

Opportunity and disruption: How circular thinking could change US business models

A circular economy survey

Introduction

Increasingly, US companies are embracing sustainable thinking within their business strategies in recognition of its importance to their long-term viability.

Limiting the use of natural resources, improving energy efficiency and reducing waste have been central to many companies' sustainability initiatives to date.

Despite this progress, a consensus is emerging that current sustainability practices don't go far enough. So, while sustainable thinking may be more deeply embedded in companies' decision making than ever before, growth remains largely tied to resource use – and most businesses continue to operate traditional, 'linear' models that 'take, make, use and waste' materials.

This approach has given rise to a range of problems, from air, water and soil pollution to resource depletion and climate change.

To achieve true long term sustainability, companies must move away from this linear economic model and decouple growth from the use of natural resources. They must not only improve efficiency and reduce waste, but retain existing value and create new value from materials to close the loop. Moreover, they must develop innovative propositions for customers that enable them to use products for longer or to share them with other consumers. This will lead to a new type of relationship with their customers, one that is less transaction-based and more long-term.

This is the 'circular economy' model. It has the potential to be hugely disruptive to existing companies and industries. However, it will also create huge opportunities; Accenture predicts it could unlock \$4.5 trillion of additional economic output by 2030. "A circular economy lets us do it again," says William McDonough, Founder of McDonough Innovation and one of the pioneers of the circular economy movement. "And we can double the size of the economy because we'll keep goods in service."

Although there is a perception that US businesses are less aware and less concerned by sustainability than European firms, for example, our new survey finds that many US businesses are aware of the need to adopt circular practices, but they are at an early stage of their journeys. 62% of US firms we surveyed say they plan to move towards a circular economy framework as part of their business strategy, while 16% said they already have. However, some still have a narrow view of the potential benefits of adopting a circular economy model.

Our research shows that while going circular does address business efficiency and the broader issues of resource scarcity and climate change: it's also about responding to consumer demand for new product models and identifying potential new revenue streams. In many industries, circularity will be an important part of future competitiveness and getting ahead of disruptive trends. Our study finds that the firms with more mature circular strategies are more likely to view circular as an opportunity to create a competitive advantage.

It is starting to happen already. For example, a number of global carmakers, including GM and Ford, are rolling out zero-waste policies across their facilities, while Product-as-a-Service (PaaS) models are being adopted at pace, from MRI scanners and lighting to jeans.^{1,2}

Going circular will not be without its challenges, however. Our research highlights the significant transformation US businesses will need to undergo to pursue circular strategies: they will need to design differently, sell differently, value differently, treat risk differently and finance differently. Through our ongoing research into circular economy models, and our work supporting clients to adopt these practices, we continue to uncover fresh insights about the business opportunities they can create — and how best to unlock them.³

This report examines how US executives across four diverse sectors (automotive, consumer electronics/telecoms, food/agriculture, and healthcare) are looking at the circular economy, to answer the following key questions:

- How are US executives thinking about the circular economy, and the opportunities it may create for their businesses?
- What progress has been made within different industries with respect to circular initiatives?
- What are the biggest challenges involved in transitioning a business to a circular model?
- How can these challenges be overcome – and which parts of the value chain will be prioritized for embedding circular practices?

We surveyed 300 US executives and conducted in-depth interviews with business leaders in our four sectors of interest, as well as speaking with experts within academia and from ING, to help us answer all of these questions.

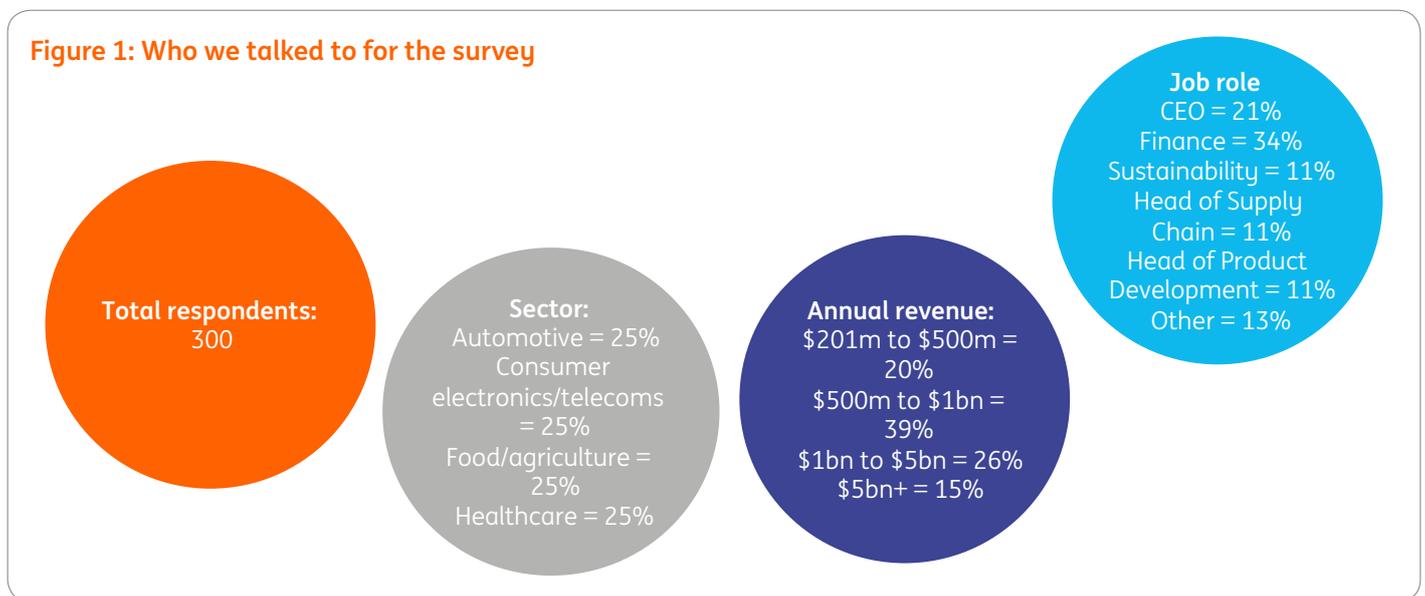
1 Selling light as a service, Ellen MacArthur Foundation, 2017

2 Pioneering a lease model for organic cotton jeans, Ellen MacArthur Foundation, 2017

3 Circular economy, ING, www.ing.com/Sustainability/Sustainable-business/Circular-economy.htm

About the research

Figure 1: Who we talked to for the survey



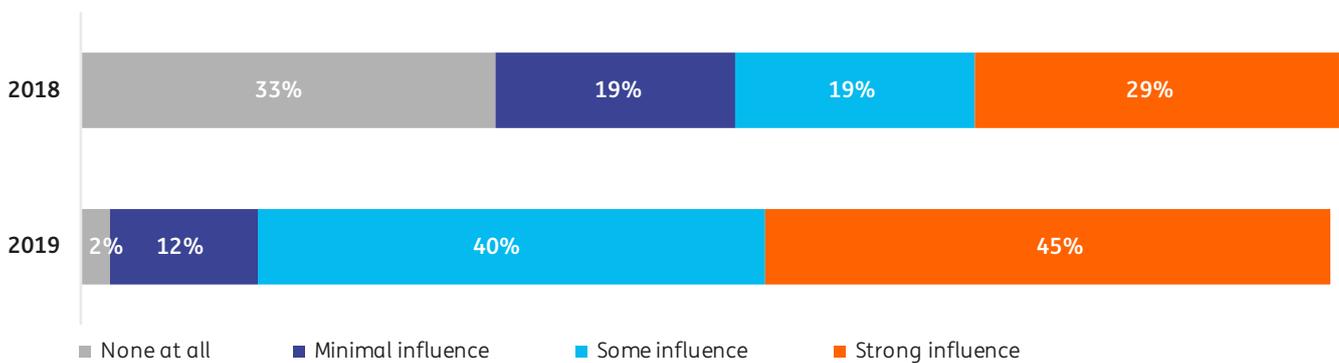
- Longitude, of the Financial Times Group on behalf of ING interviewed 300 US-based executives across four sectors: automotive (25%), consumer electronics/telecoms (25%), food/agriculture (25%), and healthcare (25%).
- 20% of the companies have annual revenues of \$201m-\$500m; 39% have revenues of \$500m-\$1bn; and 41% have revenues of more than \$1bn.
- CEOs composed 21% of the respondents; 34% have senior roles in the finance function; 11% are directors of sustainability; 11% are supply chain managers; 11% are responsible for product development; and the remainder work in operations or R&D roles.

Executive summary

Figure 2: The growing influence of sustainability on US business

Question: What level of influence do sustainability or environmental concerns have on your company's future growth strategy?

Influence of sustainability concerns on future growth strategy



1. The US focus on sustainability is intensifying: Nearly twice as many US firms are embedding sustainability in strategic decision making in 2019 as we saw in 2018.

There has been a marked jump in the number of executives who say that sustainability is influencing business growth strategy: 85% say this today, compared to just 48% in our 2018 study. The number saying that it has a strong influence rose from 29% to 45%, while those saying it had no influence at all fell from a third to just 2% of respondents.

However, companies are embracing sustainability chiefly for defensive reasons, rather than seeing it as an opportunity to find new markets, new products and new customers.

2. Circular is on the agenda: US businesses are embracing circular practices – even if in a fragmented fashion.

Even though, to date, only 16% of US firms have adopted a circular economy framework, there is strategic intent to do so on the part of 62% of the businesses we surveyed. In reality, there are a substantial number of circular-type initiatives under way across the production cycle, and a lesser number to transform product models, demonstrating that circular thinking is on the agenda of US business but that companies are at different stages in their strategic thinking.

3. But circular value isn't fully understood: For many in the US, circular remains a story of unidentified value. Current perceptions of circular practices will need to evolve to help US firms reap the rewards and respond to business disruption.

Most US businesses we surveyed are focusing on the cost-saving aspect of circular initiatives, rather than focusing on the value retention and creation that can be achieved through closing material loops. A minority of firms with more advanced circular strategies say that responding to evolving consumer trends is a key driver for them to pursue circular initiatives.

1 Please note: Where figures do not total 100%, this is due to rounding.

2 From Sustainability to Business Value, ING, 2018

Figure 3: The move towards the circular economy gathers pace

Question: Which of the following most closely describes your organization's approach toward the circular economy model?

Approach toward the circular economy model

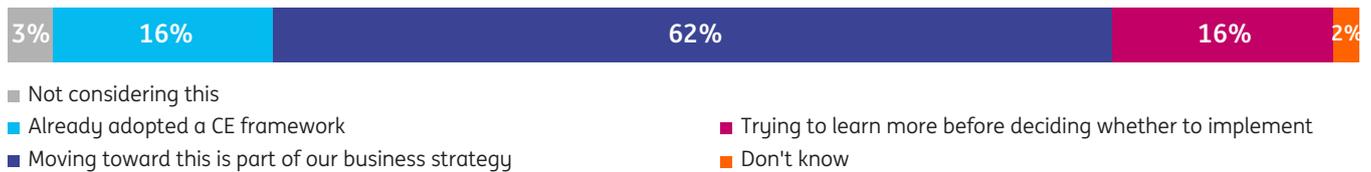
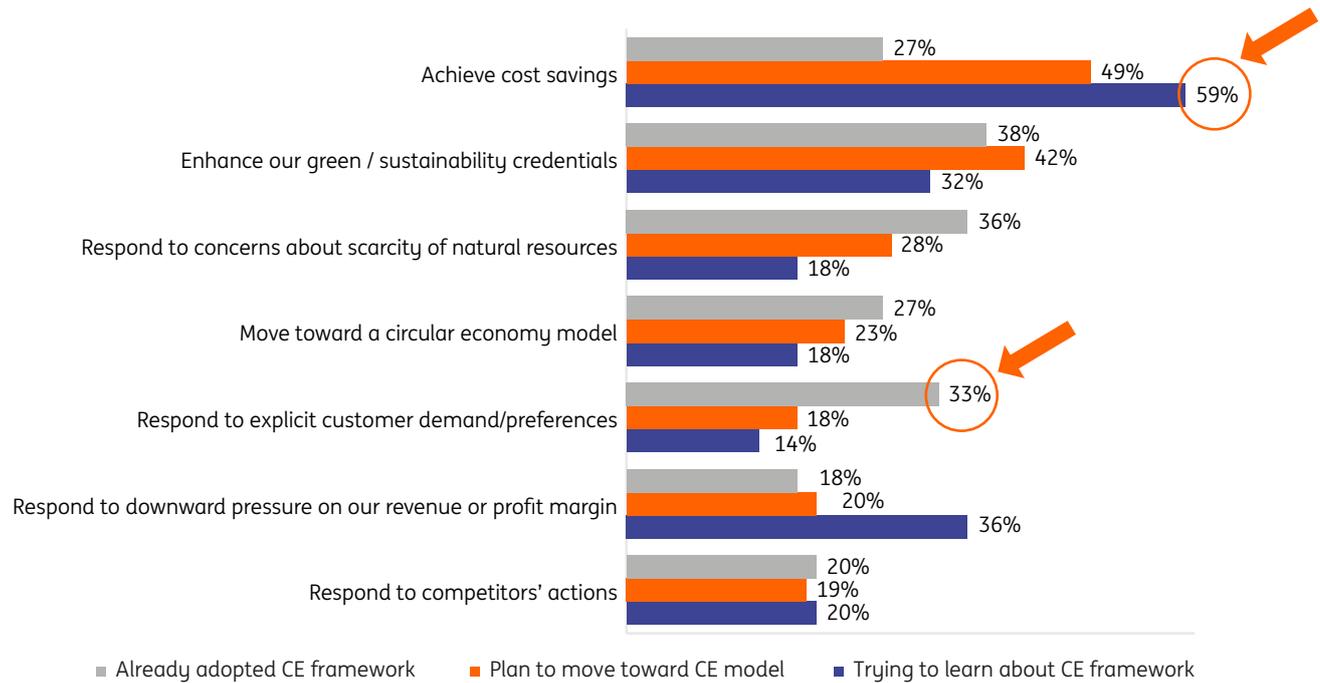


Figure 4: Reasons for pursuing circular initiatives vary depending on experience

Question: What was the most important motivation for your organization to undertake circular-related initiatives (e.g. recycling/efficiency/remanufacturing measures) across the production cycle

Motivation for undertaking circular initiatives in the production cycle (Rank 1+2)



And given that the circular economy is still a new concept for the majority of US businesses, those in our study are conscious of the challenges they will encounter in adopting such models. Many firms cite the difficulty of getting materials and products back from customers in order to recycle, reuse or remanufacture them as one of the main barriers to adopting circular practices, indicating that more effective reverse logistics practices need to be developed. Moreover, there remains a perception among senior leaders that adopting circular models would create business risks.

Altogether, the survey results suggest that many companies remain in the early stages of thinking about the benefits of sustainability, focused mainly on operational benefits and risk management. The experience of sustainability leaders suggests that as they become more familiar with the concept, they will see it as an opportunity to create a competitive advantage, create new products, gain access to new markets and find new customers.

1. The US sustainability outlook matures

Year-on-year findings show that sustainability is having a growing influence on US business's growth strategy. Some 40% of respondents said that it had some influence, and even more (45%) said it had a strong influence, a sharp increase on the previous year.

It is becoming much harder to ignore the benefits that sustainability offers to businesses. HP, for example, believes that its commitment to sustainable impact is fundamental to fueling its innovation and growth, and to strengthening the business for the long-term.

"We've seen an increase in the number of customers that are asking about our sustainable impact strategy. This past year, we saw a 38% year-over-year increase in deals where a demonstrated commitment to social and environmental topics was a requirement. This reflects the importance of having a strategy in place, setting and achieving bold targets, and developing products that help customers further their own environmental and social impact efforts. Companies that don't focus on their impact on the planet, their people and global communities will be at a competitive disadvantage," says Nate Hurst, Chief Sustainability and Social Impact Officer at HP.

In the food industry, Columbia University's Malo Hutson highlights how a program designed to increase procurement of California ingredients for school meals has created a competitive imperative for food producers and distributors. "Schools in the participating districts are procuring more than 20% of their food locally so the big distributors have to shift their production to meet the needs of California school districts. You see them realizing, we need to shift gear and operate a more sustainable system," he says.

Yet while sustainability concerns are becoming more commonly embedded in business strategy, the maturity of company mindsets is still varied.

The top four factors driving sustainability are:

1. To improve resource efficiency and reduce waste (30%)
2. To improve reputation and brand equity (26%)
3. To comply with regulatory requirements (24%)
4. To achieve savings and cut costs (23%)



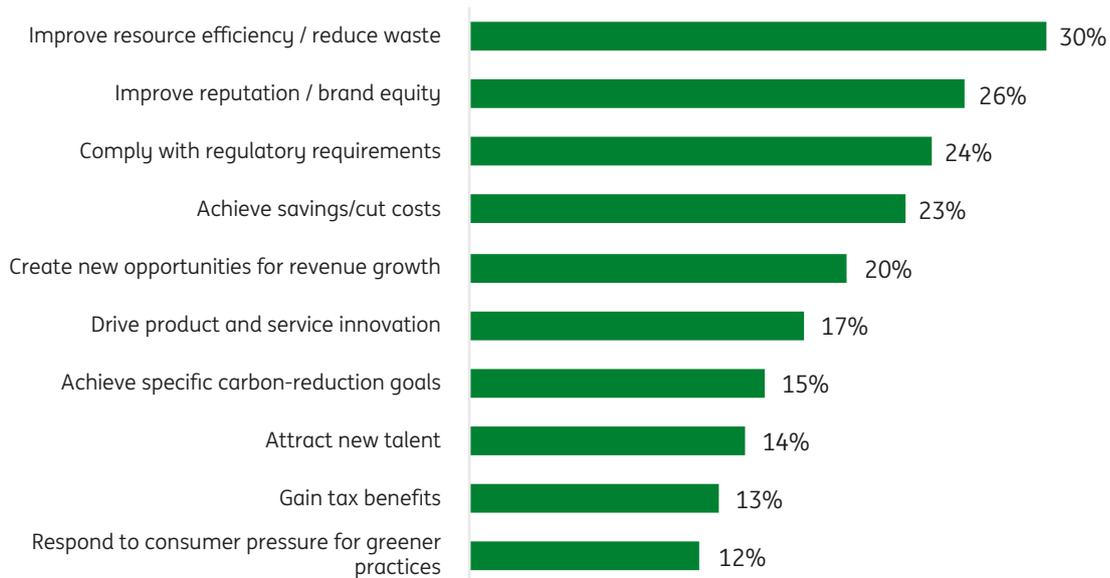
Only then do they talk about creating new revenue growth opportunities (20%), driving innovation (17%), attracting new talent (14%) and responding to consumer pressure (12%). And yet, says Dell's Vice-President of Sustainability, David Lear, "More and more customers are expecting this type of consideration when they purchase."

The drivers of sustainability strategy are fairly consistent across sectors, with resource efficiency the top priority for healthcare, automotive and consumer electronics/telecoms, and second for food and agriculture. Only in this last sector was one of the more growth-oriented drivers in the top three - 24% of those questioned said sustainability helped them create new opportunities for revenue growth.

Figure 5: Waste-reduction and efficiency lead the drivers for pursuing sustainable business practices

Question: What have been the most important motivations or drivers for your company to pursue sustainable practices?

Factors driving companies' sustainability practices – Total (Rank 1+2)



Healthcare top 3:

Improve resource efficiency: **35%**
 Achieve savings/cut costs: **27%**
 Comply with regulatory requirements: **25%**



Automotive top 3:

Improve resource efficiency: **33%**
 Comply with regulatory requirements: **29%**
 Improve reputation / brand equity: **25%**



Food and agriculture top 3:

Improve reputation / brand equity: **33%**
 Improve resource efficiency: **27%**
 Create new opportunities for revenue growth: **24%**



Consumer electronics + Telecoms top 3:

Improve resource efficiency: **25%**
 Improve reputation / brand equity: **25%**
 Comply with regulatory requirements: **24%**



Sustainability maturity models suggest that, as companies become more comfortable with the concept and the possibilities it offers, their ambition increases. The UK's Cranfield School of Management, for example, says companies go through five stages, in each of which they may be characterized by a dominant behavior pattern:

- **Denier** – not recognizing any responsibility for a company's Social, Environmental and Economic (SEE) impacts.
- **Complier** – following laws and common business practices in dealing with SEE impacts.
- **Risk Mitigator** – identifying material SEE impacts and reducing negative impacts to mitigate reputational, financial, regulatory, social 'license to operate' risks.
- **Opportunity Maximizer** – reducing negative SEE impacts but also now systematically seeking business opportunities from optimizing positive impacts the business has made.
- **Champion** – both embracing sustainability in its own value chain and collaborating with others and advocating public policy changes to create sustainable development.

While we see clear evidence that sustainability practices are gaining significant traction with US businesses, many companies remain in the Complier or Risk Mitigator stages. And this has a knock-on effect on the way that circular economy practices are being perceived in the US too.

2. US firms have yet to unlock the full potential of circular thinking

There are clear indications that US companies are looking beyond sustainability to the more specific circular economy model. Just 16% of companies said that they already operate on circular economy principles, but a further 62% intend to move towards this as part of their business strategy.

However, as with their approach to sustainability, many have a narrow view of circularity that doesn't fully account for value, and instead focuses primarily on waste reduction and resource efficiency.

In many sectors, US businesses are undertaking circular-type initiatives targeting various aspects of the value chain without necessarily identifying them as circular – they are simply seen as good business practice.

Resource recovery was the most widely adopted circular economy initiative across all the sectors in our survey, although, for automotive, it tied with product life extension, which was also important in consumer electronics/telecoms. Circular supply chains were a key concern for food and agriculture companies and those in healthcare.

Figure 6: Views on circularity focus on operational issues rather than strategic possibilities

Question: Which of the following best describes for you the central principle of the 'circular economy' concept?

Circular economy concept

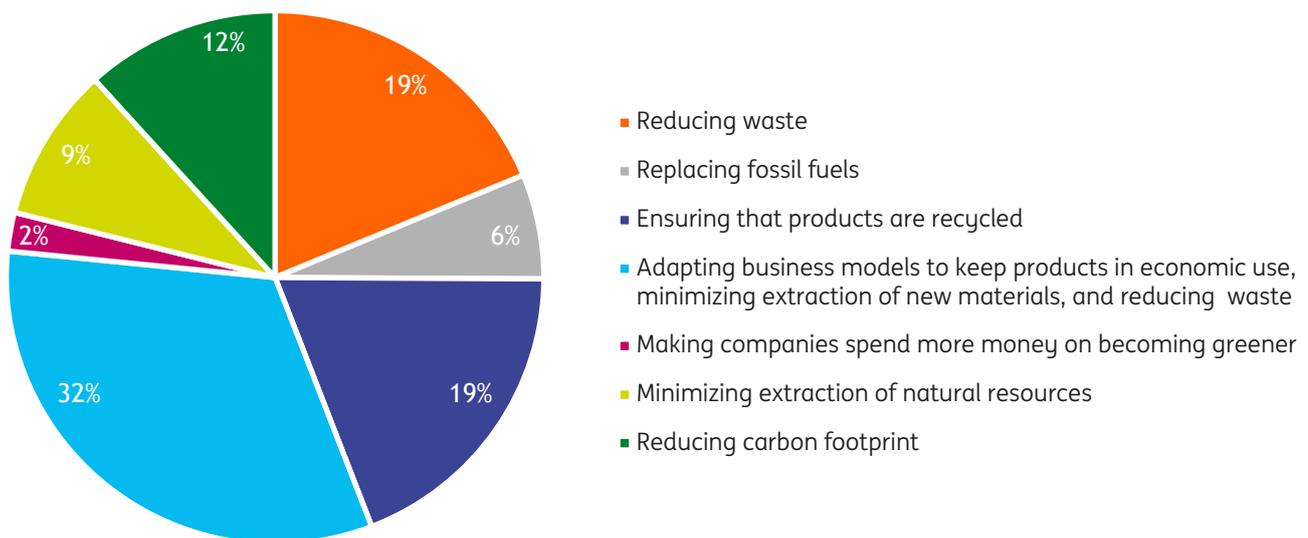
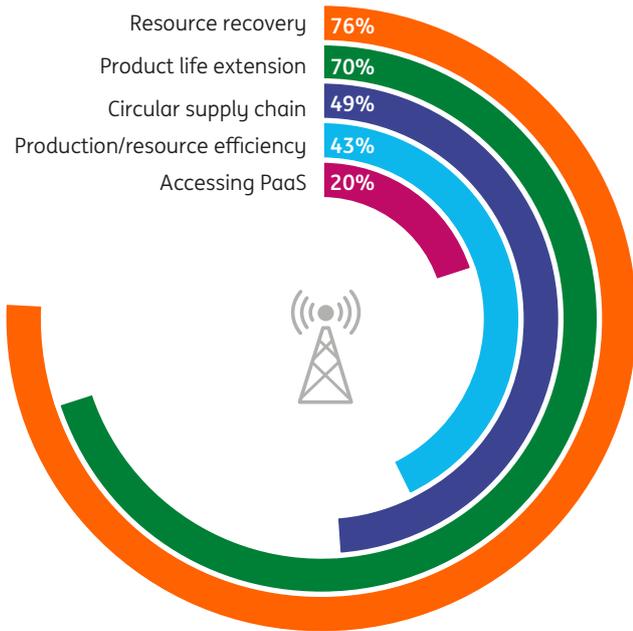


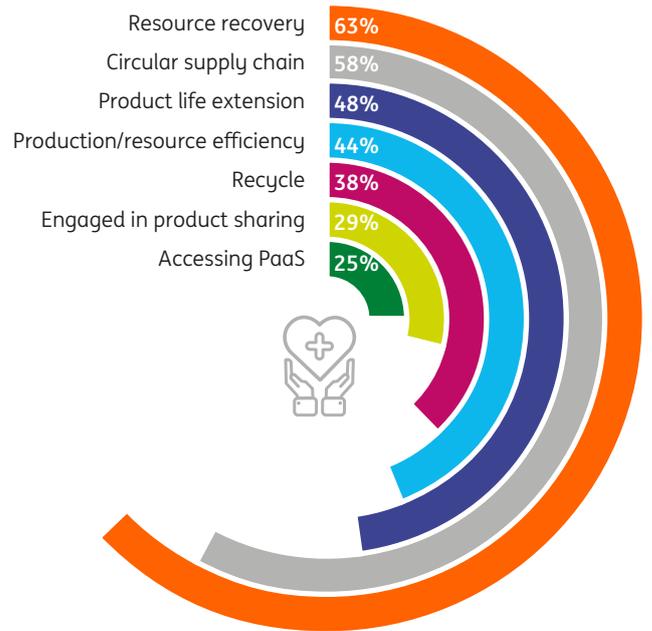
Figure 7: Circular-related initiatives implemented across the production cycle

Question: Has your organization undertaken any of the following initiatives or measures in the past three years?

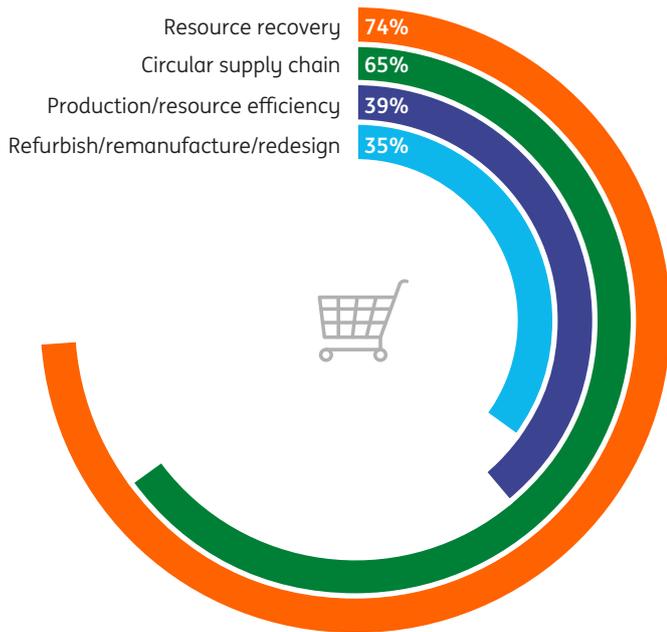
Consumer electronics/Telecoms initiatives (last 3yrs)



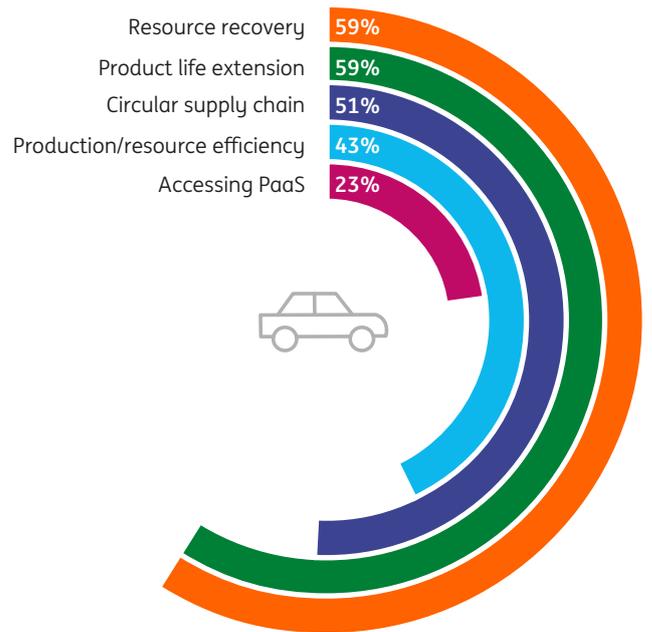
Healthcare initiatives (last 3yrs)



Food and agriculture initiatives (last 3yrs)



Automotive initiatives (last 3yrs)





For the firms in our survey, common drivers of circular-related initiatives in the production cycle are cost savings (46%) and enhancing sustainability credentials (39%). Cost savings were the key concern for all sectors except food and agriculture companies, whose chief concern was enhancing their green credentials.

For companies to get more out of the circular economy model, they will need to ensure that retaining and creating value is a central part of their strategies too.

The minority of firms that have already adopted a circular economy model put greater emphasis on the value they create. They are much more likely to say that circular initiatives are a way to respond to changing customer demands and concerns about the availability of natural resources. They know that circular can be a way to access new customers and markets and retain a competitive edge, as well as to ensure access to the raw materials they need to stay in business.

Global brewing company Heineken has adopted a circular system across the organization to reduce waste from its breweries. It has already achieved zero waste at 98 breweries

out of 163 of its breweries, with waste streams being separated into constituent materials such as plastic, glass and metal to enable reuse. But this is only part of the story. Heineken uses other brewing by-products such as spent grains (barley husks) to create new revenue streams, such as through selling them onto agricultural firms for animal feed.

“Looking forward, I think there are other circular opportunities to consider because these streams are of a very high quality since they are coming from a human food plant,” says Willem de Jonge, Global Director of Sustainable Development at Heineken. “We’re doing research in that area to further split the spent grains into separate husks, proteins, fats, and other materials and then to use them for higher purpose applications, whether in the human food industry, cosmetics or pharmaceuticals — there are a lot of possibilities we’re looking at.”

Some companies may be better equipped to go circular than they believe. HP, for example, only adopted in 2013 the circular economy philosophy outlined by the sector’s leading think tank, the Ellen MacArthur Foundation. Today, however, HP is one of the leading US technology companies on circular. (see ‘Scaling up circular: Dealing with ocean plastics unlocks new revenue for HP’ on page 13).

The work it had undertaken over the previous two decades, with initiatives on energy efficiency, product design and recycling, meant that adopting the circular economy model was a natural progression. Many of the businesses we surveyed are already implementing circular initiatives, even if they are not yet joined up or being applied under a circular economy philosophy.

Some companies, such as HP and Royal Philips, have adopted a holistic approach to going circular. Philips has switched its focus to health technology and refocused its home appliances business to focus on home health. “Our strategy is to unlock the value of seamless care, helping people look after their health at every stage of life,” says Markus Laubscher, the company’s program manager for Circular Economy.

For others, the business imperative of dealing with urgent issues such as the problems created by packaging could be a good way to start understanding the circular economy, says McDonough. “I think packaging is front and center now in framing the circular economy need. Plastics in the ocean have exploded the consciousness of people around the world.”

The ability and strategic vision to develop circular initiatives that can be scaled up will be important in delivering business value too. Scaling up waste recovery and recycling initiatives can help retain the value of materials and isolating core components can often create new revenue streams. Caterpillar, for example, remanufactures engines and other parts, while HP sells some of its recycled waste plastics into other companies’ supply chains.

Todd Brady, Director of Global Public Affairs and Sustainability for Intel, which has set ambitious waste recycling and material reuse targets as part of its circular strategy, says: “It’s changed our thinking to start looking at each of the waste streams as a potential source of revenue for the company, increasing the value of that stream and then, as we do that, it causes us to go out and engage with others who might want that stream as an input and create relationships that weren’t there previously.”

In healthcare, circular models can help alleviate pressure on constrained resources. “I think it’s still quite a conservative sector that is looking at circular economy with a keen interest. Health systems are under more pressure than ever before. By shifting to a circular economy approach, you can alleviate some of that pressure by using resources more effectively,” says Laubscher.

It is also helping healthcare providers deal with the increase in the amount of technology in the sector. New technology is expensive, and it can be difficult to persuade people of the need



for change. “Rather than take that technology risk themselves, they can have the manufacturer look into their needs with them, and then see how they can upgrade,” he adds. And because Philips can operate these partnerships more cost-effectively than it could through its previous approach, it can also help with the key challenge facing healthcare today, which is affordability.

Johnson Controls captures value in closing the loop

On one hand, Johnson Controls is a building technology company that makes thermostats, building control systems, HVAC equipment, lighting, and other smart systems. On the other, it is the largest manufacturer and recycler of batteries in the world, producing lead-acid, lithium-ion and other batteries. The batteries business operates a closed loop, circular process.

“When we deliver new batteries, we take old batteries back, and we are substantially vertically integrated in that business,” says Liz Tate, the company’s Director of Public Policy and Global Sustainability. “We also work with external recyclers. We’re at the point where at least 80% of every lead acid battery is made of recycled material, and, in some batteries, that percentage is much higher.”

It is crucial to understand the value of the recycled material when you seek to build a circular system, Tate adds. “What you’re producing has to be worth enough that it’s worth recycling, rather than getting it from a virgin source.” The price of lead has, historically, been very high, and geopolitical issues around sourcing make virgin lead less attractive. As a result, Johnson Controls has been recycling lead-acid batteries since the beginning of the 20th century.

“Recapture is so critical to circularity,” Tate adds. The company has agreements with customers and distributors to recover old batteries. “It’s an interaction between a business supply chain structure and smart regulation,” Tate explains.

The closed loop helps to insulate the company from price volatility in the market and other supply chain disruptions, Tate says. The company has its own smelters and recycling facilities. “We wouldn’t have made that kind of investment if it wasn’t valuable to us as a business,” Tate says, adding that “Keeping control over our supply chain and keeping the loop closed produces synergies and cost saving, and also mitigates risk. It makes us competitive from both a business and a product standpoint. It has driven our innovation forward, which keeps us competitive.”

“Lead acid battery recycling makes so much sense,” says Tate. “It saves us money, it protects our supply chain, it insulates us from risk, and it pushes us towards innovation.”





Scaling up circular: Dealing with ocean plastics unlocks new revenue for HP

HP has teamed up with Thread and the First Mile Coalition to make ink cartridges from recycled plastic bottles from Haiti. The project focuses on preventing plastics from reaching the Caribbean Sea, helping to combat the problem of ocean pollution.

However, in a country where people rely on bottled water because there is little potable water, it also has an explicit social focus: by opening a new market opportunity, generating a steady revenue stream and partnering to improve conditions for workers, HP is helping create jobs and bring dignity to the collectors of recyclables in Haiti. And this is all done while producing sustainable, cost-neutral ink cartridges, the company says.

“When we started looking at the Haiti project, we knew we’d be reinventing our supply chain procurement strategy in support of our circular economy efforts,” says Hurst. “But we thought that, if we could figure out how to make this successful in a very poor country like Haiti, it would allow us to scale these efforts by opening up similar business opportunities elsewhere in the world. And the project has been successful—to date we’ve sourced 250 tonnes of ocean-bound plastics for our closed loop recycling process.”

The company also partners with Best Buy on a closed loop recycling process for printers, giving customers who return their old printer a 15% discount on a new one. Recycled plastic recovered from the returned printers is then used to make new products. “We now have printers that have more than 30% recycled plastic by weight. We’ll keep innovating and driving that percentage up but having a partner who is willing to share in the circular economy decision certainly helped get these projects off the ground,” Hurst says.

3. Circular product initiatives will disrupt existing markets, but also create new opportunities

If companies want to maximize their circularity, they may have to adopt new product models. The further down the track companies get with circular thinking, the more it may lead to new product approaches.

There are four key circular economy product models they can use:

- Product life extension: re-design initiatives to extend the usable life of product components.
- Product recovery: collection of used product components for reuse in new products.
- Product sharing: this model enables consumers to share access to products with other users, often facilitated by online platforms.
- Product-as-a-Service (PaaS): Where companies lease products to customers while paying for ongoing maintenance costs.

Embracing these circular product models will help companies in the bid to meet objectives around resource efficiency, but it could play an important role in driving future competitiveness too. In industries that face substantial business model disruption over the next decade – as a result of changing consumer behaviors and technology advances – embracing circular practices could put companies in a better position to respond.

“Traditional US businesses are facing disruption from companies with new business models, which might be circular models, coming from outside their sector and also from outside the US,” says Leon Wijnands, Global Head of Sustainability at ING. “New industry ecosystems will form over the next decade too and it’s clear that being a sustainable business will be an important factor in being part of those long term.”



“Just as changing consumer pressures are driving companies to think differently about things like packaging, changing customer preferences – particularly among Millennials – towards accessing rather than owning products will spur companies to rethink their business models,” says Anne van Riel, Head of Sustainable Finance Americas at ING.

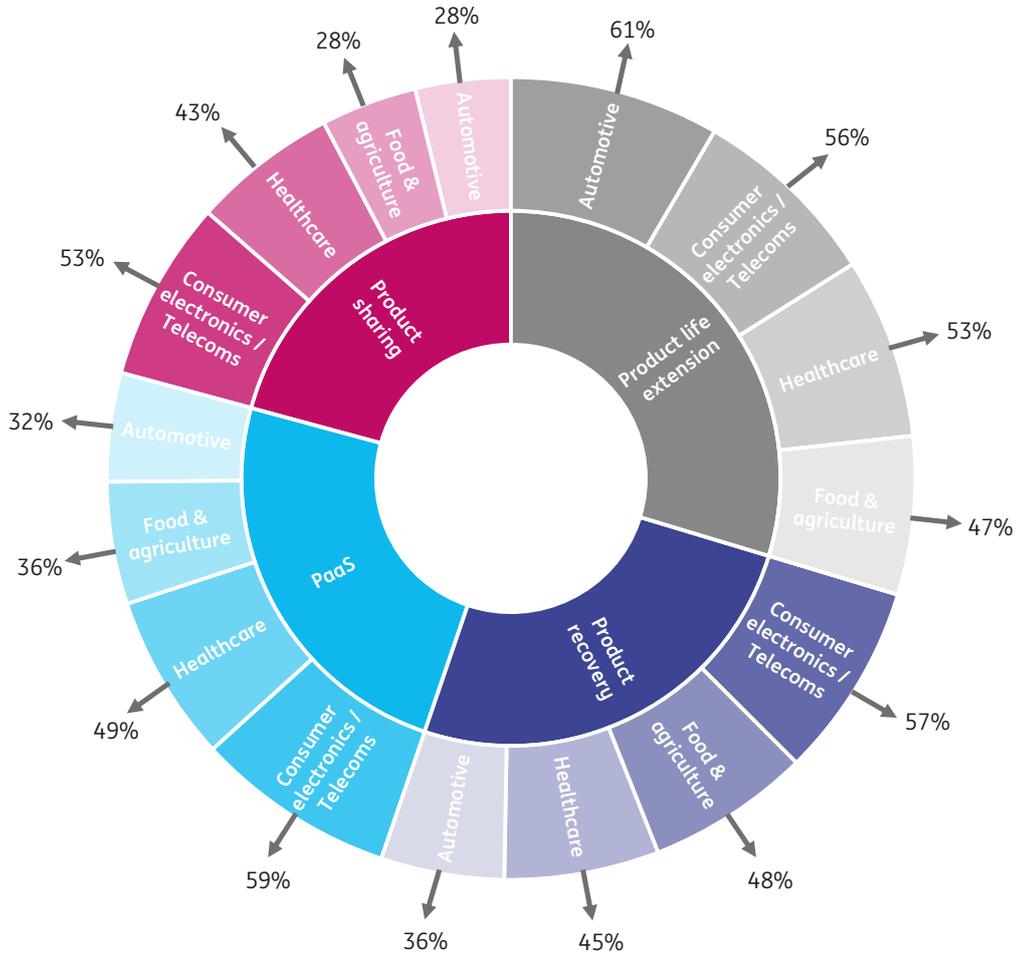
And let us not forget how important an agile response to disruption can be. Think of Netflix switching from sending DVDs through the post to a digital streaming model, as compared to the fate of Blockbuster – a once dominant player in the movie rental market – which filed for bankruptcy in 2010.

The circular economy is “an innovation engine,” says McDonough. “It’s going to throw you into a principled and inspiring innovation space. It’s really the driver because in modern commerce, the only constant is high-speed change.”

Among our survey respondents, there is varying adoption of circular product models across sectors today (see figure 8). We found that product life extension and product recovery models are in greater use, while there has been limited uptake of product sharing models, particularly within the automotive sector.

Figure 8: Adoption of circular economy business models differ between sectors

Question: Does your organization currently use any of the following models in terms of how it sells or distributes its products?



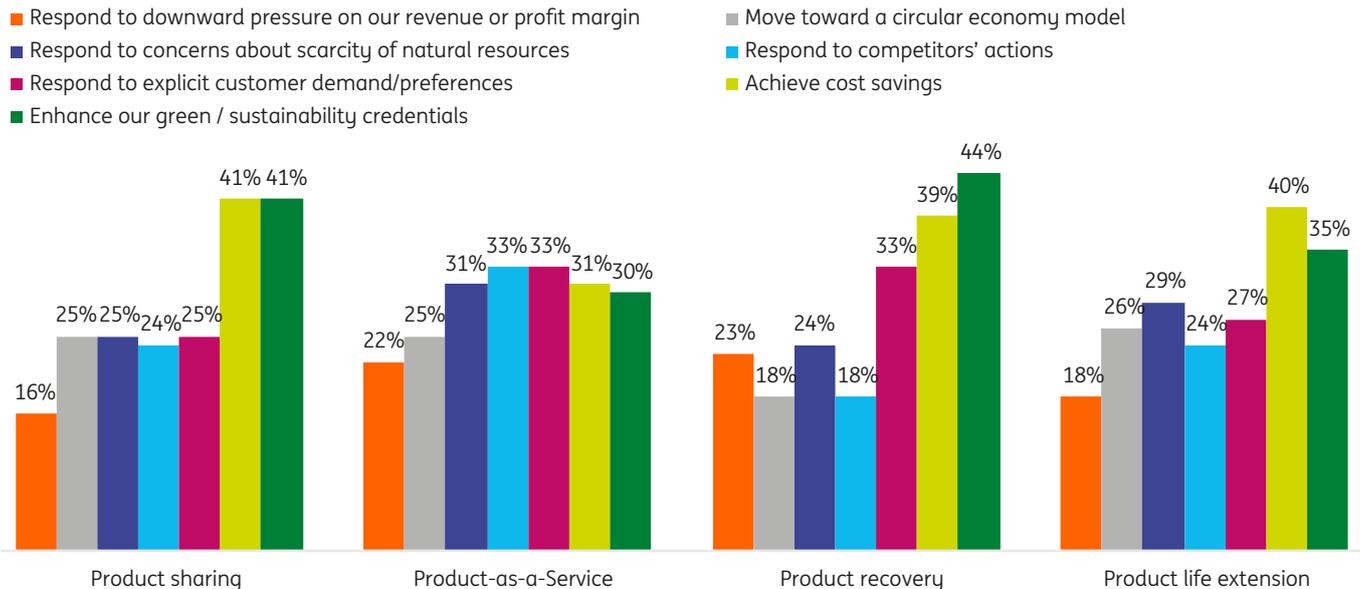
For product life extension, product recovery and product sharing initiatives, the key motivations for pursuing them – by quite some margin – are cost savings and the opportunity to enhance green credentials.

For PaaS, by contrast, the need to respond to changing customer demands and to competitors' actions were viewed as top drivers. This may reflect a recognition that industry disruption is underway and uprooting traditional product models may become a more important survival strategy over the coming years. Even companies whose roots are defiantly hardware-based, such as Apple, are moving to an emphasis on services rather than products.

Figure 9: Motivations for introducing circular economy product models

Question: What was the most important motivation for your organization to introduce a 'Product sharing/Product-as-a-Service/Product recovery/Product life extension' product model?

Motivation to introduce a product model (Rank 1+2)



McDonough is unequivocal about this direction of travel in the technology sector. "We're seeing hundreds of small examples of people putting their toe in the water with Product-as-a-Service models, and while you don't see it really writ large in a lot of the places you might expect yet, it's coming fast," he says. "I think we'll be surprised how quickly it explodes onto the scene. Computers will become subscription models just like software did. Consumer will become demanding customers saying to their providers, 'Just serve me and make me current. Don't make me think or worry about the world.'"

HP's Hurst agrees with this outlook: "People's appetites, both in B2B and B2C, are moving towards a device-as-a-service model. In particular, younger generations of buyers are looking at environmental and social implications of the throw-away society mindset that's been around for a long time," he says.

HP has already introduced a subscription-based printing model for its business customers, called Managed Print Services (MPS). "Customers wanted the ability to print, but they didn't necessarily want to have to purchase, maintain and understand how best to use the printers," Hurst says. "MPS provides business customers with access to the latest, greatest technologies.

It allows them to scale up or down and ensures that resources are not wasted because we refurbish or recycle the equipment and supplies. It's kind of a win-win for the B2B customer's IT buyer, procurement officer and chief sustainability officer."

In the healthcare sector, Philips has a head start in PaaS owing to its experience in the medical scanner market. "The usual situation in our business is that we buy back from our customers equipment that they bought some years before," Laubscher says. "At the same time, our whole industry and we as a company are shifting our business model away from transactional business, away from just selling, and then calling back a few years later if there needs to be an upgrade.

"Now we have 50-60 long-term relationships with big hospital systems. These are service contracts that generally last 10-15 years. These contracts are not structured around a certain number of products, but rather around the delivery of performance and outcome to the customers. And then it's up to us to make sure that we employ the right equipment to deliver those results. And, in that kind of situation, there is no trade-in necessary because the equipment is already managed by us."

Philips designs its products “more and more in a modular way, so that, when there is a need for a shift in technology, an upgrade in technology, we can actually go into the hospital and bring, for example, new hardware elements and strip a system of its old technology components on the spot, put the new ones in and leave a lot of the existing material actually untouched,” Laubscher says. “In that way, we recover all the older materials, which might be useful for repair parts, or they will be recycled.”

In the automotive sector the fact that car leasing – a form of PaaS – has been around for decades and could help the industry respond to the challenge of electric cars. “I think the electric car will move the automobile industry into Cradle-to-Cradle, Product-as-a-Service models because the electric motors are going to be valuable for a very long time and could be transferred from one vehicle to another. Cars could have interchangeable parts that nobody really cares about. You don’t care if a battery has been used before if it’s functioning at the right levels,” says McDonough.

The uptake of PaaS models is growing, and the approach is being implemented in a diverse range of sectors. In many cases, the companies at the forefront of implementing these models are also some of the leading adopters of the circular economy philosophy within their industries.



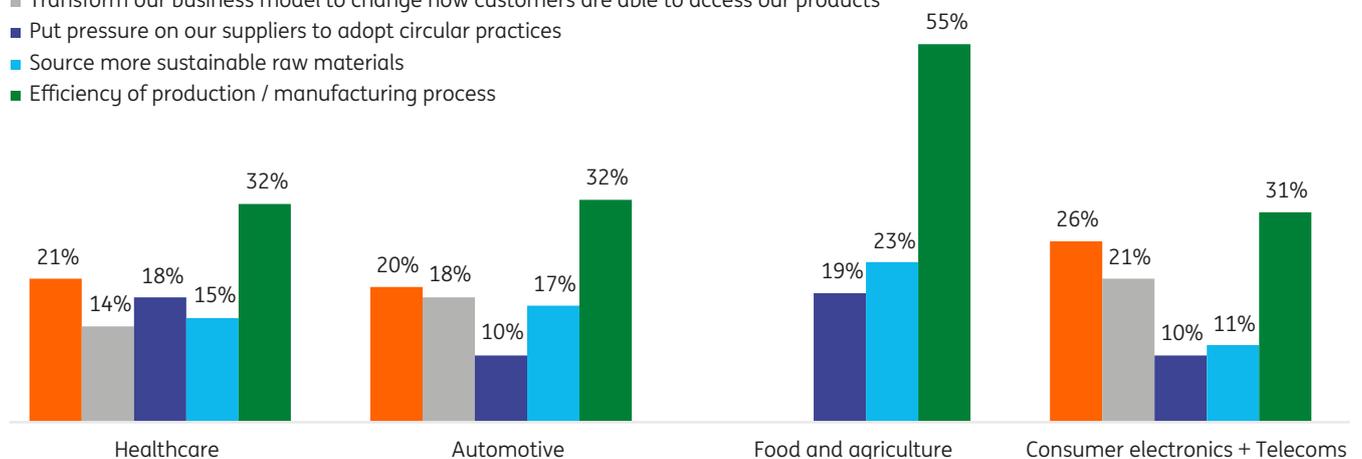
That said, many US firms may be at risk of falling behind the curve or becoming disrupted by new models, as only a few businesses say they are prioritizing circular product models ahead of other parts of the value chain.

Figure 10: Production efficiency leads priorities for circular economy business models

Which part of your company’s value chain will you prioritize first for implementing circular economy practices?

Prioritization in implementing circular economy practices

- Redesign our products to extend their lifecycle
- Transform our business model to change how customers are able to access our products
- Put pressure on our suppliers to adopt circular practices
- Source more sustainable raw materials
- Efficiency of production / manufacturing process



4. Completing the circle: How ready are US firms?

US firms still have a long way to go before they can be said to have embraced the circular economy, and they cite a number of challenges that must be overcome.

For all sectors, the biggest challenge is the difficulty of recovering materials for recycling. There is also concern that switching to circular may create business risks as they try out new and untested models.

These are challenges that today's circular leaders have encountered along the way too, and those just embarking on their journey can be encouraged by the fact that solutions have been discovered.

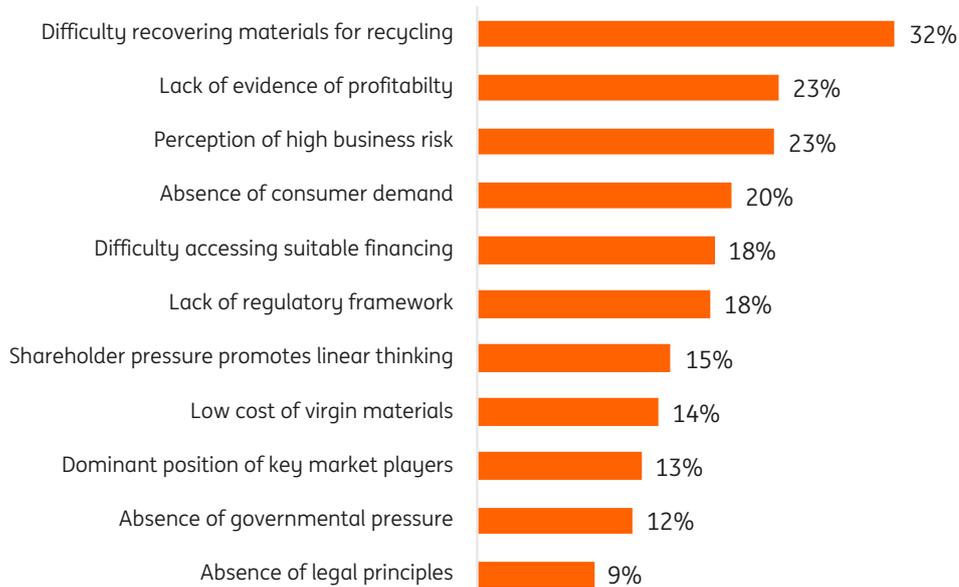
Apple, for example, has a program called Give Back, which allows customers to return a device and either gain credit if it can be resold, or to recycle it for free. While in the automotive sector, Johnson Controls' Tate says the US regulatory environment is helping. "Certain products, once they're out in the world, it's hard to get them back. And it is that recapture that is so critical to circularity," she says. "In the US, in all states, when you go to an auto store or a dealer and you buy a battery, you either have to pay a deposit or return an old battery."

Building in incentives and facilitating easy routes for consumers to return materials – in some cases with the help of government and regulators – will help companies close the material loop with their customers.

Figure 11: Material recovery and potential business risk are a source of concern

Question: What are the primary barriers to the adoption of circular economy practices and/or models in your industry?

Barriers to adoption of circular economy



Collaborating on the circular supply chain

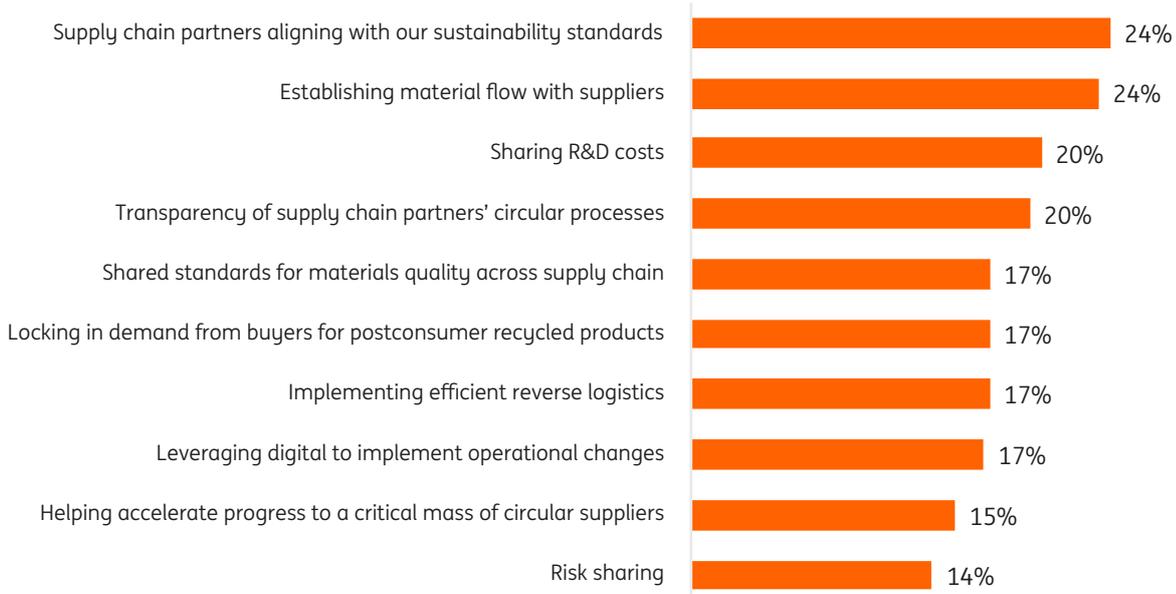
The successful implementation of circular models is heavily reliant on rethinking supply chain models too.

The US business we surveyed recognize the importance of aligning the supply chain with company standards, ensuring the steady, unbroken supply of material flows and having transparency on how suppliers are implementing their own circular initiatives.

Figure 12: Deeper supply chain collaboration will be critical for circular models to succeed

Question: Which of the following measures relating to your company's supply chain will be most important in supporting your development of a circular economy model

Supply chain measures need to support development of a circular economy model (Rank 1+2)



Understanding the value of collaboration is crucial, says Intel's Brady. "The circular economy is typically not something you can do all by yourself, so you need to build the supply chain relationships and understand what others have and what their capabilities are."

Dell's Lear points out that one of the key factors in its meeting its closed loop goals "is because several suppliers stepped up and helped us get there. And I think our suppliers are going to be an incredible source of innovation for us and I think, by partnering with them, by setting long-term goals and collaborating, that's going to help us."

Collaboration with competitors and across sectors is also important. More than 120 electronics, retail, auto and toy companies, including Apple, Intel, Dell and HP, are members of the Responsible Business Alliance, which has created a common code for supply chain responsibility. Dell, along with companies including GM, Ikea and Interface, is also part of an initiative called Next Wave, which was created to tackle the issue of ocean plastics.

Unlocking value in the circular supply chain

ING, Accenture, and Circle Economy set up the Circular Supply Chain Accelerator (CiSCA) as part of the World Economic Forum's Platform for Accelerating the Circular Economy (PACE).

CiSCA will support the development of circular solutions by large manufacturers and their suppliers. The accelerator is based on the premise that significant funding is available to support the circular economy transition in Europe, but deploying that capital is challenging.

Building closed-loop circular supply chains between original equipment manufacturers (OEMs) and their suppliers requires concrete project opportunities with defined circular economy criteria, CiSCA says. It will also need suppliers to work together with their customers and financiers to come up with solutions, helped by the creation of innovative blended financing models.

CiSCA helps OEMs define the business case for circular propositions, for themselves, for their suppliers and for their offtakers. By providing insight on the investment required and the expected returns, all parties can make an informed choice about implementing a circular model. "The ultimate aim is that by quantifying the business case of circular propositions, it will promote their bankability," says Joost van Dun, Circular Economy Lead at ING Sustainable Finance.

Moving to alternative business models

In specifically assessing the transition to PaaS models, the cost and resource needed to manage maintenance and servicing of assets is considered the hardest change to implement by our survey respondents, along with making the required changes to the sales and distribution model.

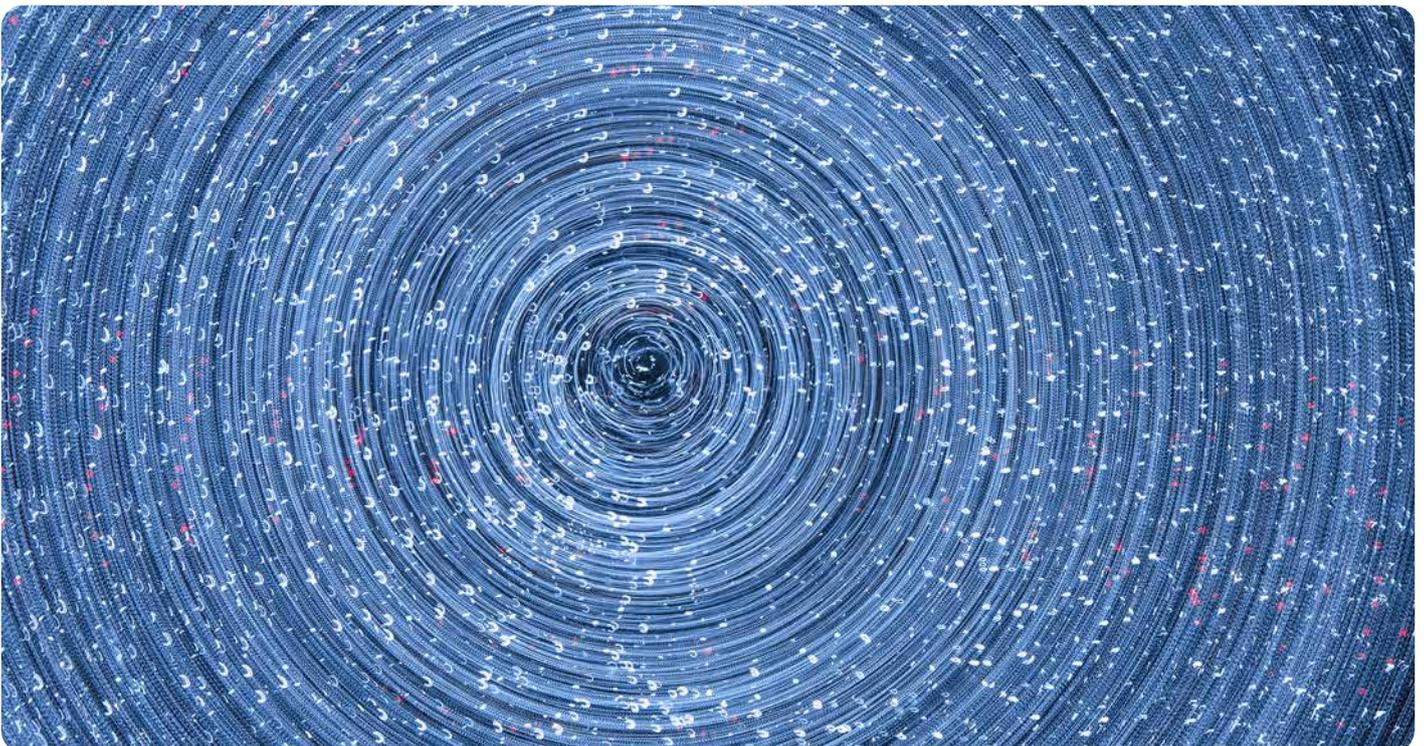
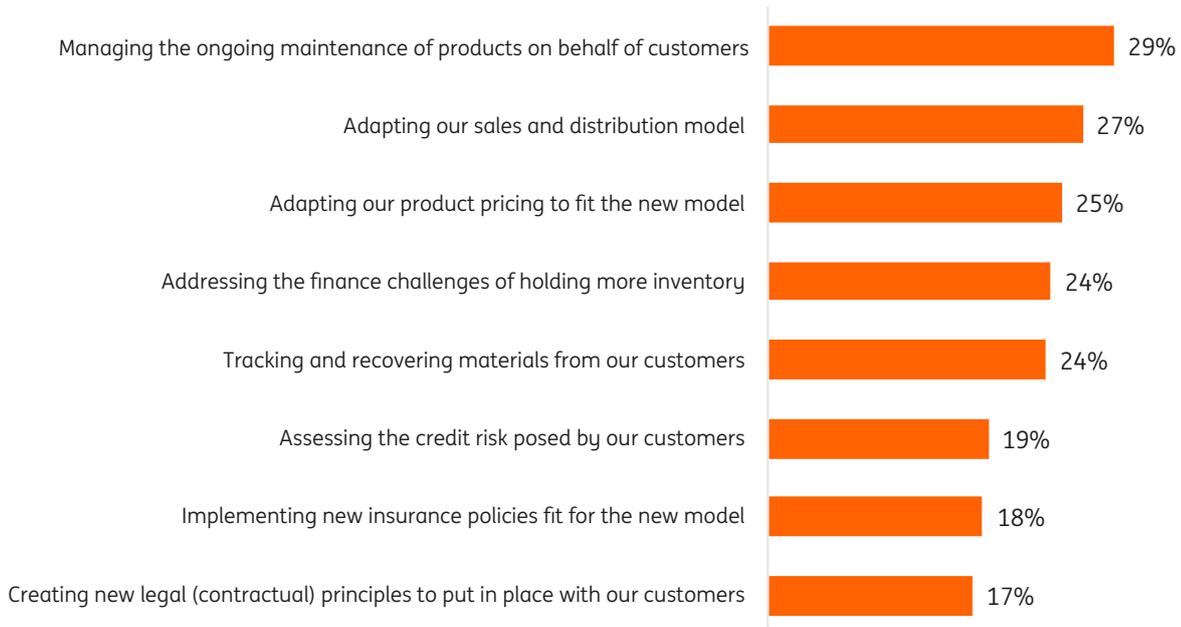


Figure 13: Perceived challenges of implementing PaaS models

Question: If your company was to adopt a “product-as-a-service” model, which of the following changes would your company find it hardest to implement?

Challenges if implementing a product-as-a-service model



Of course, there is a lot to consider for companies introducing PaaS models. They give rise to issues related to holding more assets on the balance sheet. Income streams come over a long period of time, rather than all at once in an upfront payment. There are also issues around credit risk and how companies assess that, if they are hoping to collect payments over the long term, rather than on a one-off basis.

Companies also fear it could be harder to attract lenders to fund PaaS models because of the risk of customers missing payments or defaulting. Automotive respondents think banks’ unfamiliarity with such models may make it harder to get financing, while consumer electronics firms are worried about the amount of inventory they will have to retain on their balance sheets.

On the finance side, we may start to see the creation of separate joint entities, between manufacturers or between service providers and business users, that will be responsible for financing, managing and deploying assets, says Joost van Dun, Circular Economy Lead at ING Sustainable Finance. “A special entity will be financed by, for example, the banks, but it’s also possible to have co-funding together with the manufacturer or the service provider or an equity provider to cover the highest risks.”

This could be a gradual process, he adds: “You can, for example, start with a vendor lease program, in which the leasing company finances the portfolio of assets of a manufacturer. I think that it will evolve later on to more separate entities.”

Next to financing PaaS models, financiers also have to deal with the fact that the value of products and materials will change in the circular economy. Products, and the materials they contain, will always retain a certain value as they are kept in the loop as long as possible. If you calculate this (residual) value incorrectly, it can have a big impact on the business case, but it is something that is inherently hard to determine. One solution could be that the supplier guarantees the value. The creation of new insurance products to cover this value might be another solution here.

Another option for funding is to use blended finance, where private institutions combine with regional or city authority funds to stimulate the local economy, which could be particularly appropriate for helping SMEs to switch to a circular approach.

ING is deploying both its mainstream finance capabilities and its portfolio of green products, such as green loans, which can be used for circular initiatives. For business models that are more complicated or that introduce a new kind of risk, ING is looking to get involved as early as possible. “We want to engage at an early stage with our customers and to work together on creating this business model and finding finance solutions,” van Dun says. “Given our responsibility as a financial institution, we cannot take on more risk, but we can understand the ways in which circular economy approaches reduce risk and help to retain value. So for those initiatives with a higher risk profile, we can help introduce parties that are willing to accept this, such as angel investors and equity providers.”



Conclusion: Capturing business value

1. Build the business case

Talk to your customers to gauge whether they are likely to demand a more circular economy approach to doing business. If so, you need to be prepared.

Assess your business for areas where you are already implanting circular solutions without realizing it.

Look for operational areas where circular solutions would be easy to implement without major changes and assess the potential costs and benefits, both financial and environmental.

Identify products or processes that could go circular and test circular systems to see if they will work. You don't need to become entirely circular all in one go.

Think about the business case beyond your own organization: understanding the investment and return implications of circular propositions for OEMs, suppliers and offtakers will improve the bankability of a project and help get the buy-in of key partners across the value chain.

2. Use circular strategies to get ahead of disruption

Look for areas where the circular economy could create new markets, customers and value for your company.

Look at how new business models such as PaaS might impact your business and your supply chain.

Work out the cost and resource requirements of making any changes, and the payback period. Circular approaches could make your company more resilient or profitable.

Assess the parts of your operations that have the biggest impact and so would most benefit from switching to circular solutions, even if this may be challenging.

3. Collaborate on circular

Work with your suppliers to assess the possibility of collaborating on circular initiatives. Start-ups and social enterprises which are circular by design can also play critical roles in helping to close materials loops.

Explore new business relationships, with new buyers for waste materials and with cities or communities to encourage greater resource recovery — and open up potential new revenue streams.

Talk to your competitors, and companies in other industries, to see if there are areas in which you could co-operate on circular solutions.

Talk to the circular economy leaders in your industry about how they are doing it and the extent to which it is transferable to your company.

Talk to your financial services provider to assess whether it understands, and whether it is prepared to provide financing solutions for circular models.

To learn more about ING's ongoing research into the circular economy and its work to support companies in transitioning to this model, visit: www.ing.com/Sustainability/Sustainable-business/Circular-economy.htm

Survey

All survey work undertaken by Longitude, a Financial Times company.

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