



8 BUSINESS
CASES FOR THE
**CIRCULAR
ECONOMY**

CONTENTS



THE CIRCULAR ECONOMY

The circular economy 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 and parts to create a system that promotes long life, digitization, sharing, services across materials, energy and water.



To grasp the scale of circular economy opportunities, we must understand the limits of our current linear economic model

By applying these principles, companies can design out waste, increase resource productivity and decouple growth from natural resource consumption.

Linear risk

Today's linear economic model is reaching a tipping point. Demand is increasing alongside the growing global population and expanding middle class. At the same time, the natural and social capital costs of non-renewable resource extraction and disposal impact the cost of doing business. Companies must get into the circular mindset to address this.

Commodity and raw material prices will continue to remain volatile as climate change, demographics and technological innovation impact resource supply and demand.

In addition to market risks associated with the linear economic model, firms should also anticipate regulatory and reputational challenges. Landfill closures, material bans and extended producer responsibility policies are springing up globally, often without input from the private sector. Further, brand association with environmental degradation during extraction and post-consumer pollution can negatively impact a company's reputation and other intangible assets.

Circular opportunity

The global, macroeconomic opportunities associated with the circular economy have come into focus over the last decade.

Studies show that the circular economy presents a \$4.5 trillion USD opportunity, may boost GDP by 1.1%, create more jobs and make the economy more resilient^{1,2}

These findings have fueled circular economy momentum globally.

However, these values are difficult to translate for companies trying get internal buy-in on circular projects.

Pioneer companies are already capturing circular value

Even some of the most revered corporate sustainability companies face challenges in understanding what the circular economy is, its implications for their business and which methods to use for identifying the business case.

As with any new idea or technology, there are pioneers in the circular economy. Each company has its own business drivers and justifications for transitioning to more eco-effective products, services and business models.

Just as the circular economy is much more than recycling, companies stand to gain much more than solely mitigating risks. We hope this helps you find yours.

8 BUSINESS CASES FOR THE **CIRCULAR ECONOMY**

Successful circular initiatives will reduce dependence on natural resources and will create value for companies and their stakeholders.

Through interviews and surveys conducted across 2016 and 2017, WBCSD collected information on specific business cases that companies use for implementing circular projects.

Participants identified eight business cases for the circular economy that accelerate growth, enhance competitiveness and mitigate risk

Figure 1:
8 Business cases for the circular economy



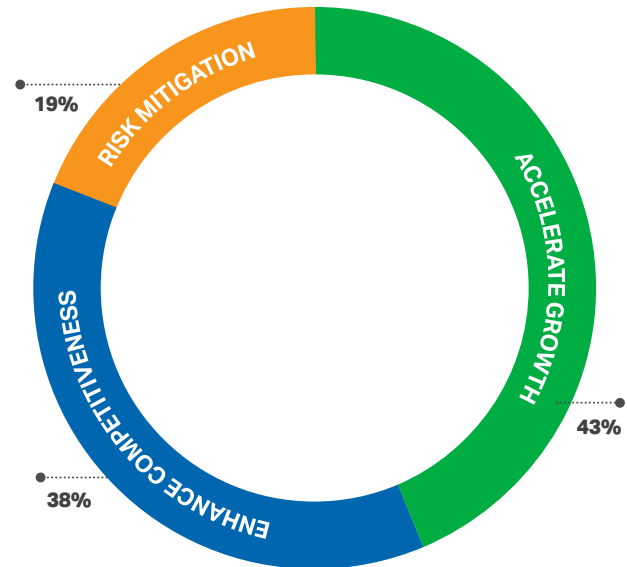
The survey showed that about 40% of companies implementing the circular economy referenced growth and competitiveness as key business cases, respectively

The final 20% of business drivers cited risk mitigation as the main business driver

This report describes each of these eight business cases and provides concrete examples to outline the circular opportunity for business. Companies should think of these eight drivers as a menu of options

for justifying the transition to **circular economy**. A company's industry, position in the value chain and geography (among others) will determine which business cases are most relevant.

Figure 2:
The 8 business cases
in practice



8 BUSINESS CASES FOR THE CIRCULAR ECONOMY

PROJECT 1

Lorem ipsum

PROJECT 1

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Gener8:

Create additional income from the existing products and processes

Companies can GENERATE revenue from existing products by taking a circular economy perspective on their products, services and operations

Specifically, businesses have demonstrated positive contributions to their bottom line by remanufacturing, refurbishing and turning products into services.



Gener8:

Canon also offers remanufactured multifunction devices as well as refurbished products. **The company maximizes value from its manufactured capital by collecting used equipment from the market, remanufacturing it and re-selling it with the same high-quality guarantee as original products.** In reusing at least 80% of the materials, Canon also reduces product greenhouse gas emissions associated with raw materials, parts and manufacturing by more than 80% compared to a newly manufactured product.

By capturing the components and materials directly, Canon offers customers a high-quality product with fewer environmental impacts at a competitive price.



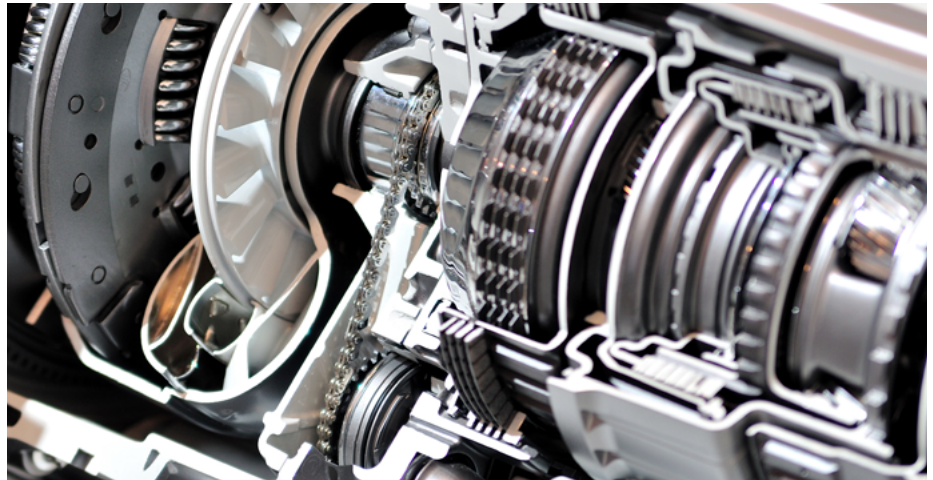
Gener8:

Tata Motors Limited, a USD \$42 billion organization, is a leading automobile manufacturer practicing sustainability and the spirit of “giving back to society” as a core philosophy.

One of the company's highly successful circular economy initiatives is Tata Prolife, a pioneering after-market product support strategy for Tata Motors' customers. Use of Tata Motors Prolife aggregate ensures original equipment-like-performance of the vehicle even after the first life cycle. Tata Motors conducts its reconditioning at Prolife plants in Lucknow and Coimbatore. The ambition is to minimize the product life cycle cost, allowing the company to offer high quality products at a reduced price.

Tata Motors' Prolife business has a wide variety of reconditioned products, from engine long blocks, gear boxes, turbo chargers and air compressors to electrical components such as starter motors and alternators. Tata Prolife business reconditions about 23,000 equivalent engines in a year.

With such positive results, it is not surprising that Tata Motors' Prolife is expanding into new facilities at Surat and Hyderabad, India.

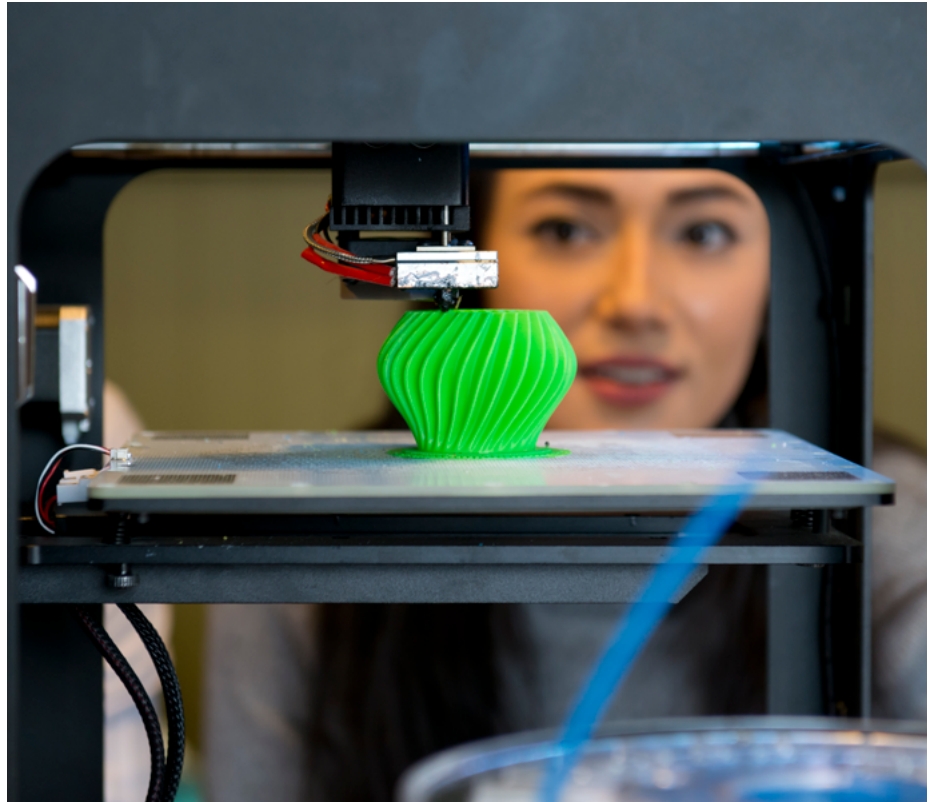


Innov8:

Spur innovation
of new products
and services

**Business can INNOVATE
new products and services,
establishing complementary
revenue streams or adopting
new business models**

Companies have capitalized
on innovation opportunities
to drive growth through joint
ventures, reevaluating product
design or function and disruptive
technologies.



Innov8:

SUEZ is the only international company whose activities are exclusively dedicated to solid waste and water management, and it therefore intends to be the leader in sustainable resource management to improve the environmental and economic performance of cities and industries.³

SUEZ's strategy is based on two main pillars: Transform the Group's activities through innovative solutions that lead the way to circular economy, and open up to new markets across the globe and in new customers' segments.⁴

In establishing new revenue streams and services, the company aims to double the volume of plastics recycled by 2020, increase the production of renewable energy from waste and water facilities by 10% and improve alternative water

resources supplies.⁵ SUEZ has partnered with two companies aiming to capture complementary business lines: innovative recycling solutions with TerraCycle and a new polymer recycling facility in partnership with Chemelot Ventures.

Capitalizing on the power of collaboration, SUEZ anticipates its circular economy solutions will allow it to capture more market share and expand into unconventional markets for resource management companies.



Innov8:

Launched in 2012, **Lyft** is the first peer-to-peer ridesharing platform that unites humanity and technology. Based in San Francisco, California, the company recognized the underused capacity of personal vehicles on the road as an opportunity for direct transportation services at a fraction of the cost of taxis while providing income to drivers.

Demonstrating successful implementation of the sharing economy through turning products into services for underused assets, Lyft had 162.5 million rides in 2016, three times the amount in 2015.

Lyft launched Lyft Line in 2014, an additional service that uses a real-time on-demand ridesharing model to maximize every seat in the car. Building

upon the original Lyft service model that established trust and reliability with consumers, Lyft Line creates more value for customers by offering fare reductions of up to 60% if they're willing to share their ride.⁶ As the Lyft platform improves in efficiency, passengers, drivers, local business and communities all stand to benefit from on-demand carpooling.

Lyft Line now operates in over 20 cities and gets smarter over time as it better understands how people move around. As the system learns more it can better optimize vehicle rides, Lyft aims to shift society's perception from "needing a car" to "needing a ride." Lyft recently raised another \$600 million USD at a valuation of \$7.5 billion USD as it has expanded operations to 131 additional cities in 2017 alone.⁷



Moder8:

Reduce operating costs

Companies can **MODERATE** the resources they use to save money and generate financial gains

Resource reuse, remanufacturing, recycling, by-product exchange, circular procurement and selling services instead of products are some of the strategies companies have taken.



Moder8:

Renault is a circular economy pioneer.

Renault has implemented circular strategies at all stages of the vehicle life cycle, including dematerialization through design as well as end-of-life vehicle collection and dismantling, reuse, remanufacture and recycling. In 2008, Renault entered a joint venture with SUEZ to acquire 100% of INDRA vehicle recycling services.⁸

The objective of the partnership was to recover 95% of all end of life vehicles in France, addressing the European Community ELV Directive 2000/53.⁹ INDRA's dismantling network processed 400,000 end of life vehicles in 2016. Renault supported INDRA's development to supply its own plant and foundries (plastics, aluminum, platinoides or

copper), as well as second hand part premium services for repair in its dealer network (offering more affordable solutions for repair to its customers).

Simultaneously, Renault is increasing recycled content in its vehicles, achieving over 32% of new vehicles by weight in EU in 2016.¹⁰ **The large amount of recycled plastics reintroduced into the system saves between 10% and 15% of the cost virgin material.**

Thanks to INDRA and other company operations, like the Choisy-le-Roi gearbox and injection pumps remanufacturing plant, Renault's remanufacturing division is more than a €200M business.¹¹ This is still a small fraction of the European automobile remanufacturing market estimated at €8-10B.¹² Additionally, the company has €370M turnover of dismantling and material recycling.



Moder8:

Global resource constraints are driving a shift to value-based healthcare approaches that reduce cost, increase access to care and improve patient outcomes. At the same time, the rapid pace of technology development triggers the replacement of medical equipment with significant residual value. Therefore, **Philips** is transforming its business model, moving from selling equipment alone to providing solutions to hospitals and other care providers, sharing risk for results through [long-term partnerships](#). Through this new approach, Philips can directly manage when to upgrade equipment, refurbish systems, reuse parts and recycle materials. This allows Philips to reduce the total lifecycle costs of equipment and extend their lifetimes.

The model enables care providers to also reduce costs and access state-of-the-art technology at a more predictable cost. By moving away from a purely transactional sales approach, **Philips has achieved 50-90% material reuse (depending on**

the product) through its refurbishing activities, including its reuse of 940 tons of refurbished medical imaging equipment in 2016. Currently 9% of Philip's total revenues (in 2016) is circular, with a goal to reach 15% in 2020.

Captiv8:

Engage customers
and employees

**Companies can CAPTIVATE
customers and employees
by working towards a circular
economy**

Businesses may find that improving customer loyalty and recruiting better talent are outcomes of circular business models and objectives, enhancing their competitive advantage.



Captiv8:

Michelin solutions, one of Michelin's business units, offers a Fleet Tire Management solution called [EFFITIRES™](#) in which customers pay a monthly fee for traveled kilometers (or miles) instead of tires. **Today, more than 320,000 vehicles are under an EFFITIRES™ contract and Michelin expects to double the revenue of services and solutions by 2020.** This alteration of the existing business model from product- to service-based offers turns customers into "long-term partners" and generates improvements to fleet efficiency, productivity and environmental impact.

Because of this, Michelin solutions improves its value proposition to customers and consequently strengthens their loyalty. The solution maximizes tire usage and therefore its life expectancy, by ensuring tire

use – in compliance with the law – to the last possible millimeter of rubber, then regrooved and retreaded. Michelin established this new business line without compromising its core business of manufacturing and marketing tires.

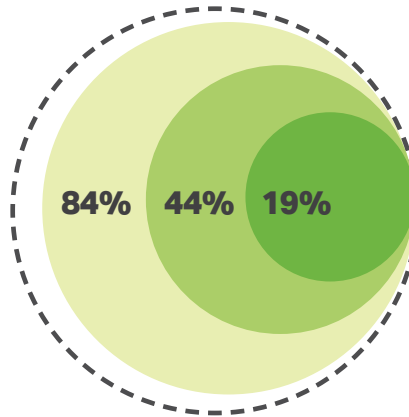


Captiv8:

Dow Chemical's packaging group has observed that programs aiming to close the loop have had a significant effect on their recruiting efforts. Based on listening sessions with new employees, Dow estimated that approximately 80% of new recruits viewed the company's commitment to sustainability as the number one reason for joining.

These new recruits are often some of the most enthusiastic and innovative employees in helping Dow achieve its [2025 Sustainability Goals](#), one of which is to advance the circular economy through closed-loop solutions.

This reflects results from a joint study between the Yale Center for Business and the Environment and WBCSD, which found that **84% of students prefer to work for a company with good environmental practices and 44% are willing to accept a lower salary to do so.**¹³



Companies who can demonstrate that employees can contribute to corporate sustainability programs that create positive change will have an advantage in securing top talent.

84%

of students would choose to work for a company with good environmental practices

44%

of students are willing to accept a lower salary to work for a company with better environmental practices

19%

would not accept a job at a company with bad environmental practices, regardless of how high the salary was

Differenti8:

Distinguish from competition

Companies are using circular approaches to DIFFERENTIATE themselves from their competition based on price, quality, durability or convenience

These strategies allow businesses to improve their competitive advantage by capturing more market share, expanding into new markets, securing niche markets or being the first mover.



Differenti8:

TerraCycle has cemented a market niche as the company that can recycle anything. The company has found those opportunities in the most difficult to recycle products, including cigarette butts and chewing gum.

Since 2012, TerraCycle has worked directly with municipalities and businesses to implement [Cigarette Waste Recycling Programs](#) across 363 cities, diverting over 75 million tons of cigarette waste from landfill.¹⁴ Collected cigarette butts, filters and packaging are manufactured into industrial products like plastic pallets while remaining residual tobacco and ash are composted.

This program – [and other programs](#) for difficult to recycle products – are free to consumers as strategic brand partners cover the operating costs. In many of these programs, companies want to close the loop on their products and partner with TerraCycle to collect and repurpose the products and materials that curbside recycling programs do not.

Their innovative business model and drive to solve the circular economy's biggest challenges distinguishes them from other recycling and resource management companies.



Differenti8:

Carpet is not easily recyclable due to challenges in deconstruction and material blends. As a result, around four billion pounds of carpet winds up in U.S. landfills every year, making up about 85% of discarded carpet and one of the largest contributors to landfill sites.¹⁵ The second most common disposal method for carpets is incineration, which requires a high constant temperature and results in the release of toxins.

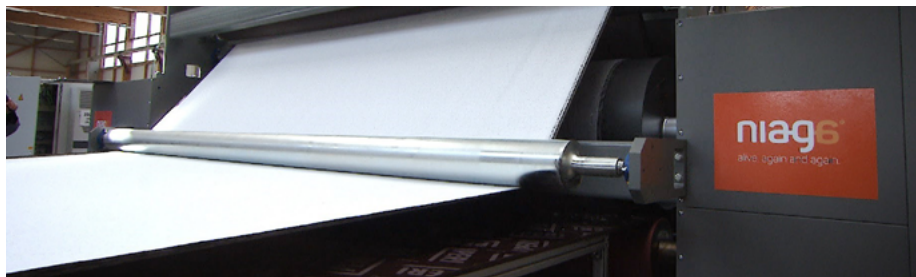
DSM recognized the risk associated with the current carpet life cycle and identified how it could turn it into an economic opportunity. In partnership with Niaga, DSM redesigned carpet manufacturing and end-of-life characteristics. Their new design approach required them to (1) focus on purpose; (2) choose clean and pure materials; (3) simplify and (4) connect

materials that allow for simple end-of-life processing.

DSM-Niaga used its technology to create a 100% recyclable carpet product with no Volatile Organic Compounds (VOCs). DSM-Niaga Technology enables simple recycling through DSM engineered adhesive, which replaces energy-intensive latex in bonding the carpet fiber top to the backing. **This product differentiates from others based on characteristics that allow manufacturers to easily separate the carpet fiber and backing without compromising the quality of the original product.**

In contrast to today's carpets, Niaga® carpet does not consist of PVC, bitumen, latex and undisclosed fillers. Due to the simplified design, the carpet offers unexpected additional benefits: no water use and 85% energy reduction during the lamination step in production, reduced product weight, easier installation and maintenance, as well as better fire safety and indoor air quality.

DSM-Niaga sees the potential of this technology extending beyond carpets to other products like car mats and diapers.



Integr8:

Align with corporate strategy or mission

Implementing the circular economy may **INTEGRATE** a company's strategy with its mission

In this scenario, the firm may find that their ethos provides an advantage over its competition.



Integr8:

In 2001, Tata Steel and SAIL established a joint venture called [mjunction services limited](#), which has become the world's largest eMarketplace for steel and India's biggest B2B eCommerce company.¹⁶ mjunction's mission is to create robust and sustainable supply chains by bringing more efficiency and transparency to stakeholders.

Extending beyond typical ecommerce buy and sell services, mjunction also offers financing and consulting services to customers. However, it is the side business that helps customers sell their "non-core" products and by-products such as secondary steel, minerals, coal and coal chemicals, hazardous products and obsolete or idle assets. **Arguably the biggest value offer to buyers and sellers is the price transparency on**

industrial by-products. mjunction has increased its business volumes from \$13.8M USD in 2002 to \$10.27B USD in 2016.¹⁷

Additionally, mjunction sells hazardous wastes like batteries, e-waste, coal and chemicals. For the last five years, mjunction has facilitated the sales of approximately \$900M USD worth of hazardous materials. mjunction is helping many industries and organizations to find right buyers for these hazardous materials, and thereby providing the best solution for their by-products while contributing positively to the environment.¹⁸



Integr8:

In December 2015, **Veolia** announced its [2017-2018 strategic](#) plan to focus on continued growth and improvement in operational efficiency. The company cited the circular economy as a key driver for growth as a high added value offering for municipal customers and an industrial priority segment.¹⁹

Veolia aims to recover 70% of all waste treated for its clients worldwide while increasing by-product recovery, water reuse and substitute fuel production from waste. **Veolia also commits to sustainably managing natural resources through the circular economy by setting a 2020 objective of generating at least €3.8B in turnover related to the circular economy.**²⁰

Veolia further exemplifies its commitment to circular economy in the creation of their Circular Economy Committee, led by a member of their Executive Committee.

This Committee's charge is to share existing solutions across business units, analyze market opportunities, define Veolia's circular value proposition and support implementation.



Credits: Photothèque Veolia ES Limited - Chris George

Acclim8:

Adapt business models and value chain relationships

Companies may use a circular economy perspective to ACCLIMATE their business models and value chain relationships, addressing economic changes

Consumers, commodity prices and technology are everchanging, requiring businesses to constantly evaluate their relationships with their value chain and competition. Companies may acclimate through vertical integration, expanding into new consumer market segments or strategic partnerships. Companies can manage linear risk by incorporating flexibility and diversity into their strategic planning.



Acclim8:

The world leader in rolled aluminum products, **Novelis** collaborates with customers to provide infinitely recyclable products for the transportation, packaging, electronics and architectural sectors.

Novelis incorporated an average of 53% recycled content across their portfolio in 2016 (up from 30% in 2009).²¹ Their journey towards massively increasing the recycled content in their products took a big step in 2014 with the opening of their €200M aluminum [recycling center in Germany](#), the largest and most advanced in the world. The facility has a capacity to recycle up to 400,000 metric tons of aluminum scrap annually, potentially saving 3.7 million metric tons in CO₂ emissions.^{22,23}

Because of the high-energy intensity of aluminum production, Novelis views this vertical integration as a strategy to decouple their economic productivity and energy consumption. In addition to securing future feedstocks, this new value chain relationship also saves money and greenhouse gas emissions.

In addition to contributing to their recycled content goal, **a key driver for opening a recycling plant was to give them the ability to produce their own aluminum and hedge supply chain risks like commodity price volatility.**²⁴ Novelis even considers their customers to be suppliers because they can give back scraps.



Acclim8:

Copersucar S.A., Brazil's largest trader and exporter of sugar and ethanol, bringing together field and industry with integrated logistics throughout its entire business chain, operating excellence and sustainable value creation. Copersucar's partner mills reuse 100% of their by-products and generate enough electricity for self-sufficiency during the harvest season.

The sugarcane industry is highly effective in reusing by-products - with over 150 alternative uses available by some estimates. A few reuse examples include using cane tops in animal feed, filter muds and vinasse for amending fertilizers and molasses for ethanol production.

In line with the strategic plan to strengthen its integrated logistics structure, Eco-Energy promoted investments of around

USD \$50M in the period 2015/2016, more than double of the previous year.

Recognizing the societal challenge of reducing greenhouse gas emissions from fossil fuels and the economic opportunity that their by-products presented, Copersucar invested 100% equity stake in [Eco-Energy Global Biofuels LLC](#). Through the acquisition of Eco-Energy, Copersucar became the largest global platform for biofuels. Together, the two companies marketed 13.5 billion liters of ethanol in the

2015-2016 Crop-Year, equivalent to 11.5% of the entire global supply. Copersucar traded over 5 billion liters and exported 0.6 billion of that. Over that same period Eco-Energy handled 8.5 billion liters and held 16% of US market share.

This evolution in Copersucar's strategy and its partner mills used its by-products to create financial returns through the exploration of new, higher value markets.



Credits: Renato Stockler

Insul8:

Mitigate risk exposure

Companies can **INSULATE** themselves against linear risks by purchasing circular supplies, recovering resources at end of life or partnering with the public sector.

As issues like resource scarcity, pollution and commodity price volatility become increasingly material to business, leadership has an opportunity to address these challenges through the circular economy.



Insul8:

Due to the declines in Italian energy demand and decentralization of energy generation, **ENEL** is decommissioning 23 of its old thermal power plants. Decommissioning old industrial assets in the energy sector is conventionally a waste management challenge. Each decommissioned facility requires reclamation and demolition activities that comply with stringent, local regulations.

In support for its commitment to sustainable business and the circular economy, **Enel established Futur-E, a public-private program that uses public tenders and idea competitions to identify long-term, sustainable, redevelopment solutions for the old plants.**

One of the first projects finalized within Futur-E was the transformation of the former fuel oil power plant in Augusta, Sicily to a 900 kW biomass gasification plant fueled from local biomass.

Approved by an actively engaged community, the redevelopment will also include a phyto-remediation technology research center powered, heated and cooled by onsite renewable energy. Lastly, the Augusta project will divert all ashes generated from landfill by sending them to construction material manufacturers.²⁵



Insul8:

Stora Enso is one of the largest consumers of recycled paper in Europe, purchasing recycled paper for 26% of all fiber used in its mills. In fact, three of the company's mills across Belgium, Germany and China use recycled paper for 100% of fiber inputs.

Stora Enso recognizes the economic and environmental benefits of recycled paper as it improves material efficiency and contributes to corporate sustainability goals. Sourcing recycled paper requires cost-effective collection, sorting and de-inking. De-inking is a wash to remove ink from the paper, resulting in white paper pulp.

Stora Enso's Langerbrugge Mill in Belgium produces over 500,000 tons of paper from recycled fibers per year. Beyond contributing to material efficiency, using recycled paper provides benefits like satisfying consumer preferences, diversifying fiber supply and differentiation from the competition.

Stora Enso further demonstrates its commitment to preserving natural resources and sustainable forest management by using 97% of the generated residuals and waste.

For instance, production residuals and waste have gone into agriculture, brick manufacturing, road construction and bioenergy production.²⁶



CONCLUSION

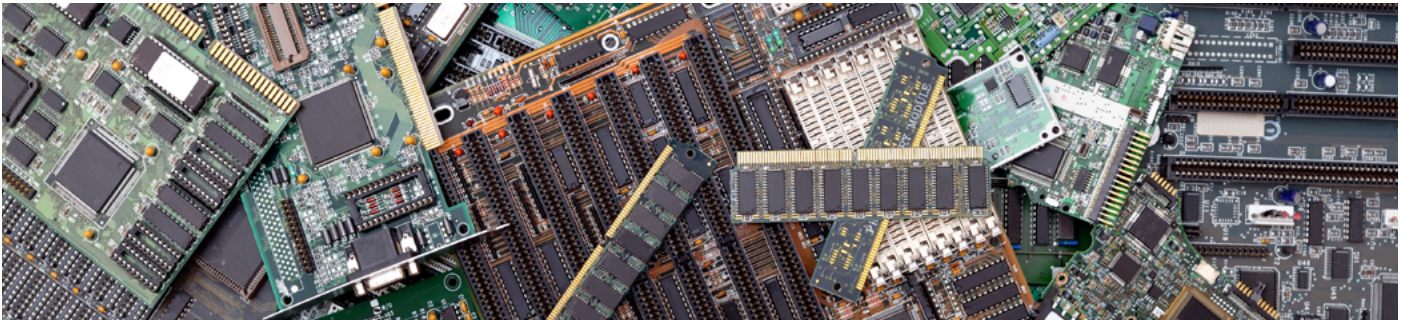
All industries face planetary resource limits

As the global population increases and the middle class continues to grow, competition for those resources will intensify. **Business must recognize the risks.**

The circular economy can help companies address these risks and identify opportunities.

Examples in this report demonstrate how companies have implemented circular measures to drive growth, enhance competitiveness and mitigate risks.

When considering the return on investment or cost-benefit of potential circular projects, start with these eight business cases as you build the argument for getting the necessary buy-in and implementing circularity.



CONCLUSION

Each example in this report touches on more than one of the eight business cases. The table adjacent lists all the examples in the report and the corresponding business cases.

It is up to everyone to move their respective companies and organizations in the right direction. Regardless of department or function, [there are measures that will help accelerate the transition.](#)

Companies of all sizes, industries, legacies and geographies can capitalize on the circular economy

● Circles indicate the business case the example was categorized under in this report. The (✕) represents supplemental business cases relevant to each example.

	ACCELERATE GROWTH			COMPETITIVE ADVANTAGE			MITIGATE RISK	
	Gener8	Innov8	Moder8	Captive8	Differenti8	Integr8	Acclim8	Insul8
Tata Motors ProLife	●		✕			✕	✕	
Canon Imaging Refurbishing	●		✕	✕	✕	✕	✕	
Lyft's Sharing Economy Business Model		●		✕			✕	
SUEZ Drive for Innovation		●		✕		✕		✕
Renault Reuse & Remanufacturing	✕	✕	●			✕	✕	✕
Philips Partnership Business Model	✕		●	✕	✕			✕
Dow Packaging Recruiting				●				✕
Michelin Tire Lease Program	✕		✕	●	✕		✕	✕
TerraCycle Cigarette Recycling		✕	✕	✕	●	✕		
DSM-Niaga Technology		✕	✕		●	✕		✕
Veolia "Resourcing the World" Strategy	✕	✕	✕			●		
Mjunction		✕	✕	✕	✕	●	✕	
Copersucar Sugar & Ethanol Production	✕			✕		✕	●	
Novelis Aluminum Recycling Facility		✕	✕	✕	✕		●	✕
Enel Futur E		✕	✕	✕				●
Stora Enso 7 Lives of Paper			✕		✕	✕	✕	●

CALL TO ACTION

Integrate life-cycle thinking

Successful businesses of the future will maximize the economic value of every unit of resource used. They will incorporate a circular mindset into the design of their products and services, and they will not fail to consider end-of-life consequences before it's too late. The earlier companies integrate circular thinking and processes into the product or service, the greater the opportunity to create the most value.

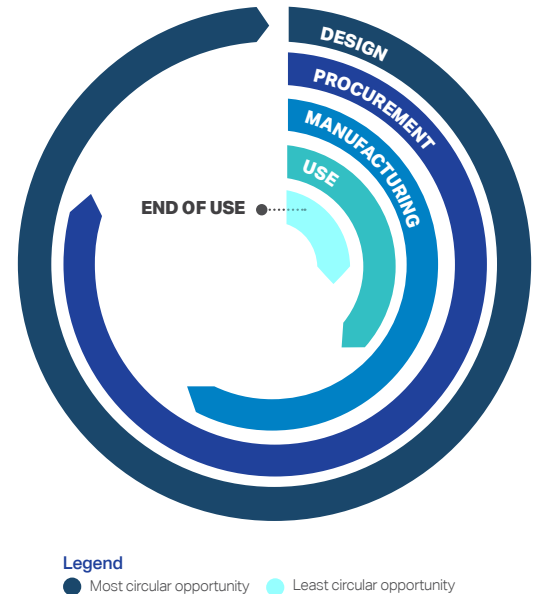
Collaborate

Collaboration is also essential for achieving a circular economy, both externally and internally. Internally, individuals and teams must work across departments and geographies to identify opportunities, implement and scale across the organization. Externally, companies must work with value chain partners, stakeholders and sectors with complementary goals and objectives. Whether in the form of a joint venture, merger, customer relationship or a general partnership, collaboration has been and will continue to be a pivotal characteristic of successful circular programs.

Know your flows

One of the most valuable exercises a company can do as it begins to think about the circular economy is to map its resource flows - including materials, water, energy and money. In doing so, companies can establish benchmarks to measure progress, while understanding linear risk and identifying circular opportunities.

Figure 3:
Opportunity for circular thinking over the life-cycle



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ACKNOWLEDGEMENTS

WBCSD thanks the following companies for their support in developing this report:

Canon	Michelin	Stora Enso
Copersucar	Mjunction (Tata JV)	Suez
Dow	Novelis (Aditya Birla Group)	Tata
DSM	Philips	TerraCycle*
Enel	Renault-Nissan	Veolia
Lyft*		

*non-member

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The WBCSD is proud to be a platform for member companies and partners to collaborate in tackling the circular economy's greatest challenges.



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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.

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