



EFPIA White Paper on Circular Economy

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Executive Summary

- The European Commission's Circular Economy Action Plan has established targets for the reduction of waste, waste management and recycling, but clear details of other areas covered by the Action Plan have not yet been released.
- Transition to a more circular economy requires changes throughout value chains, from product design to new business and market models, from new ways of turning waste into a resource and, to new models of consumer behaviour.
- EFPIA supports the principles underpinning the circular economy, and looks forward to receiving more clarity on the European Commission's forthcoming legislative proposals. These proposals, if well designed and part of a coherent policy approach, have the potential to benefit the economy and environment, assisting a resource-efficient, competitive and resilient pharmaceutical industry to continue to deliver innovative medicines to improve healthcare.
- EFPIA supports the approach for any decision leading to regulatory changes is evidence-based and consider full product life-cycles to avoid unintended consequences.

1. Circular Economy: an overview

In a circular economy¹, open production systems – in which resources are extracted, used to make products and become waste after the product is consumed – are replaced by systems that retain resource value and conserve energy². A circular economy keeps resources in use as long as possible, maximising their utility and minimising waste.

Material wastage comes at significant environmental and economic cost³. Easily obtainable raw materials and low waste disposal costs have incentivised a linear 'take-make-consume-throw away' model⁴, but growing resource scarcity and better understanding of the benefits of resource efficiency are presenting opportunities for innovative companies to integrate circular concepts into their product design, manufacturing and end-of-life.

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2. Why is a shift to a circular economy important for Europe?

The average European has a resource footprint of 13 tonnes a year⁵. We are extremely reliant on raw materials and, despite our efforts to date, material recycling and waste-based energy recovery capture only 5% of the original raw material value⁶. On average, Europe uses materials only once.

Increasing global population and per capita consumption are expected to trigger the largest growth in resource demand the world has ever experienced – demand for natural resources will rise by more than a third by 2030⁷.

With Europe increasingly dependent on imports of raw materials, a shift in how we value resources is needed if EU based industries are to limit vulnerability to increasing scarcities, and price volatility⁸.

¹ For more details, see this [overview](#) of concepts associated with the circular economy.

² Chatham House, 2012. *A Global Redesign? Shaping the Circular Economy*. Available at: www.chathamhouse.org/sites/files/chathamhouse/public/Research/Energy%2C%20Environment%20and%20Development/bp0312_preston.pdf

³ Ellen MacArthur Foundation, 2015. *Growth Within: A Circular Economy Vision for a Competitive Europe*. Available at: www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf

⁴ European Parliament, 2016. *Closing the Loop, Briefing*. Available at: [www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI\(2016\)573899_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI(2016)573899_EN.pdf)

⁵ The EU-28's domestic material consumption (DMC) was dominated by non-metallic minerals, making up nearly half of the total in 2014, around 6.0 tonnes per capita. Biomass and fossil energy materials each made up approximately a quarter of DMC, some 3.5 and 3.0 tonnes per capita respectively. Metal ores constitute the smallest of the four main categories, their consumption being at a level of 0.5 tonnes per capita. http://ec.europa.eu/eurostat/statistics-explained/index.php/Material_flow_accounts_and_resource_productivity

⁶ Ellen MacArthur Foundation, 2015. *Growth Within: A Circular Economy Vision for a Competitive Europe*. Available at: www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf

⁷ Ellen MacArthur Foundation, 2013. *Towards the Circular Economy, volume 1*. Available at: www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf

⁸ CEPS, 2015. *Resource Efficiency Indicators for Policy-Making*. Available at: www.ceps.eu/system/files/Wd415.pdf



In this context, in 2015, the European Commission presented *Closing the Loop – An EU Action Plan for the Circular Economy*⁹. It includes over 50 measures to be implemented by 2019 - proposals for legislation, investment and schemes across the following areas:

- product design;
- production processes;
- waste management;
- secondary raw materials and water reuse;
- plastics; and,
- critical raw materials.

Waste reduction, waste management and recycling targets have been established, but in many areas covered by the action plans, details have not yet been released.

3. Why the circular economy is important for the pharmaceutical industry?

The driving motivation of the industry is to improve human health and well-being. With nearly a quarter of global deaths attributable to the environment¹⁰ and growing consensus that environmental protection is a prerequisite for human health¹¹, reducing environmental degradation is an important step to limit pressure on human health.

A shift to a circular economy has the potential to bring many health benefits. For example, optimising materials and processes to reduce our carbon footprint will help to combat climate change – described as the greatest opportunity to advance human health in the 21st Century¹².

EFPIA supports a transition towards a circular economy. It has the potential to harness our innovation expertise to drive the efficient use of materials, and improve long-term business value. We believe that by engaging on this issue now, we can help to shape future policy decisions to maximise opportunities for the healthcare sector.

However, industry recognises the challenges in adopting circular business models. Whilst *recovery & recycling* is widely adopted across the industry, and to a limited extent we utilise *circular supply chains*, due to the nature of our industry, adoption of other circular economy business models¹³ present more of a challenge.

⁹ European Parliament, 2016. *Closing the Loop, Briefing*. Available at:

[www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI\(2016\)573899_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI(2016)573899_EN.pdf)

¹⁰ UNEP, 2016. Healthy Environment, Healthy People. Available at:

www.unep.org/about/sgb/Portals/50153/UNEA/K1602727%20INF%205.pdf

¹¹ WHO, 2016. *Preventing Disease Through Healthy Environments – A global assessment of the burden of disease from environmental risks*. Available at:

http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196_eng.pdf?ua=1

¹² Watts et al, 2015. Health and climate change: policy responses to protect public health

[www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(15\)60854-6.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)60854-6.pdf)

¹³ Other Circular Economy business models are: *Product life extension*, where products are designed to be easily repaired or upgraded, maintaining their value for longer; *Sharing Platform*, where consumers or companies rent, share, swap or lend their idle goods; and, *Product as service*, where manufacturers or retailers lease products to consumers over the long-term, which drives businesses to boost product longevity, reliability and reusability. For more on the five Circular Economy Business Models see: Accenture, 2015. *Waste to Wealth*. Available at:

www.accenture.com/t00010101T000000_w_/gb-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Strategy_7/Accenture-Waste-Wealth-Exec-Sum-FINAL.pdf#zoom=50

4. Considerations for the Circular Economy proposals

EFPIA supports the principle of the circular economy, however proposed measures could impact our business. Consultation is necessary to ensure forthcoming rules are technically and economically feasible, and drive the intended behaviours. As a provider of life-saving medicines, the pharmaceutical industry has unique requirements. Balance is needed to ensure proposals to restrict materials to protect environmental and human health do not prevent the development of drugs vital to protect against illness and disease. The following points are important considerations for future Circular Economy legislation:

Evidence-based decision-making: Decisions must be evidence-based, considering the full life-cycle impacts of targeted areas as initial perceptions can be false. For example, single-use pharmaceutical technologies can appear inefficient, but life-cycle analyses have shown that they can reduce or eliminate the need for large quantities of steam and purified water, lowering the overall environmental footprint¹⁴.

Clarity on legislative requirements: The European Commission's targets are set for 2030. Pharmaceutical products currently in development will still be on the market in the 2030s. However, greatest benefits are achieved when resource efficiency is designed into a product's research and development stages, so **clarity on legislative requirements** is necessary to define the standards products will be expected to reach.

Clear and standardised legislation can facilitate increased product circularity: For example, research into the benefits of solvent recycling showed a 46-92% greenhouse gas saving compared to using virgin solvents¹⁵. However, no clear *end of waste* criteria exist for the majority of waste materials in the EU¹⁶, including solvents. A lack of consistent quality standards reduces the potential to find beneficial secondary use for recovered solvents and presents challenges for EFPIA members to make use of recovered materials in manufacturing processes. Where additional legislation is considered, the interactions with existing regulations should be taken into consideration.

A level playing field: The global aspect of any legislative change should be a key consideration. EFPIA members operate global supply and distribution chains and the circular economy will have limited impact if not implemented in collaboration with global partners.

The need for collaboration: Within the pharmaceutical regulatory environment, it is difficult to reduce a product's environmental footprint once on the market. Collaboration may be necessary to ensure the regulatory framework takes an evidence-based approach when implementing efficiency measures, for example, to demonstrate whether reused materials in some processes are acceptable from a human health standpoint.

The changes required for a transition to a circular economy are systemic, often extending beyond the control of individual firms. Collaboration is therefore key if we are to maximise progress in this area. To

¹⁴ Pietrzykowski, *et al*, 2014. An Environmental Lifecycle Assessment of Single-Use and Conventional Process Technology: Comprehensive Environmental Impacts. Available at: www.biopharminternational.com/environmental-lifecycle-assessment-single-use-and-conventional-process-technology-comprehensive-envi?pageID=2

¹⁵ ETHOS Research, 2013. *Carbon Footprints of Recycled Solvents Study for the European Solvent Recycler Group*. Available at: http://esrg.de/media/PDF/Study_print_090514.pdf

¹⁶ European Commission, 2016. *Waste Framework Directive*: http://ec.europa.eu/environment/waste/framework/end_of_waste.htm

engage colleagues across the industry to seek opportunities for circular innovation, awareness raising is vital. Providing a clear vision of what a circular pharmaceutical industry might look like and sharing examples of the circular economy in practice will help harness the expertise in our sector, facilitating the design of circular principles into products and supply chains at an early stage.

Finally, we believe all stakeholders in the healthcare sector are needed to transition towards a circular economy. By working together we believe we can advance human health and ensure our use of natural resources is efficient, sustainable and affordable. Hospitals, medical staff, public health bodies, patients and supply chains have an important role to play:

- increasing product circularity and developing more efficient infrastructure requires supply chain collaboration;
- to boost the return of unused medicines, collaboration between medical professionals, pharmaceutical companies and patients is needed to drive behaviour change; and,
- by utilising our understanding of illness and disease in partnership with patients, medical professionals and health agencies, we can help people live healthier lives, reducing the likelihood that they will require future treatment for disease.

Annex:

Examples of the Circular Economy from EFPIA members:

EFPIA members are constantly working towards cost-effective and resource-efficient innovations (for example *Process Mass Intensity* (PMI) and *Green Chemistry*) and a shift to a circular economy will see an expansion of innovations already taking place across the industry.

For example:

a. Solvent recovery case study - AstraZeneca

Our Avlon site near Bristol in the UK is the manufacturing home of the active pharmaceutical ingredients (APIs) for two of our key medicines. In 2012, we embarked on a £4.7 million investment in a major new facility for the recovery of solvents used in the production process of one of these APIs. Solvents are a significant hazardous waste stream of the API manufacturing process.

Now, three years on, we are reaping the benefits. The recovery unit processed 480,000 litres of solvent waste in 2015 and generated savings of £437,000. During 2015, it contributed a 3.4% reduction in our total hazardous waste generation, and, for the drug in question, a 4.5% reduction in production costs by avoiding 85% of previous virgin solvent use. The project has also significantly reduced road haulage for the transport of virgin and waste solvents, and generated significant CO2 benefits. Savings are projected to increase to £695,000 in 2016, with payback of the original capital investment expected after seven years.

b. J&J actively involved in health promotion and disease prevention

The promotion of healthy lifestyles and the prevention of disease through lifestyle changes hold great promise for improving the health of people today and in the future. Johnson & Johnson supports many efforts to promote health and wellness and reduce preventable diseases.

Johnson & Johnson promotes healthy lifestyles among its employees. A system of company-wide incentives was established to help employees live healthier lives. The program includes:

- *Health Assessment & Counselling to help employees understand and reduce their health risks.*
- *Opportunities for employees to be physically active through activities and initiatives offered by the company*
- *Preventive screenings under the Healthy People Medical Plan.*

We also work with others to help reduce the rate of chronic disease through such programs as:

- *The Partnership to Fight Chronic Disease*
- *The Campaign to End Obesity*
- *The CEO Cancer Gold Standard*
- *America On the Move[®],*
- *Our creation of the Johnson & Johnson Diabetes Institute, LLC,*
- *Our many global giving programs that support community-based initiatives to prevent and reduce the impact of chronic diseases and prevent HIV/AIDS infections.*
- *Our engagement with the Oxford Health Alliance*

c. "Kalundborg Symbiosis" – Novo Nordisk

Kalundborg: Industrial symbiosis – an exchange of waste, materials and energy

The Kalundborg Symbiosis is an industrial ecosystem, where the by-product residual product of one enterprise is used as a resource by another enterprise, in a closed cycle. An industrial symbiosis is a local collaboration where public and private enterprises buy and sell residual products, resulting in mutual economic and environmental benefits.

The participants in the industrial symbiosis exchange energy and materials and have realized that a carefully managed cooperation can enable mutual economic benefit and reduce the environmental impact of large industrial operations.

Kalundborg's Industrial Symbiosis comprises eight core companies: Novo Nordisk (manufacturer of pharmaceuticals), Novozymes (manufacturer of enzymes), DONG Energy (Power Station), Statoil-Hydro (refinery), Gyproc, Saint Gobain (manufacturer of gyp boards), RGS 90 (recycling company), Kara Noveren (waste company) and Kalundborg Municipality. Each company is bound to each other via an intricate network of flows: flows of steam, gas, water, gypsum, fly ash and sludge.