The Transformational Company Guide
Quality #10 - Closed Loop

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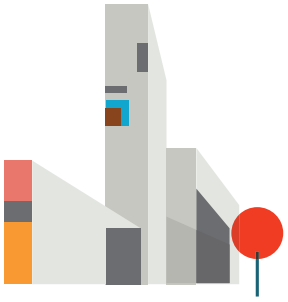
HOW
YOU DO IT

Transformational Company Quality

10: CLOSED LOOP

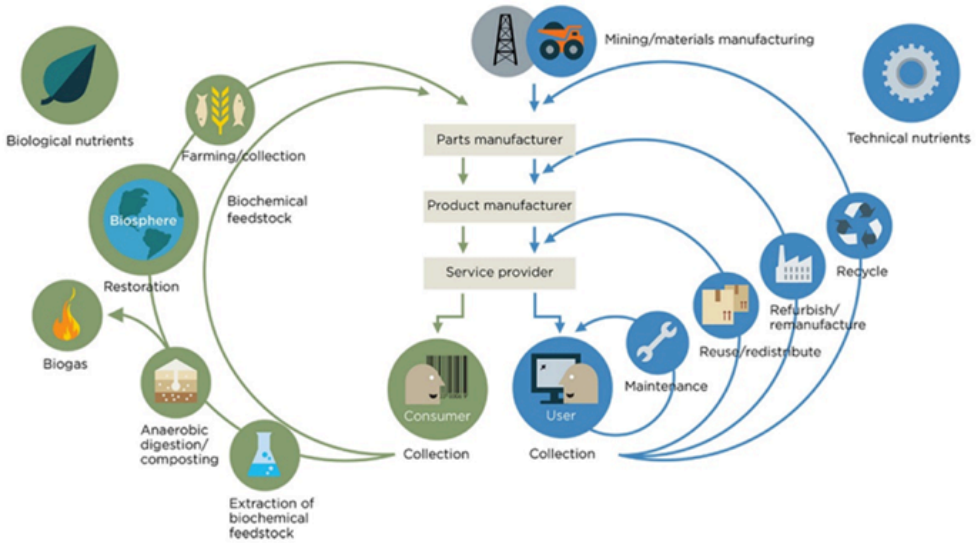


Transformational companies implement closed-loop production and advance a circular economy.

WHAT IS IT?

Our industrial economy is approaching a tipping point in which the traditional business model based on a linear 'take-make-waste' system is no longer viable. A growing and urbanizing global population, scarcity of non-renewables (metals, minerals and fossil fuels) and declining regenerative capacity of renewables (land, forests, water) are necessitating a rethink of our production and consumption systems, which are based on a presumption of unlimited and cheap natural resources. Looming resource shortages, rising and volatile commodity costs, new technologies, extended producer responsibility regulations, landfill bans, and changing customer preferences are driving a shift in this business paradigm to a circular economy model.

In a circular economy, growth is decoupled from the use of scarce resources through disruptive technology and new business models based on longevity, renewability, reuse, repair, upgrade, refurbishment, capacity sharing, and dematerialization. It represents a markedly different way of doing business, replacing established practices like planned obsolescence with new approaches to revenue generation. Restorative by design, the circular economy keeps products, components and materials at their highest utility and value, at all times. Closed-loop systems reduce the need for extraction and processing of new resources and lessen the associated impacts on the environment.



The Circular Economy. (Source: Ellen MacArthur Foundation, based on concepts defined in "Cradle to Cradle" co-authored by William McDonough and Michael Braungart, Northpoint Press (2002).)

To future-proof their operations from the inevitable resource constraints, and design and create products for a future we all want, leading companies rethink their product and service offerings from the bottom up, rather than tinker with incremental resource efficiencies. They develop business models and produce goods that enable multiple use cycles and can be mined for materials and components for reuse or upcycling into higher quality products. Companies that don't sell directly to consumers reconfigure their products to aid in the eventual disassembly, recycling, or take-back of the final product.

Technology is emerging as a key enabler of circular innovation. Today's technology solutions make it easier for manufacturers to see the value that was once invisible in the supply chain. RFID (radio-frequency identification) chips and GPS (global positioning systems), for instance, help companies easily track parts over their lifecycle—instantly seeing where a product or part is, the condition it's in, its origin and what it's made from. This greatly simplifies processes that recycle, reuse or remanufacture goods. Technology-enabled design and production is evolving quickly too, with new capabilities coming on stream, such as 3D printing which enables customized production with fewer by-products.

Research reveals circular economy businesses are pursuing at least one or more of the following five business model innovations:

Five Circular Economy Business Models

- **Circular Supplies:** Providing renewable energy, bio-based or fully recyclable materials.
- **Resource Recovery:** Recovering useful resources or energy from by-products or waste.
- **Product Life Extension:** Extending the lifecycle of products and components by repairing, upgrading and reselling.
- **Sharing Platforms:** Maximizing the use of products through shared use, access or ownership.
- **Product as a Service:** Offering product access rather than ownership.

As these business models show, the opportunity to forge stronger and more valuable customer relationships is significant. Circular enterprises move from one-off customer transactions to ongoing and value-added customer relationships, tapping into growing customer interest (particularly on the part of millennials) in the sharing, repairing and second-hand economy.

Leaders realize they cannot become closed loop on their own, and engage across value chains and industry sectors to build the infrastructure to enable the circular economy – the systems by which the biological and technical nutrients are continuously reused. These leaders engage their suppliers, customers, business partners and governments to join their quest. They lead and champion industry initiatives and public policy to accelerate the enabling environment, including reverse logistics – the strategies, processes and infrastructure to enable the cost-effective collection, treatment and redeployment of used or surplus resources.

Aluminum company pursues closed-loop innovation

Novelis, the largest rolled aluminum company in the world, announced a dramatic shift to its business in 2011. The company expressed its intention to adopt an almost entirely closed-loop manufacturing system in which 80% of the aluminum it uses to make its products – beverage cans, automobile parts and specialty products – would be recycled material. The decision meant investments of more than $2 billion over the course of the next four years, but it also marked the company's larger aspiration to move away from a business model focused on extraction and disposal of valuable resources. The target has implications for every aspect of its business, from the basic design of its products and portfolio mix, to the structure of its supply chain and its customer relationships. When reached, the company will cut its absolute life cycle greenhouse gas emissions in half, even with significantly increased production, and achieve its objective to be the low-carbon aluminum producer. Its shift toward a closed-loop and low-carbon approach also requires the company to engage and partner with a broader and more diverse set of stakeholders, to challenge and inform their thinking and advance

shared objectives that cannot be achieved single-handedly.

Source

WHY IS IT IMPORTANT?

Dependence on scarce natural resources for growth exposes a company's tangible and intangible value to serious risks. By transitioning to closed loop, circular economy business models, transformational companies become more resilient, minimize the impact of raw material price volatility and position themselves for relevance and profitability in the future. Anticipating that business and retail customers will increasingly consider natural resources in their buying decisions and give preference to companies that show responsible behaviour, leading companies will gain value from their circular economy investments.

There are a number of potential supplemental benefits from this approach, including opportunities to:

- Develop new markets and new customer segments or grow existing ones
- Create a platform for continuous innovation and new revenue generation
- Build value-added customer relationships
- Achieve cost savings
- Increase security of supply and improve price stability and predictability of inputs
- Enhance employee attraction, retention and engagement
- Build brand and reputation
- Attract government and business partners

By commercializing circular business models, businesses can reduce risks and costs and increase revenue and profits. Policymakers and civil society advocates will favour companies that can prove they have positive societal impact and can operate without depleting the planet's natural resources. Adopting circular economy strategies is better for the planet and society and arguably may be essential to long-term competitiveness.

Philips' CEO rebuilds his company on circular economy principles

"It is important to disrupt your business before someone else does. At Philips, we have started the process of fundamentally redesigning our business and our end-to-end value chains. Instead of selling products, we aim to retain ownership, selling use as a service so we can optimize the use of resources. Once we can sell the benefits instead of the products themselves, we can design for multiple re-use and eventual recycling. Circular economy is a trigger for innovation that requires a new generation of materials as well as development and production processes. We also need to define new business models, refine concepts of legal ownership and use, adaptive logistics and financing strategies. And we need a leadership culture that embraces and rewards a circular economy."
Frans van Houten, CEO, Royal Philips

Source

HOW TO DO IT?

To become a circular economy enterprise will depend greatly on your business model, sector and value chains. Here are some guidelines you can follow which will be generally applicable:

1. Secure board and executive commitment.
2. Conduct R&D with suppliers, customers, competitors, business partners, governments and experts to identify opportunities. Consider every element of your design, manufacture, supply and packaging process to look for circular innovation potential.
3. Establish the relationships necessary to advance your effort, such as recyclers, haulers, retailers, consumers, resource providers, regulators, etc. Basically this will involve most everyone in your value chain from start to finish.
4. Prototype initiatives to test and improve your initiative.
5. Define the new skills, roles and jobs needed (for example, your waste manager may become a commodity manager to find alternative value from manufacturing by-products).
6. Based on the success of your prototype, scale up and identify other opportunities.

Ask yourself these questions to inform your strategic planning:

- What would be the right financial solution to transition into a performance rather than sales model?
- What would our corporate structure look like in a circular world, and how could we manage the transition?
- What value could we recover from products we have sold for the last 5 years?
- Can we help our customers increase the lifetime and utilisation of our products?
- If our products were designed for take-back, how much value could we recapture from products sold?
- If we had to take back all the products we sold, how would that affect design and production?
- If our industry standardised and shared as much non-competitive material and infrastructure as possible, how much could we jointly save?
- If circularity substantially reduced our exposure to raw-material price fluctuations, what would happen to our cost of capital and resilience?

Source

Marks & Spencer Conducts Circular Economy Research

Businesses often lack information on opportunities to become a closed loop, circular economy business. Here is an example of how Marks & Spencer, a global UK retailer, sets business goals to research circular economy opportunities:

Aim: By 2016, we will have completed a detailed review of circular economy opportunities across all parts of the M&S business. We are members of the Circular Economy 100 (CE100) group run by the Ellen MacArthur Foundation and we plan to work with them along with other partners to identify the commercial viability of re-using potential waste materials across our business.
Aim: Conduct a series of collaborative projects to review the causes of food waste across our supply chain and operations. By 2015, we plan to set a reduction target to be achieved by 2020. In addition, we will review opportunities to donate an increased amount of food to charities. We've set up an internal project group, which meets regularly to explore ways of minimising unsold food levels and ensuring that all unsold food is put to the best possible use, ideally, by donating it to charities.

Source

WHO IS DOING IT?

Dell, an American multinational computer technology company, adopted a 2020 Legacy of Good Plan in 2013 which includes 21 ambitious social and environmental goals. Realizing they can achieve business benefits by recycling and up-cycling materials, the company included a number of long-range (seven year) closed-loop commitments in their Plan, such as:

- Use 50 million pounds of recycled-content plastic and other sustainable materials in products
- Ensure 100% of Dell packaging is either recyclable or compostable
- Recover 2 billion pounds of used electronics

While Dell has used recycled-content plastics from water bottles and other plastic sources for some time in monitors and desktops, the company recently established a closed-loop system to use plastics derived from the computers they take back. (The company has 2,000 donation sites in the US which accept any brand of computer in any condition.) With the launch of the OptiPlex 3030 All-in-One, Dell became the first in their industry to offer a computer made with third party-certified closed-loop recycled plastics.

Philips, the Dutch lighting, healthcare and consumer lifestyle company and the world's largest lighting supplier, has a mission to make the world healthier and more sustainable through innovation with a goal to improve the lives of 3 billion people a year by 2025. It committed to this mission in 2012 both as a competitive necessity and with the conviction that companies solving the problem of resource constraints will have an advantage. While the company has operated refurbishment and recycling programs for over 25 years, it is now fast-tracking its move to a circular economy and closing the materials loop.

In 2009 they collaborated with a corporate customer and a supplier to co-innovate a "Lighting as a Service" business model in which the customer buys a lighting service and Philips installs and manages the lighting infrastructure. The company now sells lighting as a service to corporate and government customers worldwide.

Philips also adapted this 'product as a service' innovation in their healthcare business. They are experimenting with a range of leasing contracts, for instance, by offering a pay-for-use MRI service to hospitals rather than selling the equipment up front. Similarly, Philips refurbishes complex medical equipment. The company believes the future is in robust maintenance contracts, where replacement electronic components can be easily fitted to customers' machines, avoiding the need for complete disassembly or new machines.

These shifts are advanced through their Design for Excellence innovation process in which the company strengthened the circular economy criteria. As part of their EcoDesign program, Philips aim to incorporate up to 10% recycled materials in their portfolio of consumer products. In a typical innovation process the company holds multi-week workshops in which designers and suppliers tear down the entire value proposition of a product to see what might be changed and how. The company is embedding circular economy principles in all strategies, processes, metrics and structures. It also established an internal centre of expertise that involves every business unit to help identify opportunities.

By shifting from 'transactions' to 'relationships' via service and solution models; designing products for disassembly and serviceability; and replacing conventional customer ownership of the product to customer access to the product, Philips is introducing disruptive innovation to established markets and its existing customer base.

Philips has written this report to communicate their shift to a circular economy business model: **Rethinking the Future: Our Transition towards a Circular Economy.**

Source

WHERE CAN I GO FOR MORE INFORMATION?

- The Circular Economy, JWT
  https://www.jwtintelligence.com/wp-content/uploads/2014/06/F_JWT_The-Circular-Economy.06.20.14.pdf

- Circular Advantage, Innovative Business Models and Technologies to Create Value in a World without Limits to Growth, Accenture
  http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Circular-Advantage-Innovative-Business-Models-Technologies-Value-Growth.pdf

- Circular Economy Business Model Case Studies and Analysis, National Zero Waste Council
  http://www.nzwc.ca/circular-economy/case-studies/Pages/default.aspxhttp://www.nzwc.ca/circular-economy/case-studies/CaseStudies/KeyThemes.pdf

- Corporate Sustainability Practices: Waste & Recycling, Waste Management
  http://www.greenbiz.com/research/report/2014/07/17/corporate-sustainability-practices-waste-recycling

- European Union's Circular Economy Initiative
  http://ec.europa.eu/environment/circular-economy/

- Cradle to Cradle Products Innovation Institute
  http://www.c2ccertified.org/

- MBDC (McDonough Braungart Design Chemistry) advises companies on design, chemistry, leadership and innovation for the Circular Economy using Cradle to Cradle(R) principles
  http://MBDC.com

- Biomimicry Institute introduces an approach to innovation that seeks sustainable solutions to human challenges by emulating nature's patterns and strategies
  http://biomimicry.org/

- National Zero Waste Council, a membership-based government, business and community collaboration at the national and international level acting as an agent of change for waste prevention and reduction in the design, production and use of goods.
  http://www.nzwc.ca/

- Five Circular Economy Strategies, Greenbiz
  http://www.greenbiz.com/article/pepsi-unilever-5-circular-economy-strategies-consumer-goods?src=nws9-17