



# **Circularity:** No Time to Waste

25 January 2024

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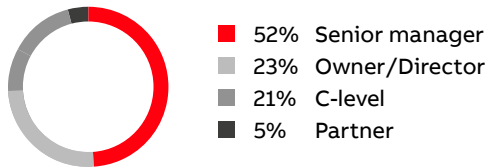
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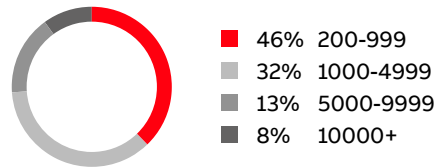
# Survey methodology

**3,304** total respondents

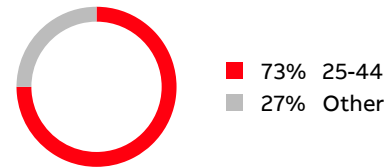
## Role type



## Company size no. of employees



## Age



## Countries



## Company sectors

6%	Mining	7%	Rail	10%	HVAC	14%	Metals
21%	Energy/power	12%	Oil and gas	12%	Food and beverage	19%	Other industrial sectors
13%	Utilities	10%	Chemical	7%	Plastics/rubber		
4%	Marine	7%	Water/wastewater	5%	Wind		

ABB survey commissioned by Sapio Research in October 2023

# Executive summary

## Foreword

The World Economic Forum (WEF) has made it abundantly clear that our current way of life depletes 60% more resources than the Earth can sustainably provide. The urgent need to transition to a circular economy, aimed at minimizing waste and maximizing resource utilization, is widely recognized as essential for safeguarding our environment. This shift becomes even more pressing as our finite resources dwindle rapidly, and our current practices contribute to escalating pollution and climate change.

Embracing circularity not only improves resource efficiency and saves money but also enhances business resilience in the face of global challenges. To gain insights into key trends, perceptions, and attitudes towards circularity, ABB Motion conducted a survey in October 2023, involving 3,304 senior industrial decision-makers from diverse sectors and countries. The survey highlights three main takeaways for businesses striving to maintain their competitiveness:

# 1

**Adopt a holistic approach** that considers all aspects of circularity.

# 2

**Instill a sense of responsibility** for circularity at every level of the organization.

# 3

**Embrace new technologies** and foster collaborations with other groups to expedite the advancement of circular practices.

# Executive summary

## Foreword

The findings demonstrate that businesses now view circularity through a comprehensive lens that surpasses conventional recycling practices. This broader perspective encompasses waste reduction, sustainable design, and the development of resource-efficient processes. However, much work remains to establish a common understanding and metrics for circularity across industries.

Among the surveyed countries, Chinese respondents displayed the highest agreement regarding the benefits of circularity, aligning with their national circular policy. In contrast, European respondents exhibited lower agreement levels, despite having arguably the most comprehensive circular policies.

Moreover, businesses that have implemented circularity practices throughout their entire organization, from C-level executives to front-line operators, reported significant benefits. These include improved cost control, waste reduction, enhanced business reputation, and energy savings – ever more important as 40% reported energy as the biggest source of waste. The findings underscore the critical significance of consistently and comprehensively implementing circularity practices within companies.

In the short-term, these practices enable the optimization of energy efficiency and resource utilization, while in the long-term, industrial leaders highlight additional strategic advantages, such as enhanced process efficiency, improved cost control, and positive

customer perception. The biggest increase to budgets for circularity-related initiatives is expected over the next three to five years.

Despite their optimism about future investments in circularity, most businesses presently face challenges related to resource scarcity and waste. Approximately 95% of businesses are encountering barriers to adopting circular practices, including cost management and limited resource access.

To accelerate the adoption of circularity, businesses are actively seeking technologies, partnerships, and other forms of support. These initiatives include implementing energy-efficient motors and drives, collaborating with waste management and recycling companies, incorporating more recycled

materials into their processes, and conducting lifecycle assessments for equipment. While new regulations will compel businesses to embrace circular practices, 77% feel the need for increased government support.

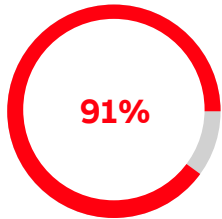
To stay ahead of the curve, businesses must embrace circularity to benefit their operations and the environment. There is no time to waste.



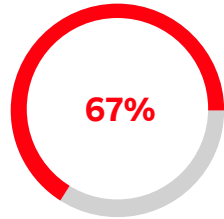
**By Tarak Mehta,**  
President of ABB Motion.

# Executive summary

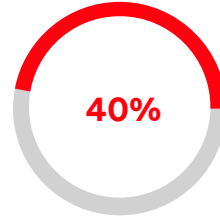
## Key survey findings



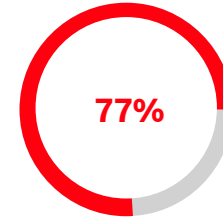
are currently being impacted by resource scarcity



say that investments in circularity will increase in the next 3 years



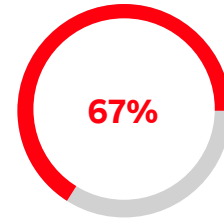
report energy as the biggest source of waste



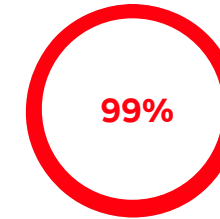
need more government support to develop circular practices



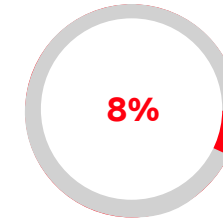
no single definition for circularity was accepted by more than half of the respondents



are using sustainable/ recycled materials in their products and processes



measure circularity in some way, but there is no predominant approach



view circularity as everyone's responsibility in their business



Inability to source sustainable materials and cost management seen as main barriers to adopting circularity

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# Circularity in industry

Perspectives, practices  
and measurement

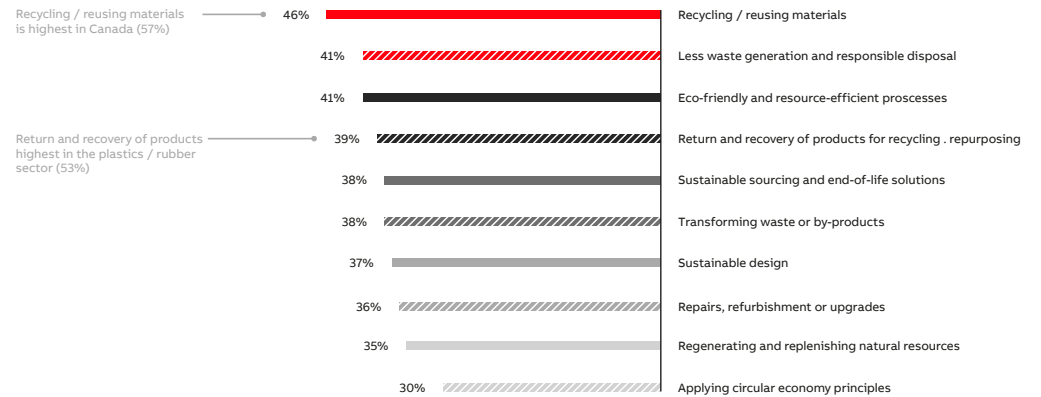


# What does circularity mean?

Perceptions of circularity are broadening – it is no longer just about recycling, but a full life-cycle approach. However, there is still some way to go in establishing a single, universally accepted understanding. In fact, no single definition in our survey was accepted by more than half of the respondents.

While two-thirds of organizations believe their country (65%) and industry (70%) excel in adopting the circular economy, this perception might not accurately reflect reality. The disparity arises from different interpretations of definitions and measurement criteria for circularity, highlighting a potential gap between perceived success and actual implementation. While awareness is expanding, the question remains: is it progressing swiftly enough?

The recognition of circularity is expanding beyond a narrow focus on recycling and encompassing a broader understanding. This includes embracing sustainable sourcing, resource-efficient operations, and responsible end-of-life practices. The move from a “take, make, dispose” model to a circular economy aims to minimize waste. For industrial businesses, a holistic approach is crucial, covering circular design, efficient operations, optimized product use, and responsible end-of-life practices.



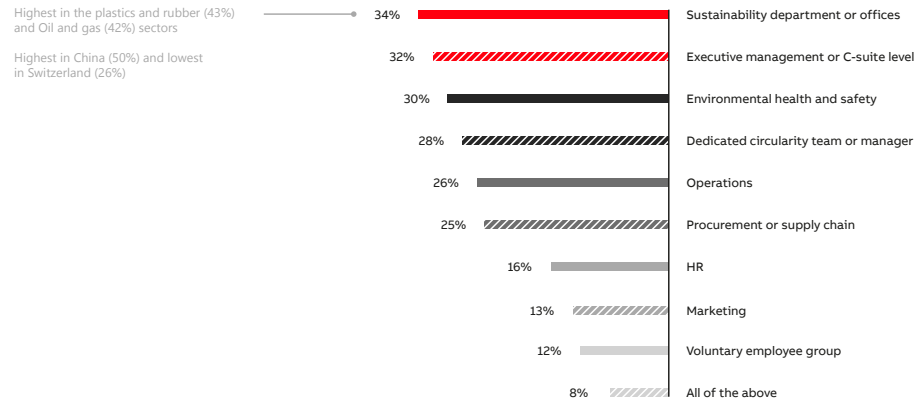
What does circularity mean for your business? Select all that apply



# Who is responsible for circularity?

The presence of specific roles for circularity within industrial businesses is widespread, with 98% having at least one person responsible for this area. However, the diversity of these roles underscores the absence of a standardized approach that fits all businesses.

Alignment with core values and operational requirements plays a crucial role in implementing circular practices effectively. Notably, 34% of businesses have a dedicated sustainability department that drives circular initiatives. In larger organizations, involvement of C-level executives is more common. Emphasizing company-wide responsibility for circularity, which can be led by a dedicated department or manager, is of utmost importance for successful implementation.



Who is responsible for circularity in your business? Select all that apply

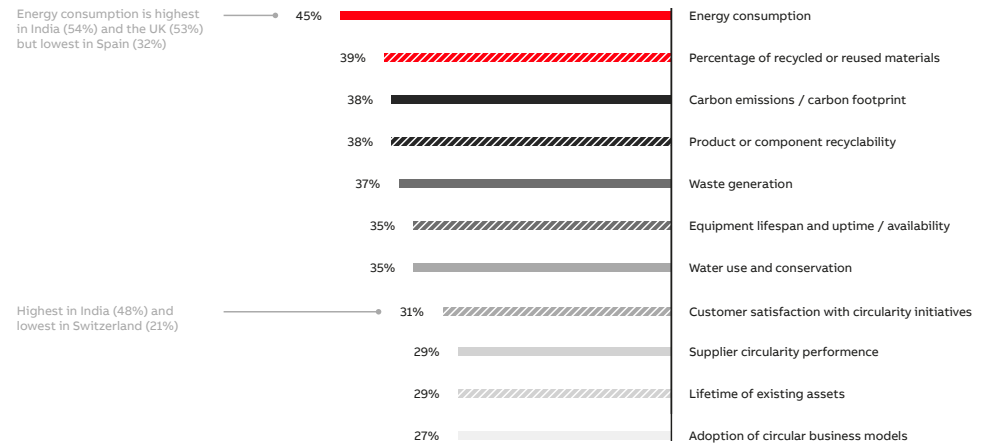
# How do you measure circularity?

While nearly all companies (99%) measure the impact of their circularity initiatives, there is no prevailing approach. Interestingly, energy usage is rated higher than recycling rate, which is traditionally associated with circularity. This shift reflects a growing recognition of the importance of energy efficiency and its alignment with circular principles.

It is worth noting that tracking equipment lifespan is a less common metric among businesses. However, adopting a more thoughtful approach to maintenance and extending the use-phase of equipment can prevent unnecessary material waste associated with early retirement and the purchase of new equipment.

There are significant variations in the metrics chosen by companies, especially based on their size. Larger businesses tend to prioritize

metrics related to energy consumption and carbon footprint. This is likely due to their exposure to broader and more stringent regulations in these areas compared to smaller companies.



What, if any, metrics or indicators do you use to measure the success of your circular economy initiatives? Select all that apply.

## A critical connection

# Circularity and energy efficiency's impact on emissions

The emphasis on energy efficiency and reducing carbon emissions highlights the connections between circular practices and sustainability, evident in their impact on Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased energy), and Scope 3 (indirect emissions from the entire value chain) emissions.

Embracing energy efficiency decreases Scope 2 emissions by using less purchased energy, thus reducing the associated carbon emissions.

Circular practices cut Scope 3 upstream emissions by optimizing product lifecycles and encouraging responsible sourcing. They also cut Scope 3 downstream emissions through

fostering end-of-life strategies like recycling, reducing the environmental impact right across the value chain.



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## Circular solutions

A circular way around resource scarcity, waste and the climate crisis



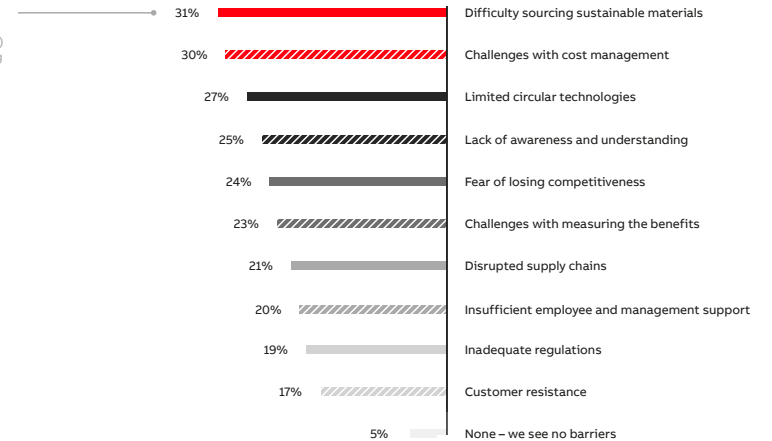
# What are the key barriers to adopting circularity?

While awareness of circularity has increased, there remains a disconnect between awareness and actual implementation due to existing barriers. Bridging this gap is crucial for effectively engaging in sustainable practices.

Almost all industrial business leaders (95%) face obstacles when adopting circular practices. The primary challenge reported is the sourcing of sustainable materials (31%). Many other hurdles revolve around accessibility, including difficulties in acquiring sustainable materials and circular technologies, as well as managing the associated costs. Interestingly, resistance from employees and customers, as well as regulatory requirements, are not considered major hindrances.

The limited availability of circular technologies is identified as one of the top three barriers to adoption in various key industrial sectors. This highlights a lack of awareness regarding the potential contributions of certain technologies to circularity.

This is more of an issue in Germany (35%) and China (35%). Businesses in Italy (24%) and Switzerland (24%) have the least trouble with sourcing



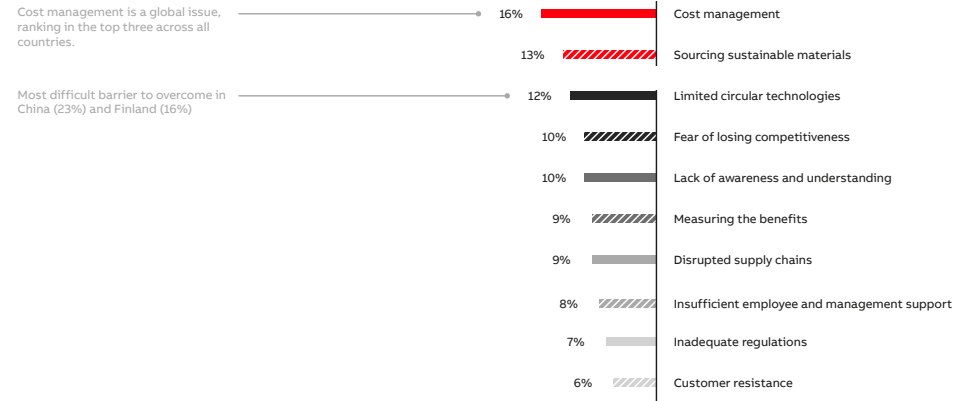
What do you see as the key barriers to adopting circularity in your business? Select top three

# Which barrier will be the most challenging to overcome?

While embracing circularity holds the potential for long-term cost benefits, the perceived barrier of cost management is considered the most challenging. Implementing circular practices may involve initial expenses, making it a difficult hurdle for businesses to overcome. However, the long-term advantages, such as addressing resource scarcity and reducing waste, highlight the need for investment in circular approaches. This underscores the importance of continuous development and affordability of sustainable technologies and resources.

that, although cost is a common obstacle, individual industries and businesses face their own unique circumstances and challenges when it comes to adopting circularity.

It can also be argued that there is no clear outlier in terms of the most difficult challenge. For instance, Chinese respondents, as well as those in the oil and gas industry, rated limited circular technologies as the most difficult challenge. This demonstrates

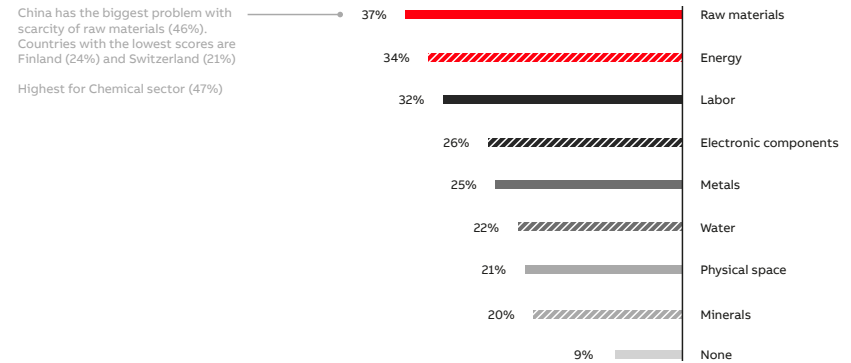


Which barrier do you believe will be most difficult to overcome? Select one

# Which resources are perceived as scarce?

The vast majority (91%) of organizations are being affected by resource scarcity, to varying degrees. Overall, organizations are most likely to be affected by a lack of raw materials, energy and labor.

This is likely to get worse as markets grow – unless businesses act. For example, Chinese respondents identified the scarcity of raw materials as the most significant issue (46%). And yet, the manufacturing market in China is projected to grow by roughly 4% between 2024 and 2028, resulting in a market volume of US\$5.82tn in 2028 (according to Statista). To sustain this growth, material efficiency must be improved – and this is possible through enhanced circularity.



Are your organization's operations currently being impacted by scarcity of any of the following resources? Select all that apply

# Dispelling misconceptions about the cost of circularity

While there is still a perception that cost acts as a barrier to adopting circular practices, the reality is that embracing circularity can lead to significant long-term cost savings. Despite the need for initial investments, the streamlined processes inherent in circular practices contribute to increased efficiency, optimized resource utilization, and reduced waste, ultimately resulting in lower operational expenses over time.

Many businesses tend to focus on capital and operational expenditure in isolation and only consider short-term financial implications. However, taking a holistic view of total cost of ownership (TCO) when evaluating circular investments, where future operating costs are factored in as net present value, offers a strategic approach that maximizes long-term financial and environmental benefits.

Therefore, it is crucial to recognize circular practices as a strategic investment for sustainable and cost-effective business operations. By prioritizing circularity, businesses can achieve not only environmental goals but also long-term financial gains.

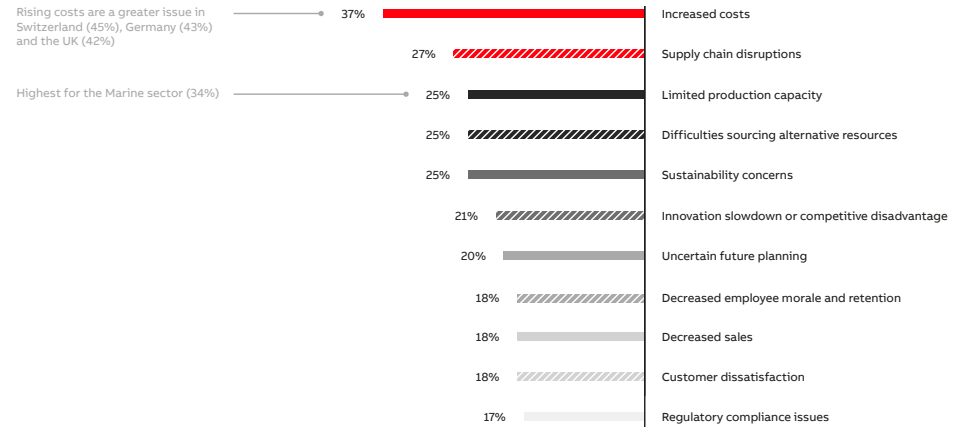




# What challenges arise from resource scarcity?

Resource scarcity is a major challenge for industrial businesses today. It leads to additional challenges too, with increased costs, supply chain disruptions, and limited production capacity rated highest.

These are all interlinked, with cost being a big theme. A lack of circular practices exacerbates resource scarcity which leads to increased costs. But there is still a perception that embracing circular practices will also be costly. However, investing in circularity is a decision that will save costs in the long-term.

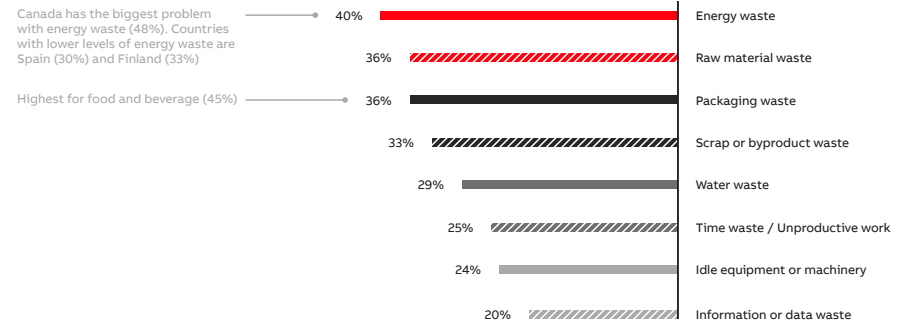


What are the main challenges your business is experiencing due to resource scarcity?  
Select top three

# What are the biggest sources of waste?

There is a close relationship between industrial waste and energy consumption, with inefficient energy use often resulting in increased waste generation due to process inefficiencies. Conversely, good waste management contributes to energy efficiency by minimizing resource use and mitigating energy-intensive processes. The optimization of both energy consumption and waste reduction is essential in fostering a sustainable industrial ecosystem within the framework of a circular economy.

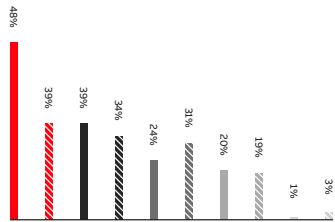
Geographically, waste patterns vary significantly, with distinctions such as high energy waste in Canada and the UK, elevated raw material waste in India, and increased water waste in France, all underscoring the importance of tailored strategies in different regions.



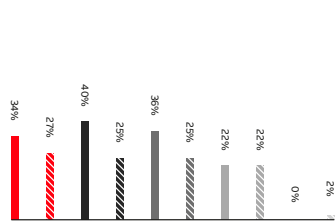
What are the biggest sources of waste in your organization? Select top three

What are the biggest sources of waste?

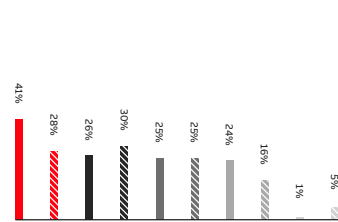
- Energy waste
- ▨ Raw material waste
- Packaging waste
- ▨ Scrap or by product waste
- Water waste
- ▨ Time waste / Unproductive work
- Idle equipment or machinery
- ▨ Information or data waste
- Other
- My organization doesn't have a biggest source of waste, they are mostly equal



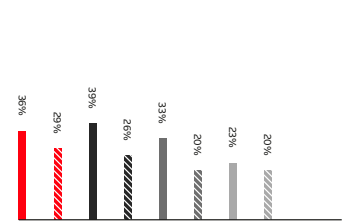
Canada



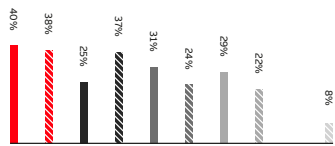
France



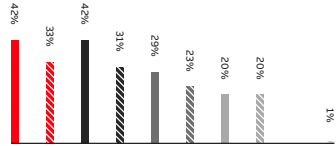
Italy



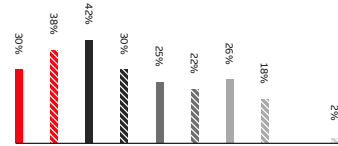
Switzerland



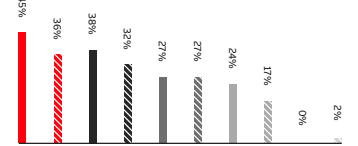
China



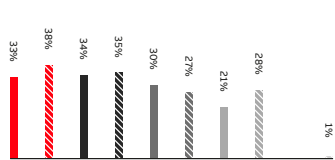
Germany



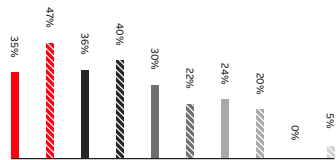
Spain



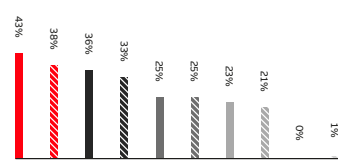
UK



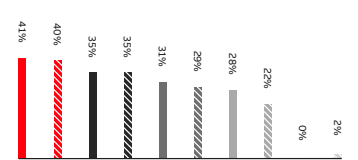
Finland



India



Sweden



US

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# Circular strategies

## Actions and benefits

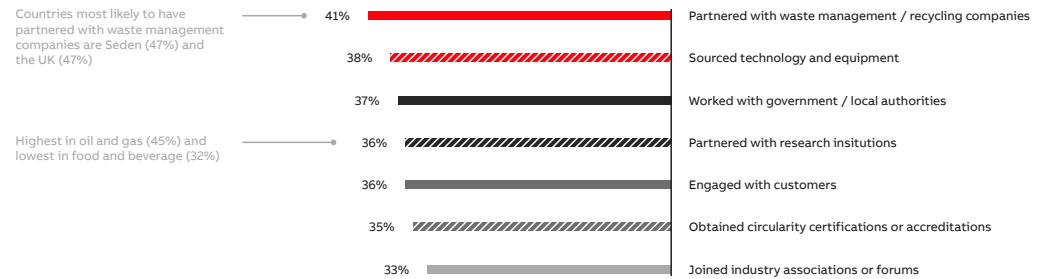


# What partnerships are being created to enhance circularity?

A cultural shift towards circularity is reflected by businesses collaborating with partners to embrace circularity throughout the value chain.

Industries are proactively forming partnerships to enhance circular practices, with a focus on waste management and recycling collaborations. These alliances extend to technology sourcing, engagement with government authorities, and partnerships with research institutions, demonstrating a comprehensive approach to sustainability. Industries are also emphasizing customer involvement, obtaining certificates, and participating in industry associations, showcasing a holistic commitment to circular initiatives.

Still, only 41% of companies are partnering with waste management firms. This perhaps indicates growing adoption, but not as high as needed to establish true circularity. Notably, companies with no specific role or department for circularity were far less likely to be partnering or collaborating with others to enhance it.



What, if any, collaborative or partnership efforts have you engaged in to enhance circularity within your industry? Select all that apply

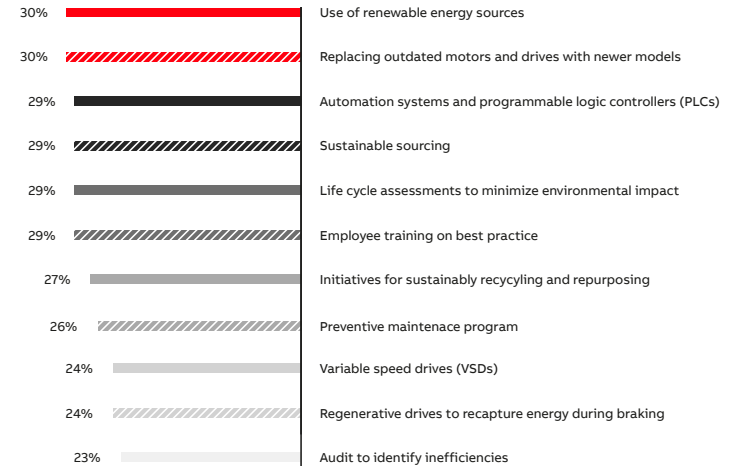
# How is technology being used to enable circularity?

Industrial electric motors account for nearly half of global electricity consumption, emphasizing the critical need businesses to adopt high-efficiency motors and variable speed drives (VSDs) to reduce energy waste. Yet, only 30% of businesses are taking the necessary steps to replace outdated motors and drives with more efficient alternatives. This represents a missed opportunity significantly improve energy efficiency, especially as energy consumption is considered a key circular metric by 45% of respondents.

While transitioning to green energy is the ultimate goal, progress in renewable infrastructure development remains slow, posing challenges in meeting the global warming target of 1.5°C. Urgent action is needed to drive sustainable transformation within the industrial sector. Optimizing motor efficiency through upgrades and integrating VSDs, which are

currently only implemented in a quarter of motors, presents a more immediate solution. However, it is vital to emphasize the ‘full circle’ nature of circularity in this context, ensuring that new technologies are sustainably sourced, efficiently utilized, and carefully maintained.

Furthermore, businesses that have embraced a shared responsibility for circularity across their organization have demonstrated a higher likelihood of implementing the listed initiatives. This highlights the importance of fostering a culture of collective responsibility for circularity within businesses to drive effective implementation.

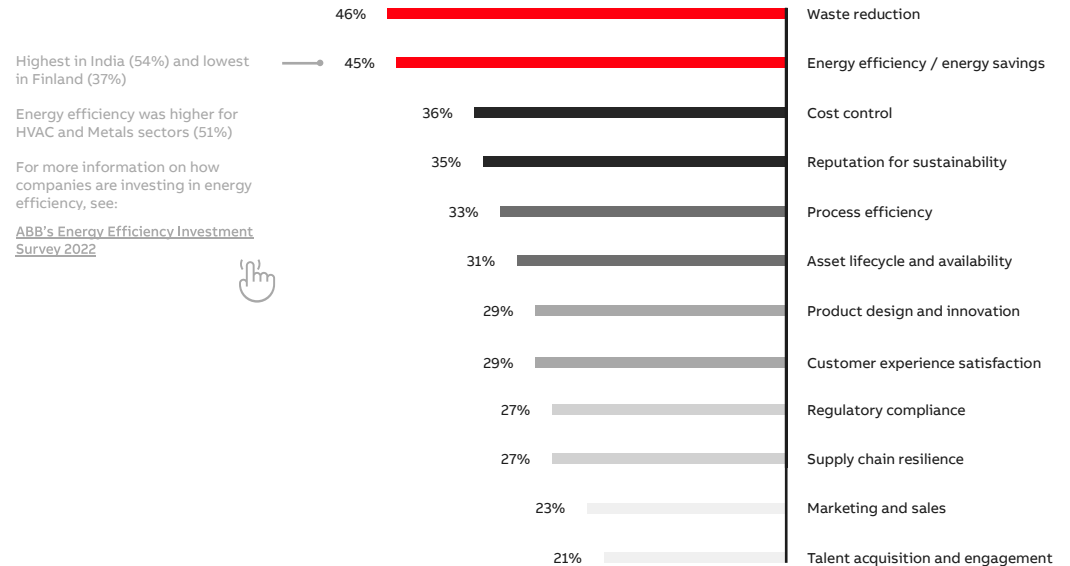


Which of the following circularity initiatives have you taken to improve your company’s use of motors and drives? Select all that apply

# What areas have been improved by circularity?

Despite challenges, most businesses recognize the positive impact of their adopted circular practices. It is crucial for industrial businesses to persist in their short-term efforts to unlock long-term advantages. Those actively embracing circular practices have already experienced immediate benefits in waste reduction and improved energy efficiency. Over time, these initial gains will likely evolve into lasting advantages, including enhanced process efficiency and improved cost control.

Businesses with a shared responsibility for circularity across the organization experienced the highest level of improvements across almost all these metrics.

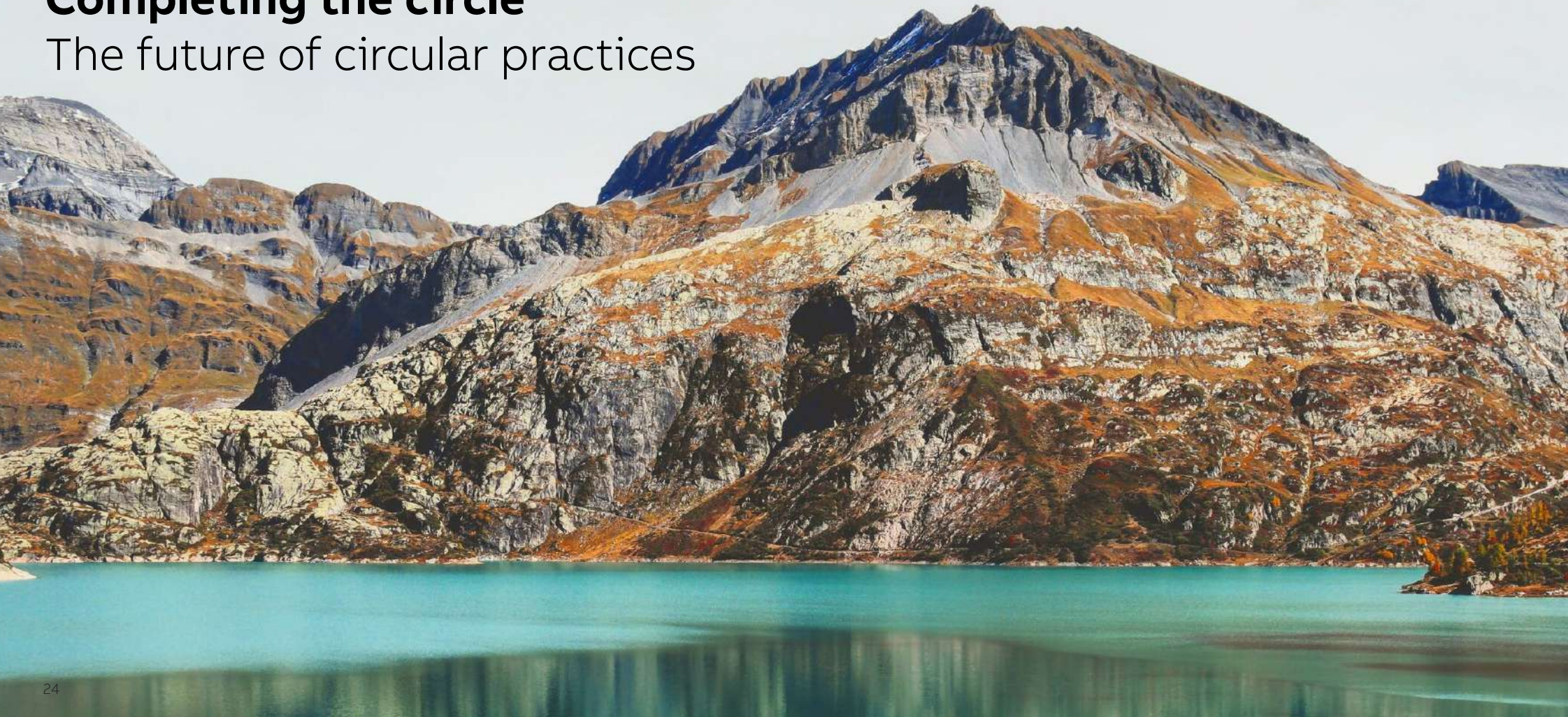


Which of the following areas of your business have already been improved due to adopting circularity initiatives? Select all that apply

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# Completing the circle

The future of circular practices

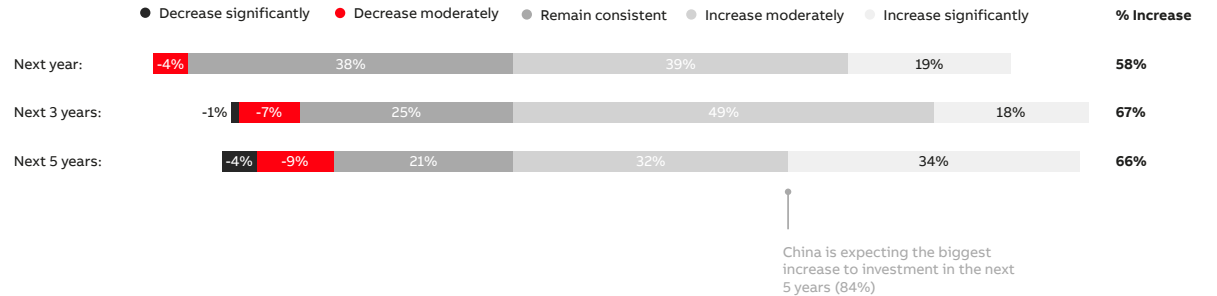




# How will budgets for circularity change?

There is a justifiable reason for optimism when it comes to circularity, as the majority (66%) of businesses anticipate an increase in their budget for circularity-related investments over the next five years. However, it is important to note that this increase is expected to be more significant in the long-term (next 3-5 years) rather than in the immediate short-term (next 12 months).

The fact that businesses are anticipating higher budgets for circularity-related investments indicates an understanding and acceptance of sustainable practices as long-term investments. However, while this is a positive outlook, there is still more that can and should be done starting from today. Making conscious decisions that prioritize investments in energy efficiency, for instance, yields immediate benefits by reducing waste and costs.



Over the next one, three, and five years, how do you expect your budget for circularity-related investments to change?

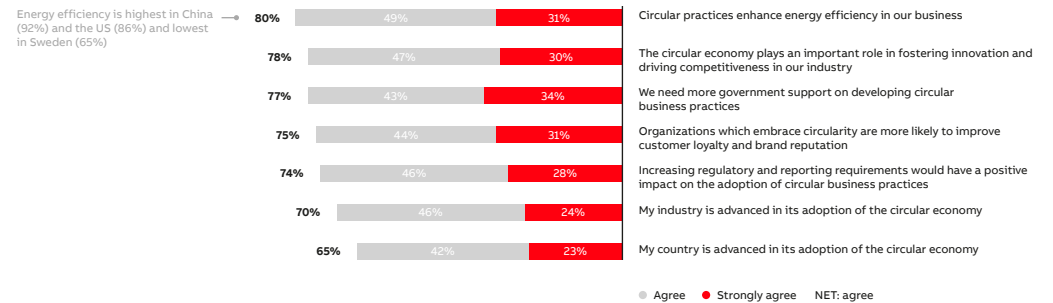
# What are the attitudes towards circularity and its regulation?

More than three-quarters (78%) of respondents agree that the circular economy fosters innovation and drives competitiveness. This feeling was highest in China (90%) but lower in EU countries and lowest in Sweden (59%). In fact, Chinese respondents consistently agreed the most with all the statements (87% agree, on average) while Swedish respondents agreed the least (59% agree, on average). This reflects the fact that China now promotes circularity as a national political objective with its Circular Economy Promotion Law.

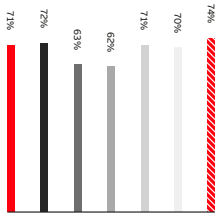
Chinese (80%) and Indian (76%) respondents agreed that their country is advanced in its circular adoption. India is also taking positive steps in implementing different rules to avoid plastic, metal, and e-waste. Conversely, French and Italian respondents were least likely to agree that their country is advanced in its circular adoption (47% and 52%

respectively). This is an interesting result, considering the EU arguably leads the world in circular policy maturity. Another example is the EU's Ecodesign Directive which, as of December 2023, is set to establish a Digital Product Passport and new sustainability requirements for goods placed on the EU market.

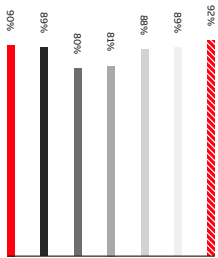
Businesses view increasing regulation on circularity as a good thing, with 74% agreeing that heightened regulatory and reporting requirements would positively impact the adoption of circular business practices. Most (77%) are seeking increased government support for developing circular business practices. Despite Chinese and Indian respondents heavily agreeing with most statements about the positive benefits of circularity, they still felt strongly that they needed more government support (88% and 85% respectively).



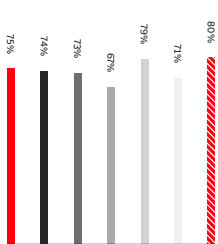
To what extent do you agree with the following statements?



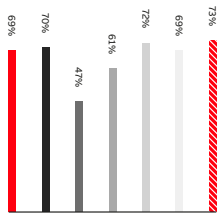
Canada



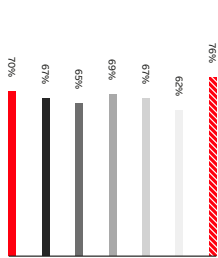
China



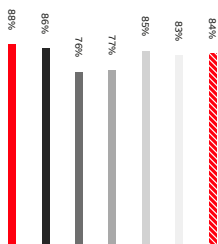
Finland



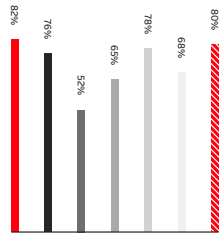
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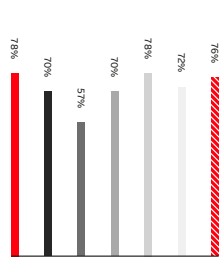
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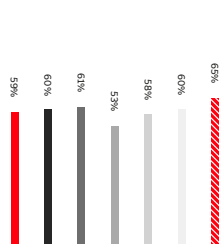
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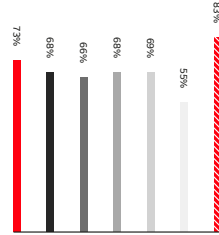
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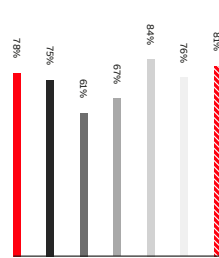
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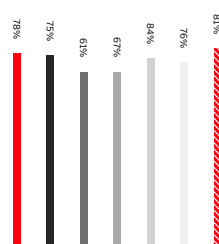
Sweden



Switzerland



UK



US

What are the attitudes towards circularity and its regulation?

- The circular economy plays an important role in fostering innovation and driving competitiveness in our industry
- Organisations which embrace circularity are more likely to improve customer loyalty and brand reputation
- My country is advanced in its adoption of the circular economy
- My industry is advanced in its adoption of the circular economy
- We need more government support on developing circular business practices
- Increasing regulatory and reporting requirements would have a positive impact on the adoption of circular business practices
- ◆ Circular practices enhance energy efficiency in our business

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# Recommendations



# Recommendations

For a sustainable future, it is time for industrial businesses to take decisive action on circularity. Here are five suggested actions to take, right now.

## 1

### Adopt a holistic approach to circularity

A holistic approach to circularity considers all aspects of the product lifecycle and supply chain, integrating circular design, sustainable sourcing, resource-efficient operations, optimized product use, and responsible end-of-life practices.

Businesses should expand their outlook beyond recycling and adopt sustainable processes, product lifecycle extensions and circular economy principles for improved energy efficiency and reduced emissions. This ensures circular principles are integrated at every stage, for more sustainable and efficient operations overall.

## 2

### Use circular technologies

Investments in advanced technology such as energy-efficient motors, variable speed drives and renewable energy sources are not simply added costs, but strategic enablers of circularity.

These strategies can reduce energy consumption and waste products from unproductive processes and offer both environmental advantages and potential long-term cost savings through extended product lifecycles.

## 3

### Design an investment roadmap

In the short-term, investments can support immediate operational efficiency, while fueling innovation in circular design and waste reduction practices. This leads to cost savings and enhanced brand reputation as companies respond rapidly to consumer demands for environmentally responsible products.

Meanwhile, long-term investments can foster resilient supply chains and new business models that facilitate product life extension, reuse, and recycling. This balanced approach comes with economic and environmental benefits, ensuring that businesses remain competitive in an increasingly eco-conscious market while contributing positively to the circular economy.

# Recommendations

For a sustainable future, it is time for industrial businesses to take decisive action on circularity. Here are five suggested actions to take, right now.

## 4

### Embed circularity into company culture

Circularity should not be the sole responsibility of a single individual or department. Instead, enterprises should appoint circularity champions across all functions – from the C-suite to frontline staff.

Regular staff training and the creation of dedicated circularity teams will ensure that the principles are embedded throughout the company, fostering an organizational culture that embraces sustainability.

## 5

### Partner to teach and learn

Businesses should actively seek partnerships with other firms, government entities, and non-governmental organizations specializing in circularity. These partnerships could provide a support network that shares resources, knowledge and innovative solutions.

Beyond mutual commercial benefits, such collaborations can accelerate the advancement of industry-wide circular practices and contribute to addressing broader sustainability and climate change challenges.

Now is the time for business leaders to galvanize their people, processes and partners to adopt circularity in every process, every day, everywhere. There is no time to waste.

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# Appendix



# Appendix

## Circular policies around the world

The focus on sector-specific circular policies in the EU is seeing advances with initiatives such as the Ecodesign for Sustainable Products Regulation (ESPR) and measures to tackle over-packaging and support reuse and refill solutions. Furthermore, with the push to introduce Digital Product Passports, a ban on the destruction of certain goods, and a new proposal for a green claims directive, the EU is creating a framework for consumers to be better informed about the products they buy, promoting transparency and accountability among manufacturers. The provisional agreement on the Critical Raw Materials Act, aiming for at least 25% of the EU's annual critical raw materials consumption to come from domestic recycling by 2030, underscores the EU's commitment to resource efficiency and a robust secondary materials market.

While Europe leads in policy maturity, North America and the rest of the world are also taking significant steps. For example, the state-level approach in the US, like California's legislative package and investment in recycling systems, reflects a growing commitment to circularity. Right to repair policies in certain US states will likely motivate companies to provide the same repair information to all US customers. Canada's ban on single-use plastics and Latin America and the Caribbean's regional strategies illustrates a growing global tide of circular economic principles.

India is also taking positive steps in implementing different rules to avoid plastic, metal, and e-waste. Eleven government committees have also been formed to drive the circular economy in their respective areas

and develop a plan for the transition. The National Solar Missions aims to boost use of solar energy as India moves away from fossil fuels.

In the Asia-Pacific region, countries like China, Japan, and South Korea are advancing their own circular economy policies, with China promoting circularity as a national political objective – for example, with its Circular Economy Promotion Law. In Africa, measures such as the National Action Plan for Sustainable Consumption and Production in Egypt and the African Development Bank's stance on coal financing demonstrate a burgeoning recognition of circular economy benefits.

Therefore, the global shift toward circular economies is becoming increasingly

legislated, systematized, and integrated into the fabric of international trade and manufacturing standards, fostering a more resilient and sustainable global economy.



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**Circularity**  
No Time to Waste

