



PHILIPS

Circular economy

Rethinking **the future**

Our transition towards a circular economy

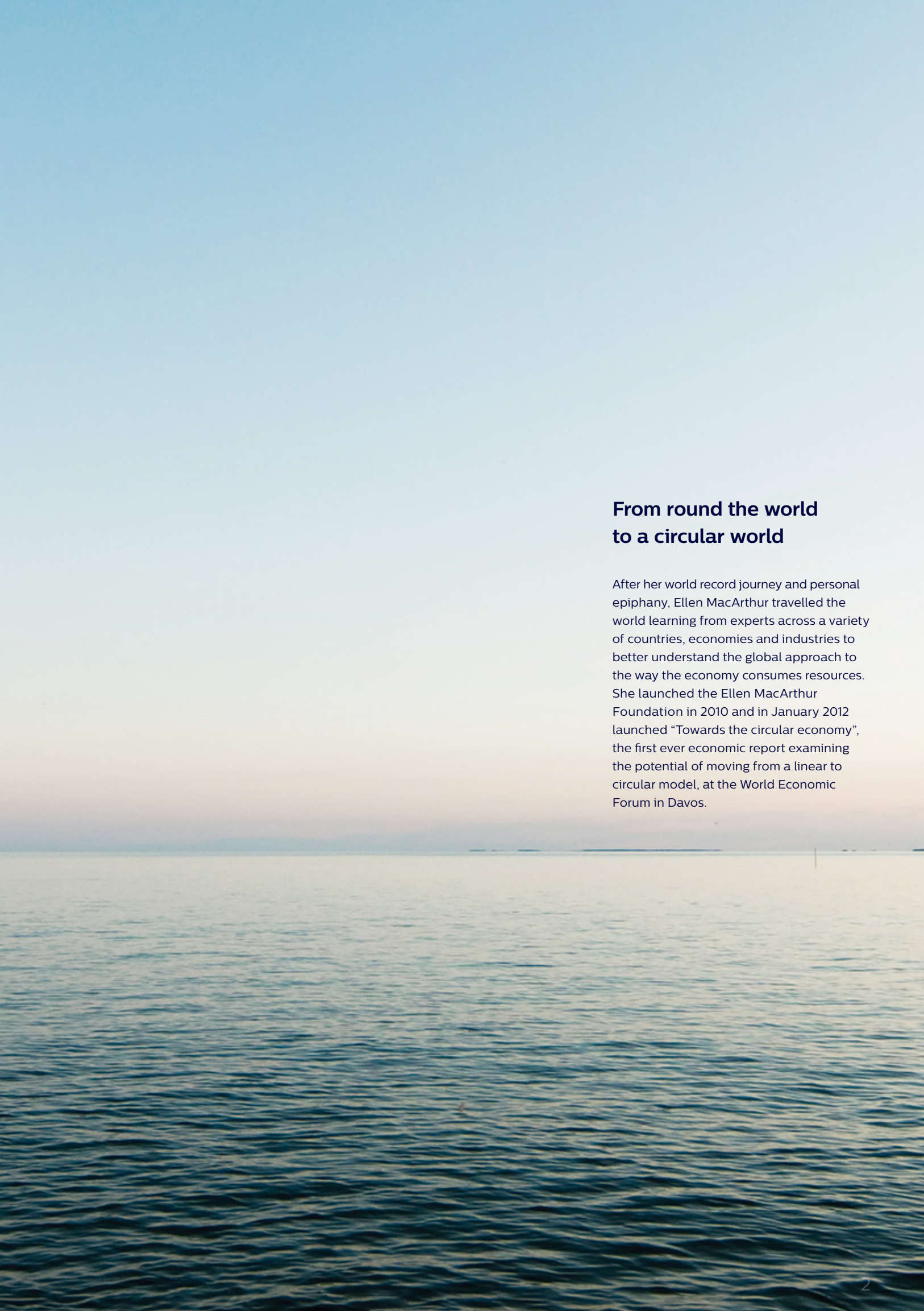
In 2005, Ellen MacArthur became **the fastest solo sailor to circumnavigate the globe**

“Sailing around the world against the clock in 2005, I had with me the absolute minimum of resources in order to be as light, hence as fast as possible. At sea, what you have is all you have, stopping en route to restock is not an option and careful resource management can be a matter of life or death. Running out of energy to power the autopilot means you can be upside down in seconds.

My boat was my world, I was constantly aware of its supply limits and when I stepped back ashore, I began to see that our world was not any different. I had become acutely aware of the true meaning of the word ‘finite’, and when I applied it to resources in the global economy, I realised there were some big challenges ahead.”

Ellen MacArthur





From round the world to a circular world

After her world record journey and personal epiphany, Ellen MacArthur travelled the world learning from experts across a variety of countries, economies and industries to better understand the global approach to the way the economy consumes resources. She launched the Ellen MacArthur Foundation in 2010 and in January 2012 launched “Towards the circular economy”, the first ever economic report examining the potential of moving from a linear to circular model, at the World Economic Forum in Davos.

The global trends that make a circular economy a business necessity for now and the future

challenges

Resource availability and pricing

We are at the end of the era of cheap oil and materials. A lack of fossil fuels and finite natural resources across the spectrum, coupled with an increased consumer demand results in challenges to manage our commodities. Simply using less is no longer enough. And with this, increased resource price volatility dampens economic growth, discouraging businesses from taking resource-related risks.



Increase of middle class consumers

The world has experienced two great expansions of the middle class since 1800 and we are living through the third. In Asia alone, 525 million people can already count themselves as middle class; more than the total population of the European Union*. Over the next two decades, it is estimated that the middle class will expand by another three billion people, coming almost exclusively from the emerging world, driving demand and ultimately waste.

* Source: Ernst & Young, 2014, Driving growth - Middle class growth in emerging markets



Big data

The emergence of big data has shifted the manner and scale in which problems can be solved, providing deeper market knowledge and increasing consumer-focused solutions. It also offers the intelligence of knowing where things are within the economy, what they are made from and what status they are in, making refining, and optimising possible and enabling additive rather than subtractive manufacturing.

Changing legislation and governance

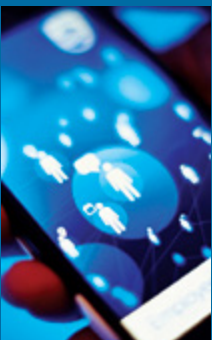
More and more companies are responding to sharpened, new legislation and governance models by introducing new innovative designs for their products. These are increasingly inspired and triggered by topics which were previously seen as challenges: such as toxicity levels in different materials or landfill.

opportunities



Changing models of consumer consumption

We have seen the emergence of a different type of consumer, who is interested in different ownership and business models for example Airbnb, Zipcar, Spotify. These consumers are more driven by access and performance rather than ownership. Services and not goods are helping to redefine the relationship between objects and consumers.



Moving from transaction to relationship

The multi-channel world has also led to new levels of engagement and connectivity with consumers looking for relationships with brands that go beyond the transactional.

Online interaction via Facebook, Twitter, YouTube and brand websites is a growing global phenomenon that will be the new path to relationship for both empowered customers and companies.

Companies such as Dell and Starbucks help turn consumer ideas into reality through on-line platforms to generate ideas. Airline company KLM maintains a constant Twitter dialogue with its consumers, providing 24/7 service in ten languages.



Our vision is to make the world healthier and more sustainable **through meaningful innovation**

As part of this commitment, we have been applying some of the principles of circular economy thinking. Philips has operated refurbishment and recycling programs for over 25 years.

The immediate business case for fast-tracking the move to a circular economy and closing the materials loop became vitally clear after Philips and the Ellen MacArthur Foundation shared their common vision for a resource efficient and, ultimately, a regenerative circular economy.

“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

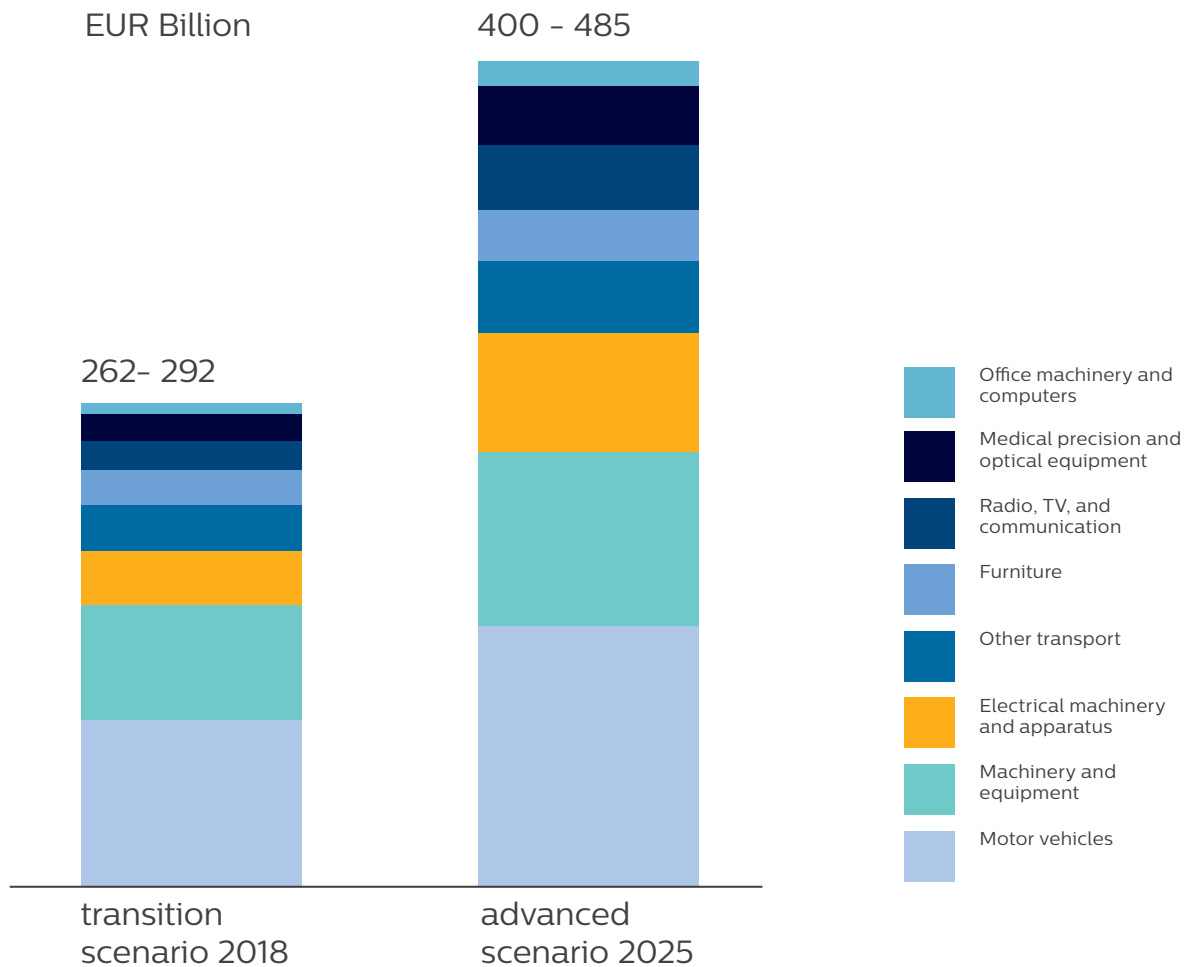
Towards economic and ecological **value creation**

The principles of circular economy are similar to methodologies such as Cradle to Cradle®, bio mimicry or the Natural Step, all of which aim to use natural resources much smarter and more effectively.

The big difference in the circular economy approach is that its starting point is economic value creation with the improvement of the ecological aspects as a positive derivative.

Circular models have cost saving potential of EUR 250-500 Billion annually for European economy

Source: Ellen MacArthur Foundation, 2013, Towards the Circular Economy



“For a sustainable world, the transition from a linear to a circular economy is essential. A circular economy aims to decouple economic growth from the use of natural resources by using these resources more effectively.

As a leader in innovation, we have long believed in an approach which integrates systems thinking and looks beyond the linear ‘take, make, dispose’ model to a circular model of regenerative product design, new business models, reverse logistics and enabling communication technologies.

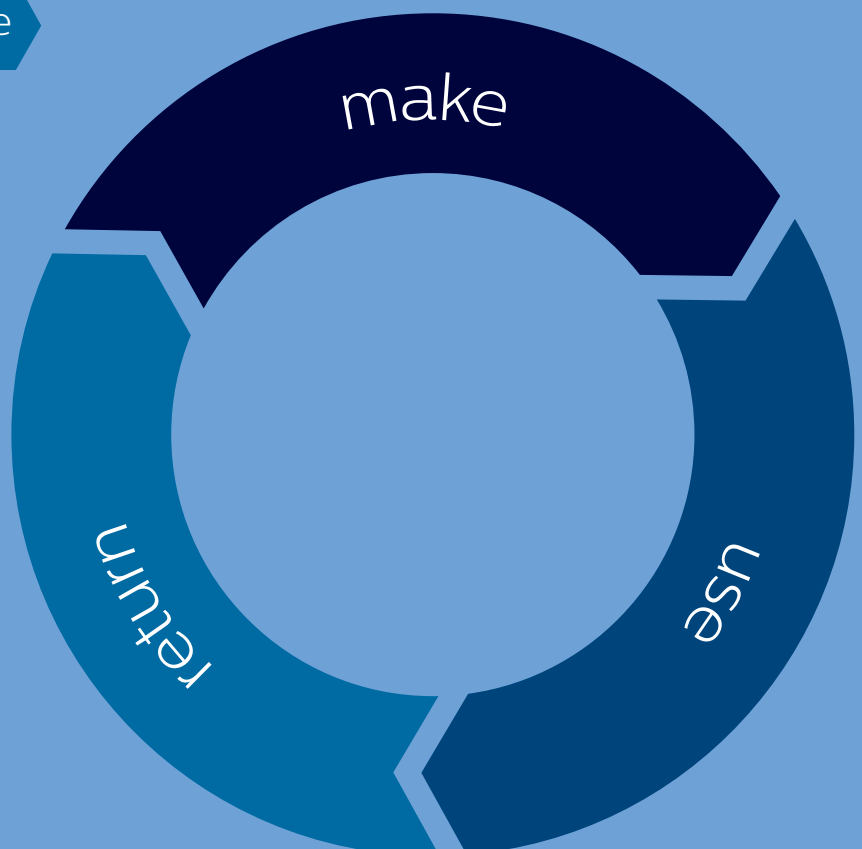
By definition, a circular economy is a driver for innovation in the areas of material, component and product reuse, as well as new business models such as solutions and services. In a circular economy, the more effective use of materials enables to create more value, both by cost savings and by developing new markets or growing existing ones.”

Frans van Houten, CEO, Royal Philips

The linear economy



The circular economy



The closed loops of a circular economy for Philips

Inspired by the interactive system diagram*, applying circular economy principles throughout Philips means reconsidering every element of our design, manufacture and supply process, while aiming for maximum use of renewable energy.

For our business, we see the move from linear to circular in four returning loops:



service

Selling a service not a product, maintenance and repair agreements, service support, technology upgrades to extend the life and make re-use possible.



refurbish

Replacing or repairing major components in existing products.



parts harvesting

Recovering components from existing products to create new or repurposed products.



recycle

Recovering valuable materials from waste to be reused in new products.

The four enablers for a circular economy



business models

Attractive value propositions that will enable an optimal capture of the economic opportunities of a circular economy – for example through further emphasis on access over ownership.



design

Designs that enable multiple lifecycles with minimal loss of value, quality and energy impact and that can also be mined for materials and components that can be reused.



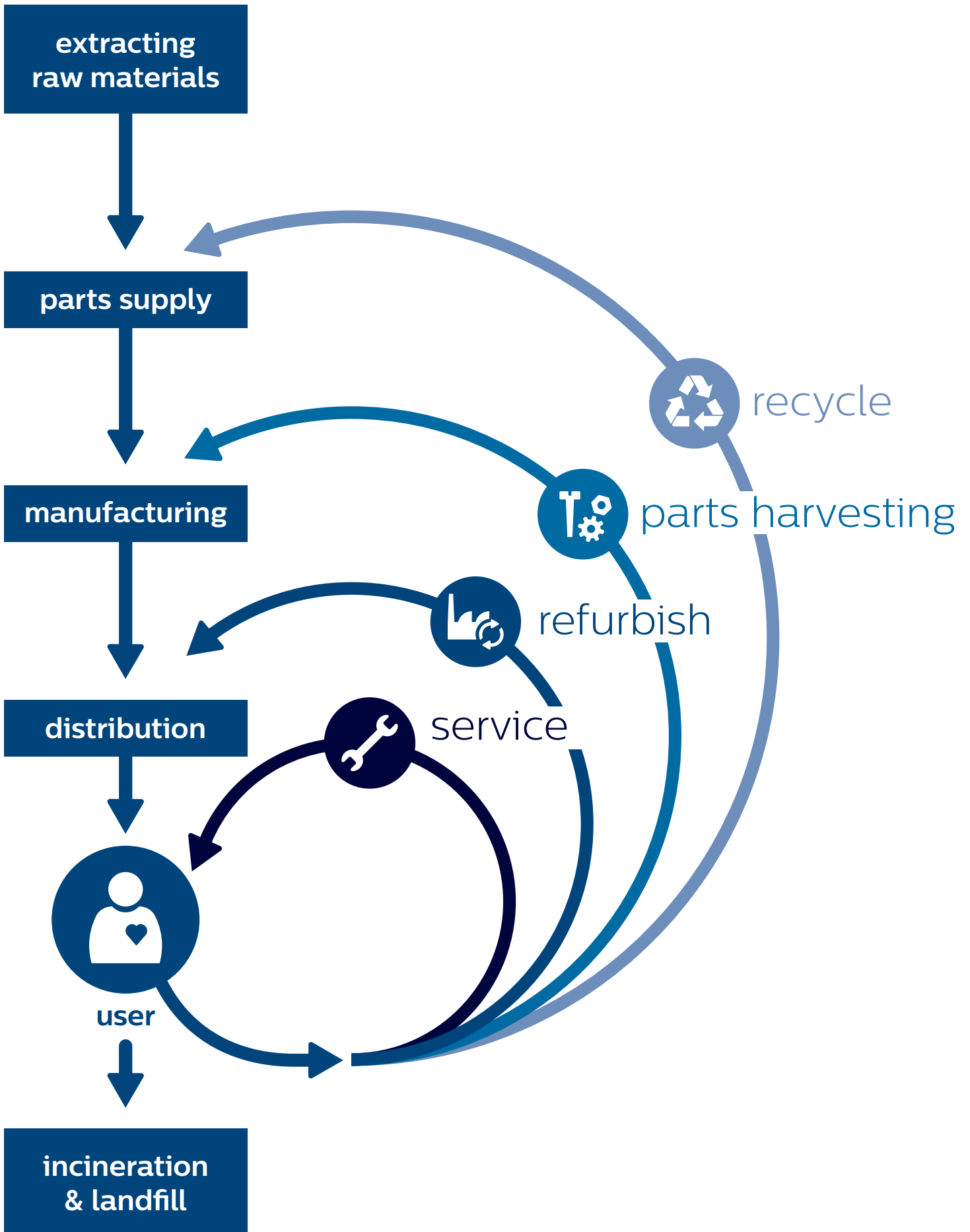
collaboration

Cross value chain and cross sector collaboration is essential. Networks and knowledge sharing schemes that facilitate the large scale establishment of circular economy as well as policy mechanisms that enable their creation need to be implemented.



reverse logistics

All operations related to the recovery and reuse of products and materials. Essentially the strategies, processes and infrastructure to enable the cost-effective collection, treatment and redeployment into the market of products, components and materials at high quality and high volume.



Changing the way we do business to **drive circular thinking in Philips**



Drive internal engagement

Inform, engage with and enable Philips employees to implement circular economy principles in the organization.



Thought leadership and collaborations

Inspire the world by sharing our vision of the journey towards a circular economy by connecting with other pioneering industry partners, governments, NGOs and key opinion leaders on this subject.

Generate proof points & metrics

Develop hero projects within Philips and start implementing new business models to show the value that circular thinking can bring.

Embed in Philips processes

Ensure that the circular economy framework becomes an integral component within the relevant Philips business processes.



Connecting with the outside world

to make a circular economy a global reality

Our partnerships include:



2012
Member of the World Economic Forum, the international institution committed to improving the state of the world through public-private cooperation



2013
Global Partner of The Ellen MacArthur Foundation, a leading organization on the concept of circular economy



2013
Sponsor of The Guardian's circular economy hub, a leading newspaper and online platform for sustainable business leaders



2014
Member of The Circular Economy 100, the alliance of 100 global corporations, emerging innovators and regions committed to working together to build circular economy capability



2013
Member of the Circle Economy Netherlands, a non-profit open platform designed to accelerate the transition to a circular economy

Circular economy strategy and activities, **healthcare**



Refurbished medical equipment offered with a full Philips warranty

With healthcare budgets under more pressure than ever and not all applications requiring new equipment, care facilities are looking to extend their resources within a restricted budget without compromising on quality.

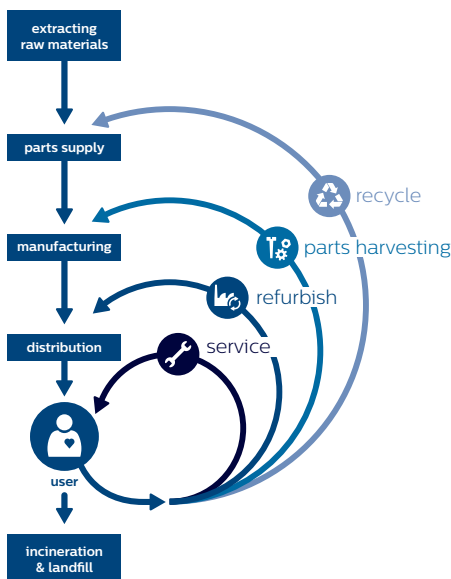
Refurbished medical products are existing examples of circular economy products already delivering clear social and economic value. In fact, volumes for

Philips refurbished products have been growing significantly over the last 20 years depending on imaging modality and region.

Through its Refurbished Systems business unit, Philips offers a choice of pre-owned systems that have been thoroughly refurbished, upgraded and quality tested. For example, the Philips Diamond Select program makes first-rate equipment available at lower cost, offering high quality

refurbished systems with full Philips warranty.

This program and business has been a success for both customers and Philips. A global trend and future, tuned to the evolution of more circular business models and closed loop supply chains is bound to see many more developments in this area.



service

Service business models will shift ownership to access. Maintenance and repair of the equipment are included in the agreement as well as the latest technology upgrades and software releases.

refurbish

In the refurbishment process components that are faulty or close to failure will be replaced or repaired. Additionally cosmetic changes will be executed such as cleaning and painting.

parts harvesting

Medical equipment will be dismantled into parts that will be re-used as spare parts for service or refurbish purposes.

recycle

End-of-life components will be broken down to basic materials that can be re-used into a new component.



business models

- Introduce service and solution propositions
- Explore performance based business models



design

- Design for re-use and residual value
- Develop a modular platform approach



collaboration

- Expand capacity and skill building
- Leverage existing infrastructure



reverse logistics

- Develop smart logistics
- Initiate and advise to adapt legislation

Circular economy strategy and activities, **lighting**

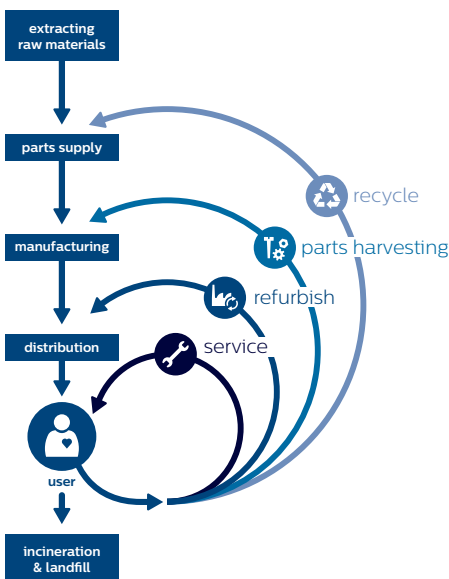


Light as a Service for the National Union of Students office in London

Philips has pioneered lighting performance contracts that create a unique value proposition in the market and employ circular economy principles.

By shifting from 'one time sale' to 'Light as a Service' Philips maintains ownership of materials. Similarly, managed services extend the lifetime and performance of products. This allows the customer to take full advantage of the newest LED lighting solutions, increase energy efficiency and reduce operational costs.

Exploring possibilities from a second hand market enables Philips to capture new value from used parts and luminaires and co-creation with like-minded companies creates a platform for innovation. And, at the end of the service period, lighting products can be returned to the production process again and get a new life in the refurbish, parts harvesting or recycle loop.



service

Value will be created by offering Light as a Service including lifecycle extension opportunities, upgrades and repairs.

refurbish

The possibilities for a refurbished product business will be analyzed.

parts harvesting

A pre-owned market for used parts and luminaires reuse will be explored and developed.

recycle

The cooperation with the established local Collection and Recycling Service Organizations (CRSO) will be continued and enhanced.



business models

- Scale up service business
- Develop sales tools for circular value propositions



design

- Expand the portfolio of circular products
- Implement a circular economy scorecard



collaboration

- Co-create and cooperate with like-minded companies
- Enhance customer relationships with customized solutions



reverse logistics

- Extend possibilities for take back and recycling
- Enhance collaboration with recyclers and distributors

Circular economy strategy and activities, **consumer lifestyle**



SENSEO Up coffee machine is designed for recycled plastics

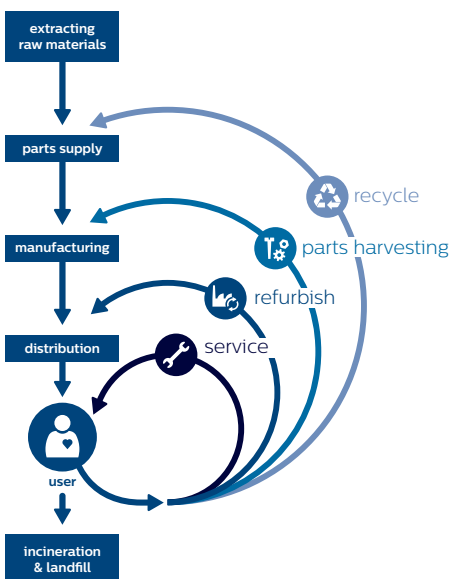
Circular economy thinking has already resulted in recycled materials becoming an integral part of product design.

By co-creating with recycled materials organizations, we can use our expertise to improve the quality of materials. Moreover Philips has also started to adjust design practices so products can be increasingly

modular. This results in better ease of repair, longer lifetimes and, ultimately, improved environmental footprints.

Exploring our opportunities in the transition from access over ownership, we can capture new markets and foster the development of new business models with customers.

An additional source of value lies in refurbishing or remarketing market returns. By giving these products new purpose we can potentially shift from a replace to a repair strategy. Collaboration across the value chain enables reverse logistics and possible trade-in campaigns. With this strategy we aim to retain the value of our products and decrease the amount of waste.



service

Shifting from replace to repair will reduce value losses. Additional service offering will increase customer touch points.

refurbish

Market returns will be repurposed by offering them in new sales channels and new markets.

parts harvesting

By collecting and disassembling returned products, value will be captured by using parts of these returned products as spare parts.

recycle

By applying recycled plastics the environmental footprint as well as material costs will be reduced.



business models

- Explore access over ownership
- Capture new business in new market segments



design

- Design for recycled plastics
- Design for repair



collaboration

- Co-develop recycled material with suppliers
- Develop new business models with consumers



reverse logistics

- Repair of products over replace
- Develop trade-in campaigns

“Innovation in circular economy combines for me a business necessity and value creation opportunity with the ambition to maintain our living environment with balanced societal interactions for the kids of our kids.”

Wolfgang Budde, Philips Research

“The main potential contribution of the European Commission to the circular economy is to make sure that the framework conditions like legislation, finance and market instruments, are in place so that businesses have the confidence to invest in circular economy systems.”

William Neale, Member of the European Commission for Environment

“The circular economy approach steers our creative thinking towards solutions that support more sustainable lifestyles and ways of production. By using the principles of Design for 4R (repair, reuse, refurbish and recycle) our design community can create value for people while protecting the environment. And this is a very rewarding feeling.”

Simona Rocchi, Philips Design

“Circular economy is very important for Philips to differentiate ourselves from our competitors. With new propositions such as Light as a Service, we can create value for our customers with a unique sustainability message.”

Thomas Leenders, Philips Lighting

“Action speaks louder than words. Once businesses take action and harvest the successes of their circular economy pilot projects, their peers will become challenged. This will help to spread the word.”

Conny Bakker, Associate Professor, Delft University of Technology

“One day soon, a circular economy will be business as usual.”

Bart Goetzee, Head of circular economy program, Royal Philips

The time is **now**

Employees and stakeholders - everyone has a part to play.

The true benefits of a circular economy will be made possible by each and every one of us – Philips employees and stakeholders - embracing the opportunity it presents for a new way of working and doing business.

By becoming circular economy entrepreneurs, everyone who works with or for Philips can contribute their individual skills and develop new ones to make the circular economy a reality.

Philips has started the move to a circular economy.

Commit, collaborate and join the journey to rethinking the future.



