

INTRODUCTION

Nicolas Renard - Executive Director, Veolia Institute



Waste is a recent invention. It was unknown in the 18th century, when everything was a resource and the economy was circular. It is an invention we must uninvent. This waste, once nonexistent and now omnipresent, has to disappear, be transformed into a resource that can be returned to the economy. The economy of the past was circular, the economy of the future will be too, but

in a different way. Returning to circularity is a complex affair because yesterday's world bears no resemblance to the world of today: the extreme variety of materials employed, large number of actors, technological sophistication and globalized trade all combine to make economic reconversion a hugely challenging task. Challenging, but not impossible.

And a reminder to the doubters: the circular economy is not optional, it is critical. Global resource use is forecast to double over the coming four decades. This is unthinkable if we are to preserve our environment. The stark reality is that, in everything that we consume and do, we use an excessive amount of natural resources, whether minerals, energy, biomass, water or space. Remember too that most of what we consume is hidden: for instance, in the digital realm, 90% of overall energy use takes place before a device is purchased, when the metals are extracted, component parts manufactured and assembled, and the finished product transported¹.

Bolstering the productiveness of resources extracted from the natural environment requires that they are recycled. Yet recycling remains marginal. Worldwide, only 9% of exploited natural resources are reinjected into economic channels. The figure for Europe is just 14%². And the fact is that recycling waste is simply one of the initial stages in a circular economy. Even if it were to become widespread, the recycling solution would not be enough to meet all needs, partly owing to losses of material during recycling processes and partly because demand for consumer goods, and thus for mineral raw materials, is growing all the time.

The truth is that there is far more to the circular economy than just recycling. It encompasses all other types of strategies for creating loops and extending the useable lifetimes of materials and products: reuse, repair, hire, share, eco-design and so on. These are all strategies that reduce the materials intensity of

economies, create jobs, and strengthen national economic sovereignty. They are also radically different to our current production and consumption habits, our business models, our supplier-client relationships, our logistics chains, and so on.

At the time of writing, the circular economy is more about potential than reality. Ratcheting up from low-level to full-on circularity will require designing products differently, as assemblies of future waste that can be reused or transformed. They must be designed to be traceable, repairable, reusable, recyclable, upgradable and improvable.

Achieving even this is no simple matter, and there are further constraints the circular economy has to overcome, including the possible toxicity of reused materials, technologies that do not always fully deliver, the strict application of hygiene standards, complying with specifications set by manufacturers for quality, price and availability, and the need to upskill actors involved in the new economic ecosystems.

Local and national governments can smooth the way for the circular economy by offering financial support to its constituent sectors until they become viable, nudging consumer behavior (since a circular economy is impossible without consumer demand), and creating indicators that simply and reliably show a product or production sector's degree of circularity.

Linear or circular, clean or dirty, high-carbon or low-carbon, extractive or regenerative: just some of the many terms used to describe an economy, its successes and limitations, and the hopes humanity invests in it. Some people are now calling insistently for an ultimate shift from the circular economy to a sober economy. A form of economy that aims not only to reduce the use of resources but

also to scale back needs. It is predicated on using fewer items and services, and therefore deliberately dialing down people's desires and dreams. Is this something consumers will accept?

When we consider inherent physical scarcity alongside the scarcity caused by exhausting existing resources, underinvestment, overexploitation and waste, we can see that today we live well beyond our ecological means. However, there is a way to redress this: the circular economy. We have an incomparable teacher to help us reach the next level in an economy that is new yet ancient: nature, where everything is a resource and there is no such thing as waste. Nature is an expert in environmentally sensitive, fine chemistry, with extraordinarily efficient transformation processes and billions of years' experience. Seven centuries ago, Leonardo da Vinci was already advising us to "learn from nature, that is where our future lies."

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¹ GreenIT, 2019. The environmental footprint of the digital world - https://www.greenit.fr/wp-content/uploads/2019/11/GREENIT_EENM_etude_EN_accessible.pdf

² Circularity Gap Report, January 2018.