

## Sustainability & Resource Productivity Practice



# Questions and answers on the circular economy

# Questions and answers on the circular economy

McKinsey has long taken an interest in how business can be more environmentally sustainable, and manage the growing pressures on global resource systems. For example, we have analyzed topics such as solar energy and the economics of water. One big idea now being explored cuts across sectors: how to make the transition from the traditional linear model of production and consumption—inputs in, waste out—to a circular model, based on reusing resources, regenerating natural capital, and designing for reuse. recent report by the Ellen MacArthur Foundation, for which McKinsey provided analysis, focused on applying circular principles to the consumer-goods sector, and estimated that US\$700 billion in savings are available globally for businesses that rethink their linear approaches.

Martin Stuchtey, a global leader in McKinsey’s Sustainability & Resource Productivity Practice, believes these savings could be attained in 10 to 20 years. “There are reasons the linear model of production established itself so strongly over the last century” he concludes. “Where resource prices are low and there are few penalties on hard-to-dispose waste, this might still be the superior answer. But I feel the markets where this assumption still holds are getting fewer.”

In the questions and answers that follow, Stuchtey offers his perspective on prospects for the circular economy.

## *1. What are the most important components of a circular economy?*

The concept could not be simpler. It is to run an economy—(or a company—) like a forest—that is, a living, growing entity that does not waste anything. To eliminate waste from our industrial system, we have to reuse all durable goods—from materials (aluminum), to components (transistors) to products (mobile phones). Consumable goods, too, such as clothing and food, can be produced and used with much less waste. Consumables can be cascaded to different, subsequent uses. For example, brewers can convert spent grains into an animal-feed supplement. This wheel of use and regeneration is propelled by renewable energy.

## *2. If the logic of the circular economy is so compelling, why aren’t more companies doing it already?*

It’s true that relatively few companies are systematic about taking advantage of this opportunity.

Many examples do exist, but people might not be aware of it. Since the early days of the industrial revolution, the market has rewarded scale and labor productivity more than resource productivity

because natural resources have been abundant and relatively inexpensive. Moreover, companies have economic and legal incentives to sell products with built-in obsolescence.

## *3. The Ellen MacArthur Foundation report, Towards the Circular Economy: Opportunities for the Consumer Goods Sectors, argues that “Over time, the market is likely to systematically reward companies with an edge in circular business practices and hence dramatically lower resource requirements.” Why would this be the case?*

Never in the last 110 years have resource prices been higher, more volatile and more correlated than in the last ten years. (There are some exceptions, such as natural gas). And the pressure on key resources is not likely to diminish. With world population on course to hit 9 billion people by 2050 (from about 7.1 billion now), resource scarcity is likely to stay. Market forces often reward those who successfully optimize around a bottleneck resource such as water in Northern China, or rare earth minerals in Europe. Circular business design is the ultimate way to optimize resources—by keeping them intact across lifecycles.

#### *4. Have any consumer-products companies begun to make this shift? What did they have to do to get started? And what kinds of results are they seeing?*

Patagonia is trying to move from being a producer and seller of apparel toward being a life-time partner for outdoor experience. This stretches from their “don’t buy this jacket” campaign (they collect old jackets and bring textiles or fibers back into use) to their Common Threads Initiative – where they organize a secondary market for used Patagonia clothing that might otherwise be thrown away or go unused. Other apparel retailers have stepped up their efforts, too, with H&M recently announcing a global used-clothing collection program and marks and Spencer expanding the number of clothing items it makes from wool and cashmere recovered through its own collection program. Other companies collect food waste for anaerobic digestion or refurbish their products (like photocopiers) to lengthen their lifetime. Procter & Gamble finds uses for its production waste in other industries.

#### *5. Can the Internet and other forms of IT promote the circular economy?*

The Internet is a crucial enabler, largely because it offers markets where products can find a second life. It can also create transparency over materials used and their end-of-life requirements, or over material flows that must be linked to potential downstream uses. The US office-furniture company Steelcase, for example, has tagged some of its chairs with information on the materials contained and best end-of-life options. By doing so, Steelcase has taken out the guesswork for waste operators and disassemblers. More broadly, IT can help to identify materials through radio frequency identification (RFID) or other means and is essential to the development of new, less wasteful, batch-of-one manufacturing concepts such as 3D-printing.

#### *6. Won’t technological innovation deal with the problems identified around natural resource depletion?*

Technology will be important. However, for technological solutions to take root, markets and business designs must change. If you sell a product, you cannot monetize the benefits of resource productivity because the value of the residue ends in someone else’s hands. So why invest in technology or material that eases recovery? Only in a model where the

product eventually returns to the originator—such as leasing or “take back” requirements, will there be investment in resource-productive new technology.

#### *7. What are your favorite examples of circularity in action?*

Desso, a Dutch carpet and artificial turf company, and Steelcase, are much talked about and impressive because they are on a complete transformation journey, tackling product design, business models, and (reverse) logistics.

However, the resource productivity reserves some companies are building can show the way; those created by Michelin selling kilometers, not tires; by Rolls-Royce selling “power by the hour” (an airplane-engine performance and repair service on a fixed-cost-per-flying hour basis), not equipment; and by Vodafone offering connectivity, not a mobile phone. Each of these companies is selling a service rather than a physical product and has generated customer value by doing so. Michelin’s customers no longer need to keep track of tire conditions and replacement schedules, Rolls-Royce’s flight-operator customers only pay for engines that are performing, and Vodafone can now afford to provide its customers with the latest fashion in cell phones and smartphones.

At the manufacturing level, a growing number of companies have started to operate in symbiosis, exchanging flows of (waste) materials and by-products, used water, and waste energy. Examples include the co-located companies and industries on Singapore’s Jurong Island or in Rotterdam harbor.

#### *8. Will moving toward a circular economy require changes in consumer behavior? Are those happening?*

One trend to watch (and encourage) is when consumers choose access over ownership. We see that happening in mature economies, where sharing is becoming acceptable in new ways, such as cars. Research shows that many younger people simply want a car for mobility and don’t see it so much as a status symbol. That’s the kind of behavior change that could have significant effects. Clearly, there is a question of whether consumers in catch-up economies will move to a “share” model without running through a saturation phase first. Luckily, we have in some cases a strong river at our back: rising prices.

*9. Does a company that decides to go in this direction require new staff positions or new kinds of managers?*

It's unlikely that there will be a "Chief Circularity Officer." CE is very much a business-driven and business-enhancing concept, not a regulatory or other type of constriction, and therefore needs to sit with the businesses and functions. Circular activities can, and will need to, grow from different parts of the company. We have seen the circularity agenda driven by

strategy directors, CFOs, marketing executives, and COOs—enlightened executives who think beyond the 20th-century way of fulfilling customers' needs, are in a position to dare the status quo and execute on bold visions, and are willing to be the anchor that helps move every other department in the same direction. What is critical for success is for companies to develop cross-functional collaborations that link design, marketing, manufacturing, and recovery. Also, new expertise might be required, for example in materials science, logistics, and customer relationship management.