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Toshiba Insight | Circular Economy

How can we decouple sustainability from social and economic pressures?

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01 What is a Circular Economy?

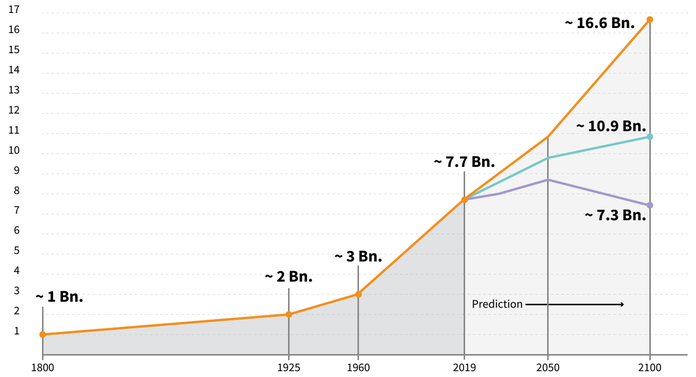
The world needs a new ecological orientation that also works economically.

The idea of a circular economy is based on a very simple fact. **We live on a planet with limited resources** – which includes the ability of our environment to deal with pollution. If resources are limited and emissions need to be avoided, then there cannot be unlimited growth. **The impending global warming and its consequences force all of us in industry, politics and society in general to act.** If we do not drastically limit our use of resources now and start moving in a new direction, we will not be able to meet the climate goals set by the Paris Agreement of 2015.

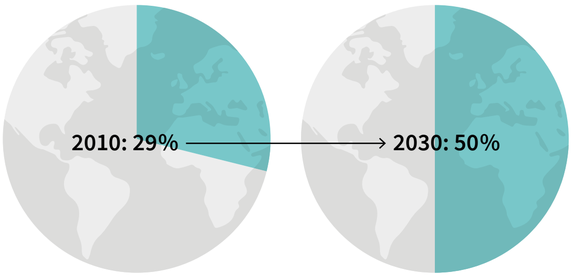
A continually growing world population, which has an expanding middle class with growing consumer needs, is accelerating this development. This poses an enormous economic challenge for the entire world.

The circular economy is not a strategy of cutbacks, constraints and doing without. Nor does it stand in opposition to economic demands. **Rather, it is a change in the system that is needed in order to reach pressing ecological goals, while at the same time offering socio-economic opportunities.**

A growth in the middle class.



World population growth[1)]



Global % of people who belong to the middle class[2)]

[1)] https://population.un.org/wpp/Graphs/Probabilistic/POP/TOT/900

[2)] Wirtschaftswoche

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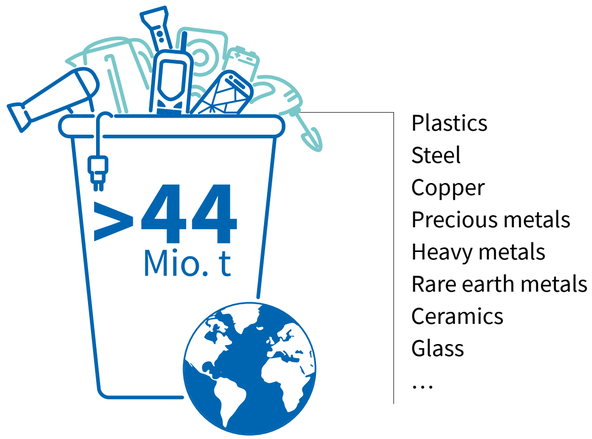
Repair, refurbishment, retrofitting and remanufacturing are methods that lead to a substantial reduction in costs, material and emissions. In many countries, however, the refurbishment of used machines and appliances is still seldom used.

In 2015, the European Union adopted the Circular Economy Action Plan. The goal: **to close the loop in the product life cycle through more recycling and reutilisation**.

A circular economy would mean responsible growth | Experts from a wide range of areas see the circular economy as a model which can be used to positively influence and shape the future of our society. This includes **decoupling the economy from the use of limited resources** and **the creation of a system that is virtually waste free**. We are however, still far removed from the utopia of a functioning circular economy. **In 2016 the world produced more than 44 million tonnes of electronic waste**[1)].

The vision that accompanies a circular economy is one of a regenerative global supply chain that functions without using up our limited resources.

Climate protection only works with social and economic sustainability | It is also important not to decouple ecological goals and the efficient use of resources from economic and social aspects. Today, everybody has a concept of what ecological sustainability means. The economic part of sustainability aims to restructure the economy, but also to sustain the economy's performance and productivity – for example by using innovative business models to ensure long-term demand. **A functioning economy is the necessary basis for a society to be able to develop, free from repression and poverty**.



[1)] United Nations University, ITU and International Solid Waste Association in Global E-Waste Monitor 2017

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02 Sustainable use of resources.

Toshiba prioritises the sustainable use of resources.

Our products and services offer many opportunities for construction innovations, avoidance, reuse of materials or recycling. In reality, this means that the number of materials used is kept as low as possible; that these materials are recyclable and easily removed; that products are designed as efficiently as possible; that our service covers the entire life cycle; and that we avoid packaging waste. In terms of circular economy this is called **3R-Design**.

Material selection and reusability | Toshiba's ethos is to consider the reusability of materials right from the very start of a product's life. For example, when components and materials need to fulfill similar functions, Toshiba will select one material. **Components which are made of the same kind of plastic are manufactured the same colour to make the decommissioning of machines as easy as possible**. Preference is given to reusable materials and reusable material combinations.

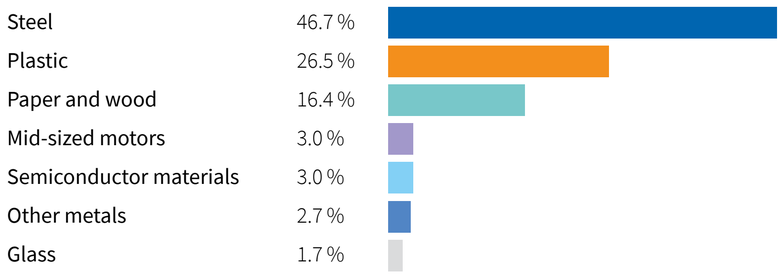
Simple Deconstruction | The professional deconstruction of our devices is tested and optimised during product development. Through the use of standardised connections, **Toshiba devices can be deconstructed by a single person, anywhere in the world, using only three standard tools**. All connectors that need to be taken apart for recycling, for example, are easily accessible. At least half of all removable plastic connections are click or snap connections. Modules made of materials that cannot be recycled together are constructed in such a way that the **materials are separable or have separators between them**. Electric or electronic modules are easy to find and to remove.

The three tools needed to dismantle a Toshiba device.

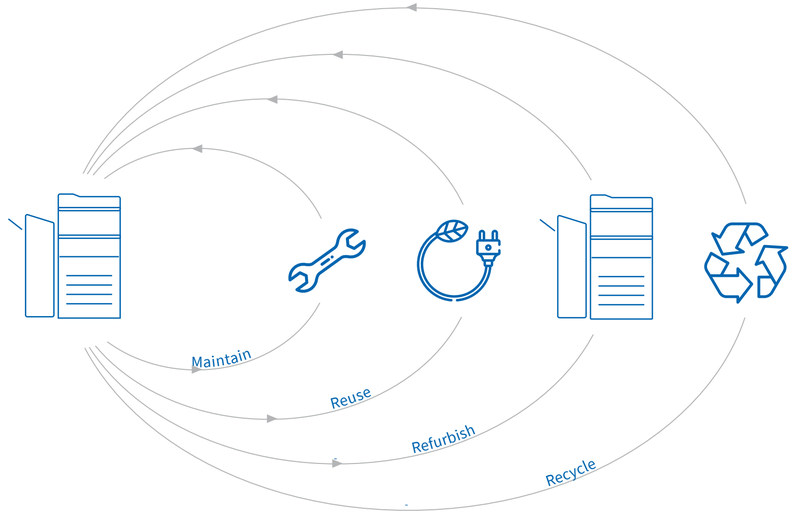
Long lifecycles and recycling-friendly design | Most customers no longer need to own a product. **A modern circular economy is much more about the provision of services and functions.** As a result, contracts are often signed where the customer does not buy a device, but rather pays a price per printed page and Toshiba is responsible for servicing and providing the consumables. The regular servicing by a trained technician increases the life span of a device.

Products with a long life cycle decrease our use of raw materials and minimise our emissions. At Toshiba, the lifecycle is already extended by the fact that many modules or individual parts can be exchanged.

> **With today's recycling technologies, it is possible to reuse more than 95 % of the materials in a Toshiba multifunction printer.**



Average material mix of the latest generation of Toshiba devices, including packaging



The lifecycles of a Toshiba multifunction printer

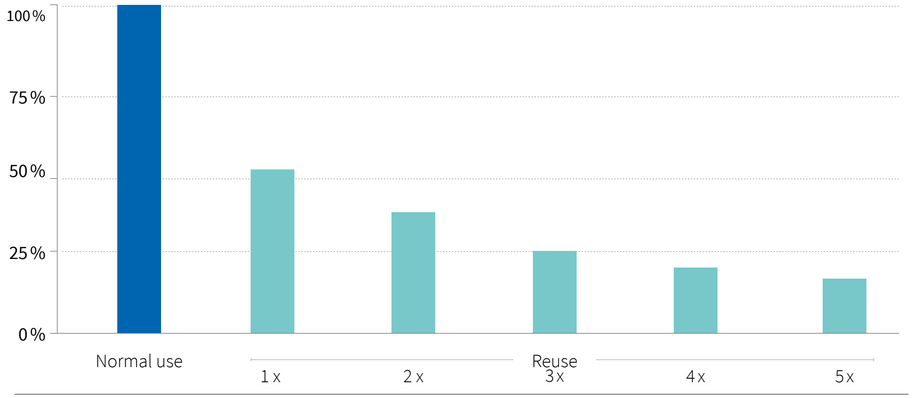
We also ensure a long product lifecycle by choosing quality components and making sure high manufacturing standards are maintained. Before production even starts, we make sure that our suppliers meet the stringent demands set by Toshiba. Materials and parts are checked and tested accordingly. From our experience, more expensive parts are often the more economical than cheaper ones.

That means that Toshiba fulfils the highest international legal standards. **With every product generation we have managed to increase the percentage of reusable materials in our products.** The share is now around 80% and the materials used includes plastics, steel, glass and aluminium. The packaging also includes recycled cardboard.

Less is more – especially, when it comes to valuable raw materials | Our engineers are constantly working on reducing the quantity and number of materials we use. **The easiest way to reduce the use of raw materials, and thereby reduce waste, is to avoid waste right from the start.** A logical way of reducing the use of raw materials is to lengthen the lifecycle of a device. As we have already mentioned, this can be achieved through servicing and repair.

At the end of the lifecycle of a Toshiba embraces its responsibility to ensure that products are decommissioned appropriately. We work together with specialised companies who take back used batteries, packaging or empty toner cartridges and recycle them.

A very important factor in the ecological impact of multifunctional printers is paper consumption. **Toshiba was the first manufacturer in the world to introduce a device with which a sheet of paper can be reused multiple times** without any noticeable loss of quality. The advantage: if you can reuse your paper five times, you can reduce your paper consumption by 80% without printing any less than you did before. This reduction in the consumption of paper is both economically and environmentally beneficial. With the e-STUDIO5008LP, you can take advantage of this revolutionary technology whilst maintaining the ability to print regular mono documents.



By re-using paper, the Toshiba Tec Hybrid MFP (e-STUDIO5008LP) can significantly reduce your paper consumption.

The technical functions of today's Toshiba devices, such as N-Up-Printing, which prints several pages on one sheet of paper, duplex printing, print preview or Pull Printing, where the print is only carried out once the user has authenticated themself at the printer, offer further opportunities to save paper. And of course, our printers produce excellent results when using recycled paper.

Energy efficient product design is a hallmark of Toshiba multifunctional printers | When a device is not working, it should only be using extremely small amounts of energy, if any at all. Toshiba devices are built according to this principle and they have various advanced energy saving technologies such as IH-Fusing – the low energy, induction-based warm-up of the fuser unit – the settings of the energy saving mode and short activation times in stand-by mode

Carbon Offsetting | An important goal of Toshiba for the coming years: the compensation for our own carbon footprint.

Toshiba does everything it can to minimise negative effects on the environment. Since we are not yet able to reduce our CO_2 emissions to zero, we have created the **Toshiba Carbon Zero Scheme**. This is a programme in which we compensate for the impact of our products and their production through social and ecological actions.

From the very beginning we have made sure that the projects we support through the Toshiba Carbon Zero Scheme, are feasable and their results are measurable while delivering a useful result. **A good example is the development and distribution of a simple, energy-efficient oven in Kenya**. The oven is inexpensive to produce, and it reduces the use of firewood by 50%, thereby reducing CO_2 emissions and protecting the local population and environment. Other projects help protect the rainforest in Brazil or provide people with clean, potable water. **From June 2009 until December 2019, we have offset a total of 635,000 tonnes of CO_2**. That is the same as:

188,000

Return flights London – Tokyo

194,000

Single-family homes heated with oil for one year

83,000

Times around the world in a car

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03 The Circular Economy is a Win-Win.

By both helping businesses and helping the environment, it’s good for everybody.

A true circular economy can only really function when governments have created the proper framework, customers make the right decisions, and companies leave their comfort zones and become an engine for change. But why should they do that? Because it makes economic sense.

The European Commission estimates that the successful implementation of **a true circular economy would save 600 billion euros in the EU by 2030**[1)]. At the same time, it could create up to two million new jobs. Through a circular economy, a corresponding modular design and the fact that businesses are now choosing to lease rather than own devices means that social responsibility and the entrepreneurial pursuit of profit could go hand in hand.

Why there is no way around a circular economy | The EU’s Circular Economy Action Plan, which was put forth in 2015, was the first large-scale attempt by governments to move the economy in that direction. A large part of the challenges we will face in the future will involve saving raw materials and avoiding emissions. A circular economy offers a lot of potential to meet these challenges, but it also offers **significant opportunities for innovation and growth**.

According to the management consulting firm Roland Berger, the global **market volume for environmental and efficiency-enhancing technologies for products, production and services was three billion euros in 2016**. These “green” markets are projected to have an annual growth rate of 6.9 % up until 2025.[2)]

[1)] Source: RESET Digital for Good is a non-profit foundation.

[2)] Source: European Union / European Circular Economy Stakeholder Platform.

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[1] Recyclingportal.eu
United Nations University, ITU and International Solid Waste Association in the Global E-Waste Monitor 2017
Umweltdialog.de / Magazin für Wirtschaft, Verantwortung und Nachhaltigkeit

[2] Data taken from: Technische Hochschule Ingolstadt (Technical University Ingolstadt)

Circular economy is becoming ever more relevant for users and decision makers | Even if most people are not yet familiar with the term, the relevance of circular economy increases with every extreme weather event resulting from climate change and with every “Fridays for Future“ demonstration.

The recycling economy with all its facets and possibilities, is a real answer to the huge challenges facing future generations. Being an environmentally conscious company is no longer a “nice to have“ but rather meets the expectations of consumers.

Design for Recycling is becoming an important criteria[1]

71% of consumers see plastic waste as a serious threat.

72% demand that disposal already be considered in the planning stage.

85% believe companies have the responsibility to design their products in such a way that they can be reused or recycled.

The impact of our waste[2]

The global population is expected to grow from **7.55 billion to 11.18 billion** by the year 2100.

We would already need **1.7 earths per year** to cover our current consumption of resources.

In 2016, the world produced **2.02 billion tonnes** of waste. In 2030 it will be almost **2.60 billion tonnes**.

The **44.7 million tonnes** of electronic waste that the world produced in 2016 included gold, silver, platinum and other metals with a total worth 55 billion dollars. But, **only 20 % of it was recycled**.

The professional recycling of a single smartphone saves **14 kilos of primary resources and 58 kilos of CO_2** and other greenhouse gases.

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06 What to do next.

Discuss your technology’s sustainability with one of our consultants.

Toshiba work with business of all sizes, from small start-ups to global enterprises. Having worked across diverse and demanding sectors, we have the experience to help your business overcome technical challenges and flourish.

At Toshiba, we do not believe in ‘one size fits all’. Instead, we work with organisations to build bespoke solutions tailored to organisational needs. This helps our solutions seamlessly integrate into existing systems and workflows which minimises cost and disruption to you organisation.

To get started, we recommend a call with one of our experts to discuss the challenges your company is facing and the various options available to you to address these.

We look forward to helping your business with a secure, efficient and environmentally friendly print infrastructure.

Get in touch

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