommy Hilfiger. With 38 production facilities across Sri Lanka, Vietnam, Bangladesh and Ethiopia, the company is involved in all aspects of the value cycle: product development, manufacturing, printing, embroidery, washing and packaging.

Hirdaramani is a family-owned business and has been involved in corporate social responsibility (CSR) for many years, largely by supporting local communities and empowering their employees. But the environmental dimension of CSR got a big push around 2005. At the time, with the industry quickly consolidating, Hirdaramani saw sustainability as a way to differentiate itself and created an environmental sustainability agenda based on four pillars: energy, water, waste and biodiversity.

The company involved local communities early-on by educating students on eco-friendly manufacturing, and it built internal enthusiasm by empowering employees. "We tried to make it a topic that employees are interested in. It is a mindset that needs to change," states Nikhil Hirdaramani, a member of the Board of Directors. To accomplish these goals, the company avoids a heavy handed top-down approach and instead makes sure the business units are involved in all

circular activities, with support from a dedicated sustainability department.

Admittedly, lower production costs do not offset the higher building costs. However, the factory confers other benefits. As Hirdaramani had originally hoped, its sustainability offering is a differentiator that few competitors can match. This has helped the company grow its business by evolving many customer relationships from being transactional in nature to more long term and strategic. Furthermore, the company's focus on sustainability has improved recruitment and retention. People want to work for the company; employees are proud and want to remain.

Given the multitude of interconnected stakeholders in the global fashion industry, no single company can make the change to sustainability on its own. Looking forward, Hirdaramani wants the industry to cooperate across the entire value cycle, and to this end is willing to share insights to develop sustainable solutions.



“Today the fashion industry is very fast moving and cost-driven. Building our ‘Mihila’ plant was a long-term investment that helped us to push customer relations to the next level. Our circular production is a unique selling proposition which helped us to establish new, long-term partnerships with customers instead of transaction-based relations. ”

Nikhil Hirdaramani

Member of the Board of Directors of Hirdaramani Group



IKEA's sustainability journey started 50 years ago, spurred both by an internal conviction that sustainability was a matter of corporate responsibility and, if done correctly, a way to lower costs.

Those early first steps toward circularity succeeded in lowering production costs by reducing packaging material and using waste as a resource. IKEA also began cooperating with the World Wildlife Fund (WWF) to study its waste stream to understand which materials ended up where and how they could be used alternatively. That work paid off. By 2016, 89% of waste was recycled or energy recovered. As Malin Nordin, Development Leader for Circular IKEA, puts it: "We need to be resource smart to keep low costs."

Today, top management is committed to continuing the transformation of IKEA's offering and business model using circular principles, especially given customers strong awareness around consumption and waste and desire for more value in what they buy. The company sees circularity principles as a way to reach more customers, being more affordable and enabling more people to live a sustainable life IKEA wants to create.



“ *At IKEA, we aim to create a better everyday life for the many people that are impacted by our business. The circular economy helps us to rethink our processes, products, customer meetings and even our business model to create a more sustainable future. Despite the great progress we have already made in the past, transforming IKEA into a circular business remains a big challenge that we can only achieve through collaboration. We need to work together to achieve faster and greater success than we ever could alone.* **”**

Torbjörn Lööf
CEO Inter IKEA Group

"It's about seeing products as 'material banks' for the future. And from the very beginning, designing them so they can be repurposed, repaired, reused, resold and recycled in any other way." To this end, IKEA is constantly developing, testing and implementing new offerings that deliver true value for the money.

At IKEA, BUs implement circular projects using their own project teams (e.g., for material innovation, purchasing, design). According to Nordin, circular economy process innovation is the first step and IKEA has been engaged in traditional process innovation for years. (Although circular is a more comprehensive framework for process innovation). Product innovation, on the other hand, requires a new way of thinking. Designers, partners and suppliers need a deep understanding of customer needs and be able to translate those needs into products and business models. For both types of innovation IKEA demands a clear business case, including non-monetary benefits such as higher customer acquisition and retention.

To foster innovation and confidence in the entire circular effort, IKEA leadership has taken the time to clearly define what it means by circular and articulate a comprehensive change management strategy. IKEA has also introduced design principles for internal use to develop products that can last longer by being reused, repaired, recycled, resold based on renewable and recyclable materials. "You can't do it on your own," Nordin said.

However, IKEA has found that business model innovation is the biggest challenge, and today it's testing different business models in order to extend product lifetimes. Examples include: taking back old furniture, providing spare parts for furniture, organizing refurbishment workshops for customers and reselling used furniture. The challenge is to find scalable solutions with a clear business case. Any new business case—even one built on clear customer needs and demands—must factor in how customer interactions will change, and how this change will affect the entire value chain and costs.

IKEA has set ambitious circular goals that it tracks using agreed upon KPIs. For example, one aim is to eliminate waste from all operations by 2020. The IKEA Sustainability Strategy, People & Planet Positive, is currently being updated with new ambitious commitments and goals on circular that will guide the transformation into a circular business to by 2030. Targets, progress, challenges and solutions are detailed in an annual sustainability report available to the public.

over 9500
articles will have circular capabilities to fulfill our ambition to become fully circular



LafargeHolcim

Headquartered in Switzerland, LafargeHolcim is a leading global construction materials and solutions company with a presence in around 80 countries employing nearly 90,000 people.

The company first took up the sustainability cause in the mid-1990s thereby differentiating itself and driving the emergence of a sustainable construction sector. Solutions designed to help customers meet EU targets for recycling and reuse under the Horizon 2020 program is just one example.

Prior to starting the circular initiative in the area of product innovation, LafargeHolcim conducted focus groups to understand customer needs and concerns.

They learned that customers were primarily worried about the quality of material derived from recycling, and so the company addressed this issue from the start.

80 million tons
amount of waste
LafargeHolcim aims to reuse
each year by 2030

Today, LafargeHolcim's sustainability strategy is articulated in The 2030 Plan which describes the company's ambitions and, among other commitments, defines targets to transform waste into resources for production processes. By 2030, the company aims to reuse 80 million tons of waste each year, and to supply four times more recycled aggregates from construction, demolition waste and reclaimed asphalt pavement compared to 2015.

One specific circular solution is the company's aggneo offering, which provides high quality aggregates processed from recycled concrete.

A LafargeHolcim global brand, aggneo is managed by a dedicated team of specialists who help set up projects in a country and then the local teams drive the actual implementation. For example, in 2016 Bouygues Construction partnered with the company in France to renovate two heritage buildings in Paris. Thanks to aggneo they converted 100% of the construction and demolition waste into ready-to-use concrete products (18%) and road gravels (82%).

Even with this kind of demonstrated success the construction industry remains conservative when it comes to sustainability. According to Mark Tomlinson, Business Development Manager at LafargeHolcim, this may persist until regulations really come into force. "Enforcement of regulation is fundamental" to kick-off circular initiatives in construction. In the future, Tomlinson expects that urbanization will steadily drive disposal prices higher and with it the demand for more recycling solutions.





Michelin, the French manufacturer of tires, produces 187 million tires per year and operates in 170 countries. It's helped shaped the market for more than 125 years, and now the company is working to develop innovations that address environmental challenges associated with transportation. "The whole company strategy is sustainable," stated Bertrand Bonhomme, Head of Sustainability and Chair of the circular economy working group at Michelin.

Circular principles can impact all stages of the tire lifecycle, starting with the design of the product and ending with its recycling. This continuum is reflected in Michelin's "4R strategy," which it developed to educate clients and anchor circular principles within the organization itself: Reduce (develop tires that are lighter, last longer and save fuel); Reuse (repair, re-groove and retread tires); Recycle (improve material and energy recovery); and Renewable (use renewable materials for manufacturing). According to B. Bonhomme "introducing CE is more a question of behavior and not about technical training."



To stimulate new thinking and new partnerships, the company schedules regular meetings on circular economy projects that bring together employees from different backgrounds and feature external speakers.

This 4R framework also helps Michelin's circular economy transformation committee track the company's progress toward becoming an industry leader in performance and sustainability by 2020, a goal inspired by the global climate deal adopted at the Paris climate conference. To better measure progress toward these goals and make regular reports to the executive committee, the company uses tailored KPIs developed in part by sharing insights with other companies.

Michelin began its circular implementation by focusing on process innovation to improve production and resource efficiency, and then moved onto product innovation. By developing durable tires that offer long-lasting performance with less weight and material, Michelin hopes to continue shrinking its tires' carbon footprint by 20% between 2010 and 2030.

Achieving that goal would reduce CO₂ emissions by 30 million tons while also lowering material and production costs. For example, the company developed an all-season tire called CrossClimate that uses less raw materials, improves fuel efficiency and lasts longer than competitors' tires (6,430 km longer on average). The product launched with great success in 2015, and the following year sales volume jumped 30% in Europe, Turkey and Russia.

20%
percentage by which Michelin aims to further reduce the carbon footprint of their tires by 2030

While process and product innovation pose challenges, it's been business model innovation that's proven the most difficult to implement. Even so, Michelin is pressing forward with innovations such as selling tires as a service. Trucking, airline and mining companies that choose this business model are charged based on the number of kilometers travelled, or the number of landings made or the weight transported using the Michelin tires.

As part of the service, Michelin takes care of every aspect of tire management, including selection, mounting, maintenance, assistance, retreading and end-of-life recycling. These solutions use onboard pressure monitoring systems to optimize preventive maintenance and reduce vehicle downtime. Well-maintained tires last longer, which is good for the planet and good for customers' business.

Because transportation customers are very price sensitive, Michelin has spent significant time educating them about the benefits of tires-as-a-service and by 2017 Michelin solutions managed the tires of more than 400,000 trucks in 18 countries. The goal is to double revenue from its services and solutions businesses by 2020.

“Circularity has an impact on every aspect of our product's lifecycle - from the design of our cycles to recovery and recycling. Our sustainable growth strategy particularly relies on circular economy levers which help us to develop innovative processes and products.”

Jean-Dominique Senard
CEO, Michelin

PHILIPS

Headquartered in the Netherlands, Philips is a global leader in health technology. More than two decades ago, Philips began to ask itself questions concerning sustainability, such as: What is our footprint and how can we reduce it? Since then, the company's focus on sustainability and circularity has steadily increased.

Its credo is that one "cannot have healthy people on an unhealthy planet," and, with that in mind, Philips is transforming its business toward being green. This includes an acceleration in the innovation process to develop solutions that help customers respond to operational and competitive challenges while also becoming more sustainable.

The initial drive for circular economy thinking came from the Executive Committee, which decided it wanted to drive transformation with a sustainability agenda at the core. Philips looks for opportunities where social and environmental benefits can translate into a strong business case and competitive advantage, with the ultimate goal to shift the business model from selling products to selling services and solutions. According to Markus Laubscher, a Philips Director of Sustainability and Circular Economy, developing a clear value proposition for customers is key for commercial success: "If you have the same product in green and non-green alternatives, the customer is often unwilling to pay a price premium; you have to deliver a new value proposition."

Besides appealing to customers, sustainability needs to appeal to employees. Getting the whole company on board is critical for success. To this end, the company works hard to communicate the value of circular thinking.

It's now widely understood that circular thinking is not an inconvenient necessity, but a driver of innovation for more efficient processes, valuable products and new business models. Philips invests in training and tools to educate employees on reuse, recycling and refurbishment—and then encourages them to come up with their own ideas for sustainable processes, products and business models.

For example, with healthcare provider budgets coming under increasing pressure, Philips is looking for solutions to extend resources without compromising product quality. In response, Philips created its Refurbished Systems business unit, which offers refurbished products such as MRI systems that reuse components like magnets, and cost just 60% to 85% of a new system.



“We expect the circular economy to replace the traditional “take-make-dispose” scheme. At Philips we aim to take back all capital equipment from our hospital clients. We expect this to become a win-win business model. There is much residual value to recover. We endeavor to “disrupt ourselves” by rethinking and redesigning the way we do business. This will contribute to a better world.”

Frans van Houten
CEO, Philips



RUBICON

Rubicon is a technology company that was founded to help companies reduce costs and increase sustainability by improving their waste and recycling practices. Today, the Atlanta-based company supports small businesses across a wide range of industries, such as restaurants and food service, retail stores, hospitality and manufacturing.

Using technologies such as visual recognition and machine learning, the company conducts an initial screening of a client's waste streams to identify types of waste and quantities, develops a waste separation system, and then tailors a waste collection schedule. This helps customers improve their recycling rates, lower costs by reducing the frequency of waste collection, and sometimes earn extra income from selling the recyclable products (e.g., carton, paper).

As part of its mission, Rubicon educates its customers' employees on waste separation and recycling. It also connects clients with its independent hauler network, which offers competitive prices, on-demand pickups, billing transparency and even a report on the customers' recycling efforts. And Rubicon collaborates with other companies along the

circular economy value cycle to create sustainable offerings for its small business customers, such as Michelin, which offers discount pricing on new commercial tires and retreads, and TerraCycle, an expert in hard-to-recycle waste.

Rubicon's growth outlook is bright as more and more companies, customers and regulators push toward the circular economy. The company employs close to 300 employees and has raised over \$200 million of funding to date. In 2016, Forbes named Rubicon one of the next Billion-Dollar Startups, and in 2017, Inc. named it one of the Top 25 disruptive companies. "The circular economy laid the foundation for building a company that is reinventing the waste industry - Our business model is circular by design," said CEO Nate Morris.



“The circular economy laid the foundation for building a company that is reinventing the waste industry - our business model is circular by design.”

Nate Morris
CEO, Rubicon

SKANSKA

Skanska is one of the world's leading construction and project development companies, focused on selected home markets in the Nordics, other European countries and North America. Sustainability is important to how Skanska builds for a better society.

Skanska's strategic work with environmental aspects of sustainability started about 20 years ago. In the beginning, Skanska's circular activities focused on reducing materials used in constructing buildings and infrastructure, and diverting from landfills the significant amounts of waste traditionally generated by construction projects. This has evolved to include more sustainable uses of material through reuse, recycling and renewable materials. Since 2000, all Skanska business units have been certified to ISO 14001 standards - the requirements for a certifiable environmental management system.

To guide and measure environmental performance, in 2009 Skanska developed the Skanska Color Palette™. This strategic tool focuses on guiding activities and projects toward near-zero environmental impacts by reducing uses of energy, materials, water and embodied carbon.

Environmental responsibility is embedded into all parts of Skanska's business processes and project operations. For example, Skanska business units have environmental plans fully integrated into business plans, and most projects have tailored, measurable key performance indicators, such as ones for chemical usage and waste. Another proactive aspect to Skanska's green efforts is collaborating with universities and other external institutions and partners when developing solutions.

In a major step, Skanska has committed to significantly reducing carbon emissions by 2030 in alignment with the Paris agreement. Increasing circular economy activities is expected to be an important part of this reduction. Ultimately, Skanska is striving to be the leading green project developer and contractor, while also creating shareholder value and helping improve society.

An example of Skanska collaborating with customers and suppliers to raise environmental achievements is the European Spallation Source (ESS), which aims to be the world's first sustainable research facility. Skanska is designing and building this pan-European research facility, which has ambitious goals such as zero waste to landfill and zero concrete waste.

To meet this mega project's goals, Skanska and the customer are focused on being preventative. "Think about solutions, not about problems," said one Skanska manager.

Concrete is a massive resource on this project; at the end of 2017, more than 40,000 cubic meters of concrete had been used, with more to come. With all those concrete pours, sometimes there is leftover concrete. Rather than the traditional practice of wasting that concrete, Skanska re-purposes leftover concrete to create concrete blocks usable in other construction projects. The concrete blocks are primarily sold on the market. Instead of creating waste, a new product is being made.

Sustainable materials is also an important area for this project. As much as possible, materials are to be free of substances with a negative impact on the environment, both to create a healthy work environment and to facilitate future recycling and reuse of materials.

ESS is committed to using energy wisely and in a responsible way. The excess heat from the research facility will be captured and distributed in the local district heating system. Also, all electricity is from renewable sources, during construction and later during facility operation. "Skanska focuses on the sustainability areas through which we can make the most significant positive contributions to society. Important to this is using – and re-using – materials in smart ways. Taking a circular approach helps lower environmental impacts and costs, helping our customers achieve their own environmental ambitions," said Skanska CEO Johan Karlström.



“Skanska focuses on the sustainability areas through which we can make the most significant positive contributions to society. Important to this is using – and re-using – materials in smart ways. Taking a circular approach helps lower environmental impacts and costs, helping our customers achieve their own environmental ambitions.”

Johan Karlström
CEO, Skanska



At Solvay, a global chemical company headquartered in Brussels, sustainability has moved from being a regulatory necessity to a driver of product innovation and growth. Solvay's CEO led the charge and put sustainability at the top of the agenda, winning support from the executive committee to become a leader in circularity.

To this end, they created a guide—the “Solvay Way”—to translate Solvay’s ambitions for sustainable value creation into clearly assigned responsibilities and concrete action at the operational level.

Once Solvay’s leaders recognized that sustainability and circular economy principles created an opportunity for long-term competitive advantage, they worked hard to integrate the principles of circularity into the

organization’s mindset by emphasizing training and acquiring the right skills. Today, sustainability and circularity are embedded in each business unit and in customer relations.

To measure its progress on sustainability, Solvay also developed the Sustainable Portfolio Management tool (SPM) that links strategy and sustainability. The tool assesses two aspects of Solvay’s portfolio: (1) the monetized risk of its environmental impact (Where is Solvay “part of the problem?”) and (2) the extent to which it helps consumers to address their own sustainable development concerns (Where is Solvay “part of the solution?”).

As with the sustainability initiative itself, leadership played a key role by endorsing the SPM methodology and setting clear goals. Today an internal team analyzes the entire portfolio with the SPM tool on a yearly basis; then each business unit and the company’s sustainable development function discuss next steps.

In 2016, 43% of the revenues were associated with sustainable products, whereof two-thirds deliver on circular economy objectives. During that time the company grew revenue

from products where Solvay is “part of the solution” by 9%, and shrunk revenue from products where Solvay is “part of the problem” by 3%. Solvay managed these results despite the fact that customers are unwilling to pay a premium purely for sustainability. Part of Solvay’s success is because it doesn’t redesign existing products in a more sustainable way, instead it looks for niches and unmet demand to create new, sustainable products for their customers.

43%
of Solvay's revenues in 2016 were associated with sustainable products

Besides process and product innovation, Solvay is exploring ways to use circular economy principles in business model innovation. As Dominique Debecker, Deputy CSO at Solvay put it, “At some point you need a system that is self-sustained. Where you have a tangible product for consumers, you don’t need to wait for new regulation. The increasing consciousness became the driving force for sustainability.”



“The circular economy has the potential to change the way we create value, and the relations with our customers and other partners - for the better. Thinking circular strengthens our innovation capabilities to further develop more sustainable solutions that unlock Solvay business growth while doing good for the planet.”

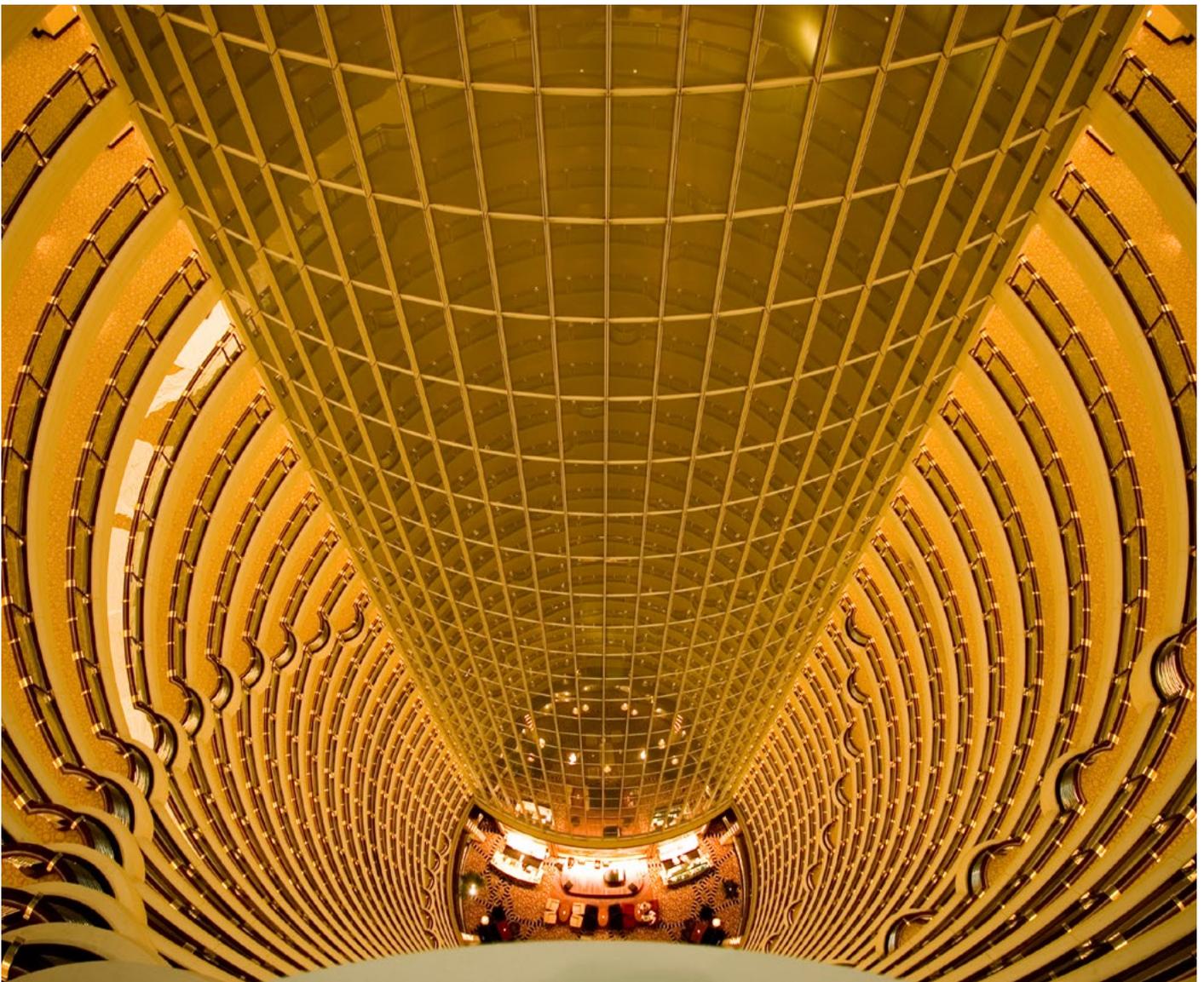
Jean-Pierre Clamadieu
CEO, Solvay

7. Conclusion

The need to use resources more sustainably in order to guard against price swings and scarcity, to conform to regulations and to satisfy increasingly vocal local demands to protect the environment might be all the reason a company needs to embrace the circular economy. Yet, there are still other compelling reasons to do so.

The circular economy is a driver for innovation and competitive advantage, and recent experience shows there is room to improve performance by creating sustainable processes, products and business models. That means that companies who pursue circular principles first could gain a significant competitive advantage as they drive the transformation of their own industries and put competitors on their heels. Companies at the forefront of the circular economy are already seeing a clear business case, often in the form of new customers, deeper relationships and more steadfast investors.

The time to act is now. As Donald Brenninkmeijer, whose family owns C&A, a Dutch textiles company, put it: "We still have a long way to go but it is the way forward."



8. About the research

In 2017, the World Business Council for Sustainable Development (WBCSD) and The Boston Consulting Group (BCG) joined forces to study key success factors in circular economy implementations based on a quantitative survey of 78 managers and more than a dozen qualitative interviews. The global sample was drawn from a variety of sources including WBCSD member companies and BCG clients.

We purposefully reached out to sustainability leaders from many industries around the world to gain insights into successful circular economy implementations. Of the respondents, 95% said their company had a sustainability strategy in place. Based on a self-assessment comparing themselves to other companies in their industry, most survey respondents evaluated themselves as either an industry leader in the circular economy (29%) or above average (31%).

In addition to the survey results, we conducted interviews with practitioners to gain a deeper understanding of success factors in a circular implementation. These interviews offered valuable insights into the roles of internal and external stakeholders, organizational integration of circular principles, decision processes and so forth.

Based on the findings from the quantitative and qualitative data sources, we developed case studies, derived key success factors and identified hands-on recommendations for the implementation of circular projects.

This is the third guide in WBCSD's circular economy series. The first was "[The CEO Guide](#)," which explains the circular economy and its benefits; that was followed by "[The Practitioners Guide](#)," which describes circular tools, resources and practices for different functions (e.g., sales, product design, and manufacturing). Together these three guides can advise the entire organization along its entire circular economy journey.



ACKNOWLEDGEMENTS

WBCSD would like to thank the following authors and editors for this report:

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The authors would also like to thank the many participating companies and their representatives, who greatly enhanced the outcome of the report with their valuable insights and contributions.

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ABOUT THE WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT (WBCSD)

WBCSD is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. We help make our member companies more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies.

Our member companies come from all business sectors and all major economies, representing a combined revenue of more than \$8.5 trillion and 19 million employees. Our Global Network of almost 70 national business councils gives our members unparalleled reach across the globe. WBCSD is uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

Together, we are the leading voice of business for sustainability: united by our vision of a world where more than nine billion people are all living well and within the boundaries of our planet, by 2050.

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Credits

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WBCSD and BCG thank the following companies for their active participation



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