

TOSHIBA

Circular Economy

How we can use new ideas to make a valuable contribution towards fighting climate change.

Neuss, June 2020

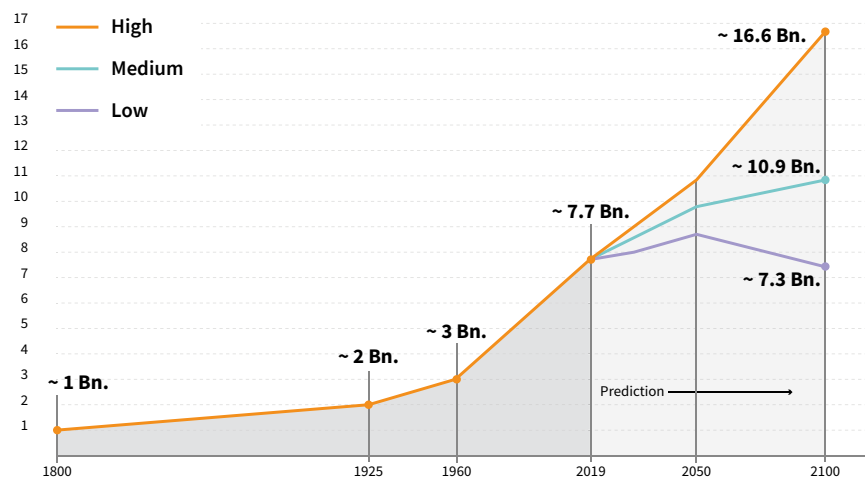
**TOGETHER
INFORMATION**

01 What is Circular Economy?

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.

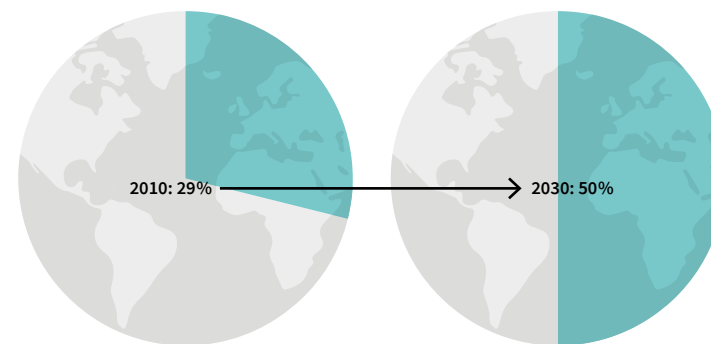
A continually growing world population, which has an expanding middle class with growing consumer needs, is accelerating this development. This poses an enormous economic challenge for the entire world.

World population growth



Source: <https://population.un.org/wpp/Graphs/Probabilistic/POP/TOT/900>

Percentage of people worldwide who belong to the middle class



Source: Wirtschaftswoche

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

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 social and economic opportunities.

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

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 a possibility which is still too seldom used.

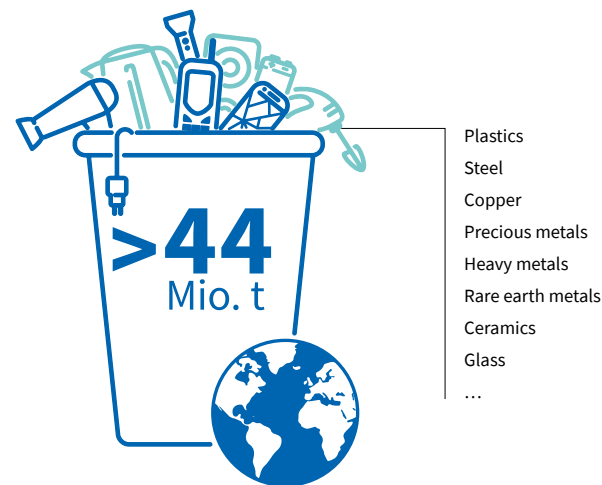
In 2015, the European Union adopted the Circular Economy Action Plan. The goal: to close the loop in the product life cycle through more recycling and reutilization.

Circular economy means 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*.

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.



* Source: United Nations University, ITU and International Solid Waste Association in Global E-Waste Monitor 2017

02 Toshiba Tec offers solutions for the sustainable use of resources.

Our products and services offer many opportunities for construction innovations, avoidance, reuse of materials or recycling. In concrete terms this means that the number of materials used is kept as small as possible, that these materials are recyclable and easily removed, that there is an energy efficient product design, that our service covers the entire life cycle and that we avoid packaging waste. In terms of circular economy this is called 3R-Design.



REDUCE



REUSE



RECYCLE

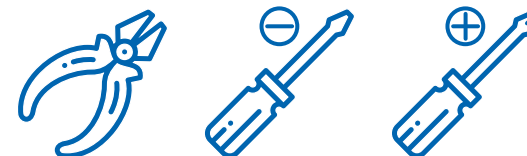
Material selection and reusability

The idea of Toshiba Tec is to take the reusability of materials into account right from the very start. The material chosen for those plastic casings which fulfil similar functions, for example, is restricted to one kind of material. Components made from the same kind of plastic all have the same colour so that they can be more easily sorted when they are being taken apart. Preference is given to reusable materials and reusable material combinations. Toshiba Tec is one of the producers with the largest share of reusable plastics (post-consumer material, based on EPEAT) in multifunction printers.

At least 50% of the components are the same as those used in other Toshiba Tec devices of the same performance level and generation.

A further characteristic of 3R-Design is simple deconstruction.

That is why the professional deconstruction of devices is already 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 a few standard tools. All connectors that need to be taken apart for recycling, for example, are axially 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.



For the complete deconstruction of a Toshiba multifunction printer you only need three tools.

For Toshiba Tec long life cycles and recycling-friendly design are decisive product development criteria.

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 Tec is responsible for servicing and providing the consumables. Even the regular servicing by a trained technician increases the life span of a device.

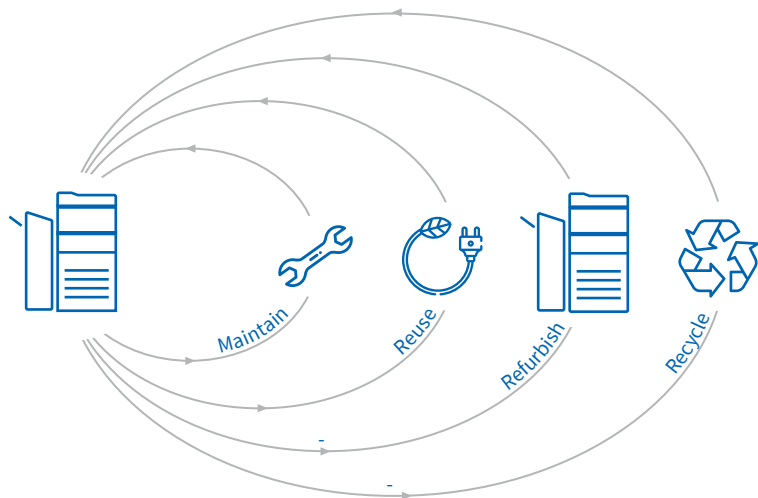
Products with a long life cycle decrease our use of raw materials and minimise our emissions. At Toshiba Tec, the life cycle is already extended by the fact that many modules or individual parts can be exchanged.

A further prerequisite for the long life of our products is their quality. Before production even starts, we make sure that our suppliers meet the high demands set by Toshiba Tec. Materials and parts are checked and tested accordingly. And from our experience we can say that in the long run, more expensive parts are often the more economical.

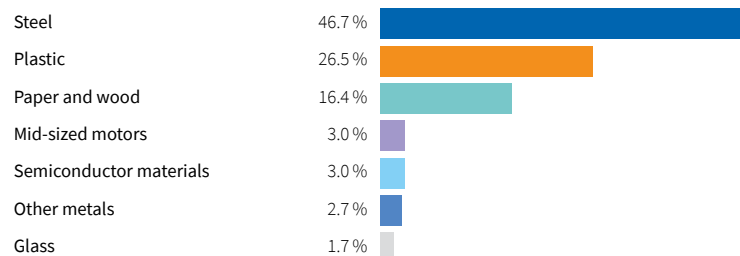
With today's recycling technologies, it is possible to reuse more than 95% of the materials in a Toshiba Tec device/multifunction printer.

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

The life cycles of a Toshiba Tec multifunction printer



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



Less is more – especially, when it comes to valuable raw materials.

Our engineers are constantly working on reducing the number and the amount 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 life cycle of a device. As we have already mentioned, this can be achieved through servicing and repair.

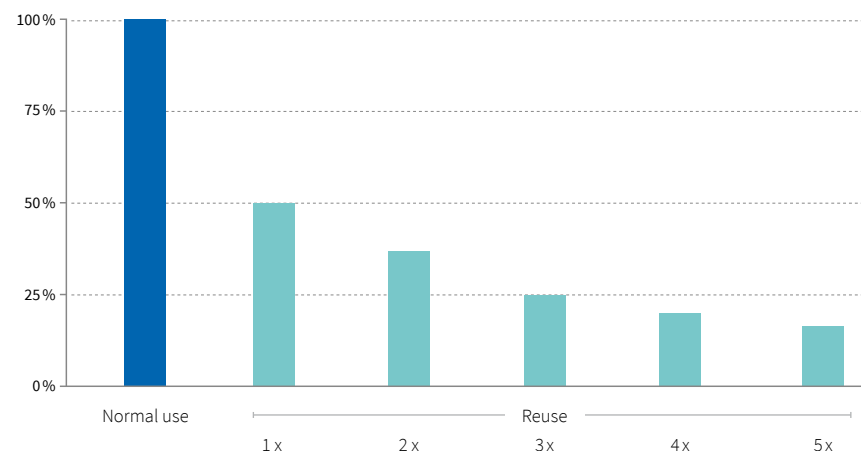
At the end of the life cycle of a Toshiba Tec device, our national organisations stand up to their responsibility. They work together with specialised companies who take back used batteries, packaging or empty toner cartridges and recycle them.

Less paper means less garbage, less energy and less water consumption in production.

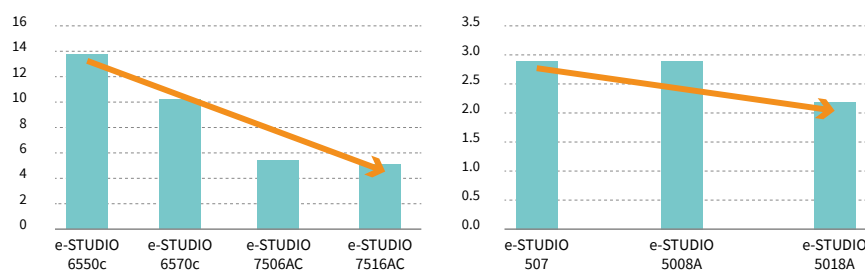
A very important factor in the ecological impact of multifunctional printers is paper consumption. With the e-STUDIO5008LP series, Toshiba Tec has, as the first manufacturer in the world, introduced a system with which every single sheet of paper can be printed on multiple times without any noticeable 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.

The technical functions of today's Toshiba Tec 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 themselves at the printer, offer further possibilities for saving paper. And of course, our printers produce excellent results when using recycled paper.

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



Average energy savings with Toshiba Tec MFP



Energy efficient product design is a hallmark of Toshiba Tec multifunctional printers.

When a device is not working, then it shouldn't be using any or only extremely little energy. Toshiba Tec 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

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

Toshiba Tec does everything it can to minimise negative effects on the environment. Since we are not yet able to reduce our CO₂ 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 feasible and their results are measurable while delivering a useful result. A good example is the development and spread 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 CO₂ 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 CO₂. That is the same as...



188,000

Return flights London – Tokyo



194,000

Single-family homes that heat with oil for a year



83,000

Times around the world in a car

03 Why Circular Economy is a win-win situation for everyone.

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*. At the same time, it could create up to two million new jobs. Through a circular economy, a corresponding modular design and new marketing strategies (use instead of own), social responsibility and the entrepreneurial pursuit of profit could go hand in hand.

The aim of a circular economy is to decouple economic growth from the consumption of resources, by keeping the resources in a closed recycling loop.

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.**



The global population is expected to grow from 7.55 billion now to 11.18 billion in 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 2.6 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 CO₂/greenhouse gases.

Source: Technische Hochschule Ingolstadt (Technical University Ingolstadt).

*Source: RESET Digital for Good is a non-profit foundation.

**Source: European Union / European Circular Economy Stakeholder Platform.

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*

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.

We hope that we have awakened your interest in the circular economy and have managed to give you some insight into Toshiba's initiatives. Further information can be found on our website at www.toshibatec.eu/about/sustainability.

*Source: 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