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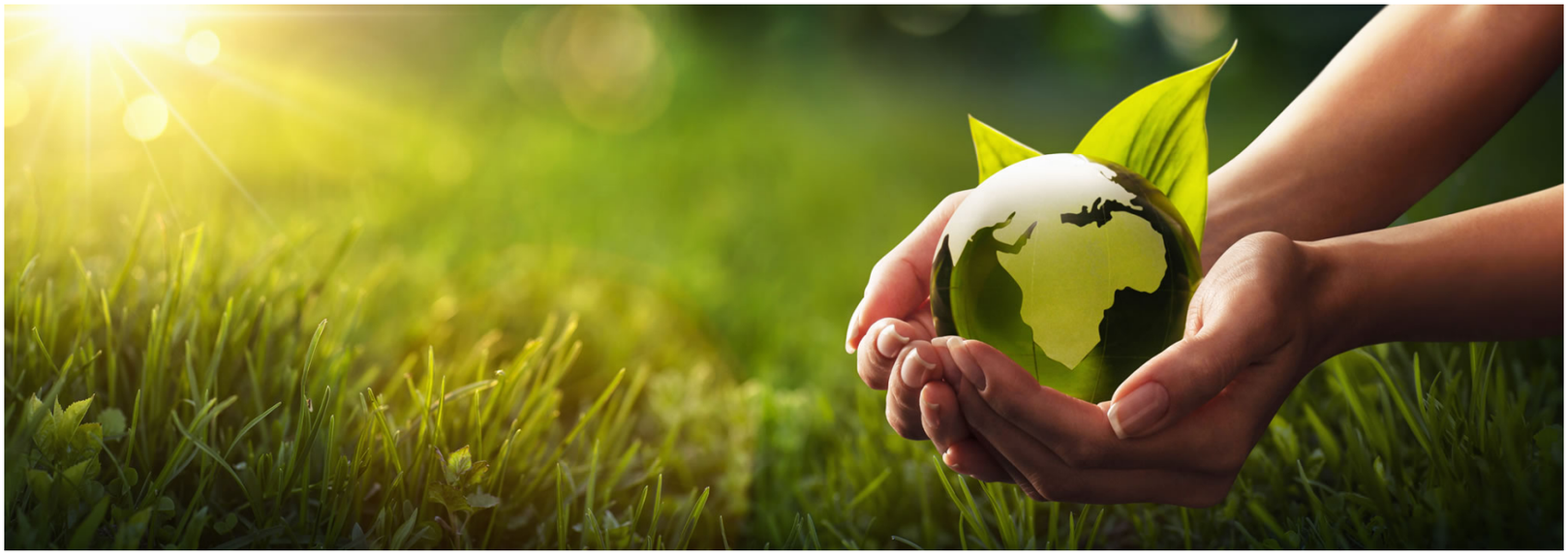

THE BASIC PREMISE OF CIRCULAR ECONOMY

Circular economy as a sustainable development vector.

Basic principles and models of circular economy

Waste management is a lingering problem which has been gaining in importance in recent years. Coupled with gradually dwindling primary resources and accelerating consumer demand growth, this prompts businesses and governments worldwide to move from the linear economy to the principles of sustainable development. These include the circular economy which allows for recycling of used products.

A French activist holds a poster explaining that production of a pair of jeans requires as much water as one person consumes in 12 years.

SOME 65 BILLION TONNES OF RAW MATERIALS ENTERED THE ECONOMIC SYSTEM IN 2010, AND THIS FIGURE IS EXPECTED TO GROW TO ABOUT 82 BILLION TONNES IN 2020.

The circular economy, or the economy in loops, is a new economic model aiming to decouple economic growth from the use of natural resources through innovative products, services, and government policies. Such economy is viewed as part of the fourth industrial revolution generally set to promote sustainable use of resources, including natural resources, thus making the economy more transparent and predictable and ensuring a faster and more consistent growth.

The idea of circular economy dates back to 1976 when Walter Stahel and Genevieve Reday produced a research report on how to extend the working life of products and recycle waste. The new concept is set to replace the linear “take, make, dispose” economic model. According to the report Towards the Circular Economy commissioned by the Ellen MacArthur Foundation, some 65 billion tonnes of raw materials entered the economic system in 2010, and this figure is expected to grow to about 82 billion tonnes in 2020. The report concludes that any system based on consumption rather than on the restorative use of non-renewable resources entails significant losses of value and negative effects all along the material chain.

The circular economy is set to replace the mass consumption model.

THE CIRCULAR ECONOMY ENSURES THAT NO TOXIC NON-RECYCLABLE CHEMICALS ARE USED.

The circular economy is an industrial system which is restorative or regenerative by design and structure. It is set to replace the end-of-life model with the one that is based on the restorative use and transition to renewable energy sources. The circular economy ensures that no toxic non-recyclable chemicals are used and aims to eliminate waste through innovative materials, products, systems, and business models.

The basic principles of circular economy are based on the so called 4R theory, i.e. Reduce, Reutilise, Rehabilitate, and Recycle (Réduire, Réutiliser, Réhabiliter, Recycler in French) at all production and consumption levels. There exist certain circular business models that turn round products and materials flows across the entire economy aiming to fundamentally change production and consumptions processes. There are five of these models:

• Circular supply model serves to replace conventional materials with renewables, biomaterials, and recyclables.

• Reuse model, i.e. recycling waste into feedstock.

• Product life extension model slows down product turnover across the economy and decelerates waste generation.

• Sharing model is based on the co-use of products by many consumers, which pushes down demand for new products.

• Product as a service models promote services rather than goods, which gives rise to green products and responsible consumption.

Plastics and circular economy

Plastics fit well into the circular economy thanks to their unique properties, including resource conservation. Boeing 787, with 80% of composites taking up 50% of its weight, boasts 20% lower fuel consumption and emissions.

The composites used in Boeing 787 ensured lower fuel consumption.

PLASTICS FIT WELL INTO THE CIRCULAR ECONOMY THANKS TO THEIR UNIQUE PROPERTIES, INCLUDING RESOURCE CONSERVATION.

Plastics provide for extended product life, thus reducing waste of fish (by 5 times), meat (by 3 times), bread (also by 3 times), and medicines (by as much as 182 times). Many polymers are recyclable. For instance, one PET bottle can be processed into two ball pens, two bottles turn into a wristwatch, seven bottles make a new shirt, and 48 bottles transform into a jacket.

Using recycled plastics has economic effect and practical applications. According to the Ellen MacArthur Foundation, plastic recycling could save USD 1 tn worth of conventional primary resources annually, reap USD 500 m in net benefits, create 100,000 new jobs, avoid 100 mt of materials waste, and reduce greenhouse gas emissions by 45–65% within 5 years. Recycled plastics find both household and industrial application (e.g. in road construction).

Bosco Fresh Fest participants wear raincoats made of recycled PET bottles.

PLASTIC RECYCLING COULD SAVE USD 1 TN WORTH OF CONVENTIONAL PRIMARY RESOURCES ANNUALLY.

International practices

Japan, China and EU countries lead the way in the circular economy. The EU follows its Europe 2020 strategy which aims at smart, sustainable and inclusive growth, supported by a roadmap for the efficient use of natural resources, and which assumes that the footprint on world resources and environmental protection are key to drive economic growth going forward. Europe also pursues the 7th European Environment Action Programme which is set to turn the European Union into a resource-efficient, green, and competitive low-carbon economy. The Ecological Footprint and Horizon 2020 programmes promote circular economy, too.

In addition, the EU Waste Framework Directive 2008/98/EC currently being implemented by 27 EU countries tightened controls on the sustainable use of resources as well as waste prevention and recycling. In particular, France has been improving its waste disposal practices for about four decades. The French Act on Energy Transition for Green Growth is now in effect, which aims to achieve a 10% reduction in household waste per capita, recycle 55% and 60% of total waste by 2020 and 2025, respectively, establish a separate waste collection and recycling system for biodegradable products, and introduce tax credits.

The opening ceremony at a waste sorting facility in Paris this year.

IN 2018, RUSSIA RECYCLED C. 7% OF MUNICIPAL SOLID WASTE. THE ECOLOGY NATIONAL PROJECT AIMS TO BRING THE SHARE OF RECYCLED WASTE TO 36% BY 2024.

China adopted laws to promote circular economy, South Korea relies on its Green Growth Strategy, and Japan is building a Sound Material-Cycle Society. Similar programmes are in place in Germany and Switzerland. The new programmes for national development intend to dramatically change waste management systems and aim to maximise waste recycling to replace crude minerals in the industrial manufacturing processes.

Such laws and other government initiatives encourage businesses to develop the circular economy principles, too. The trend is being observed across multiple industries. Toyota, Renault, Unilever, McDonald's, Interface, Michelin, Total, and BP Global have already realised the importance of sustainable development goals and now capitalise on the circular economy principles when it comes to growth opportunities and their influence on the future of mankind.

For instance, Interface, Inc., the world's largest developer and manufacturer of carpet tiles, found out that it was using far too much nylon to extend the working life of its products. As a result, the company managed to halve its feedstock consumption. Now, it imports used fishing nets from developing countries to process these into carpet flooring.

Having analysed the tyre life cycle, Michelin rolled out new products which helped save up to 11% of fuel. The new tyres were so expensive that the company failed to win support among its customers. That was why Michelin focused on all-inclusive services, tyre treading when necessary and eco-driving lessons. These new services also affect fuel consumption. In addition, customers now pay more for the distance travelled rather than products themselves, and new tyres and services cumulatively help them save up to 36% of their costs.

Michelin focused on all-inclusive services. Photo: media.michelin.ru.

Henkel announced that it joined the new global Alliance to End Plastic Waste (AEPW) as one of the founding members. The AEPW aims to develop and bring to scale solutions that will minimise and manage plastic waste while also promoting solutions for used plastics and helping to enable a circular economy.

“As a global consumer goods and industrial company, we at Henkel want to contribute to ending plastic waste,” said Hans Van Bylen, Henkel CEO and President of the German Chemical Association (VCI). “Developing sustainable solutions for this challenge will only be possible if we engage and collaborate across the entire value chain – from suppliers, trade partners, consumers and organisations through to governments.”

Henkel employees plant trees in Sochi as part of an environmental initiative. Photo: henkel.ru.

ACCORDING TO EXPERTS, THE BIGGEST CHALLENGE THAT PREVENTS RUSSIA'S TRANSITION TO THE CIRCULAR ECONOMY PRINCIPLES IS THAT ENVIRONMENTAL GOALS ARE SUBORDINATE TO ECONOMIC ONES.

Euan Sutherland,
CEO of Kingfisher UK & Ireland:

"The time is coming when it will no longer make economic sense for 'business as usual', and the circular economy will thrive. Our thinking is in its infancy but we're taking steps now to see what works in practice and to understand the implications of reworking our business model. We are preparing to lead this change."

Gavin Patterson,
Chief Executive of BT Retail:

"The concept of the circular economy tallies completely with our thinking at BT about the importance of providing goods and services sustainably. As a company, we feel intimately involved with these ideas, because digital technology will play a crucial role in providing the information needed to create circular economy systems."

Carlos Tavares,
Chief Operating Officer at Renault:

"Renault believes that innovation favours progress only if the greatest number stand to benefit from it. Renault believes that the optimisation of existing solutions will not be enough to realise the vision of sustainable mobility for all. The launch of Renault's new game changing fleet of electric vehicles demonstrates that this is possible. A growing population and increasingly volatile resource

market will challenge businesses working in a business as usual model."

Circular economy in Russia

The Russian agenda for the circular economy strives to reduce household waste landfilling. In 2018, Russia recycled c. 7% of solid municipal waste. The Ecology national project aims to bring the share of recycled waste to 36% by 2024.

Waste compaction for subsequent recycling at the Yadrovo landfill site in Volokolamsk.

THE CIRCULAR ECONOMY, IF IMPLEMENTED, IS LIKELY TO ADD 12–15% OF THE COUNTRY'S GDP BY VARIOUS ESTIMATES.

All in all, Russia boasts an extensive regulatory framework for the management of pre- and post-consumer wastes, including laws and regulations at all levels. Federal Law No. 89-FZ On Production and Consumption Wastes is the key act governing waste management in Russia. The law establishes a legal framework for the management of pre- and post-consumer wastes and aims to prevent negative effects on human health and environment and to provide for these wastes' reuse as an additional feedstock. Section 3 of the Law sets out the basic principles of sustainable development and circular economy.

Russia also pursues a strategy to develop pre- and post-consumer waste treatment, disposal and decontamination capacities by 2030. The strategy is set to develop the industry which will consolidate manufacturers of waste treatment equipment, recycling businesses and those using waste and recycled products as a feedstock.

Containers for separate waste collection at a Moscow Central Circle station.

According to experts, the biggest challenge that prevents Russia's transition to the circular economy principles is that environmental goals are subordinate to economic ones. Nevertheless, the circular economy, if implemented, is likely to add 12–15% of the country's GDP by various estimates.

Some Russian businesses are building on the circular economy principles, though. For instance, TECHNONICOL plans to construct a facility in the Far East that will produce recycled polymers to be used in their construction materials. Europlast operates Russia's only PET recycling plant. It campaigns for separate waste collection. According to Oleg Simkin, a co-owner, Europlast is the first Russian company to operate under the circular economy principles and to process its own recycled feedstock into high-quality and safe packaging.

Plarus, a plastic recycling plant built by Europlast in Solnechnogorsk (Moscow Region).

SIBUR PARTICIPATES IN SEVERAL ENVIRONMENTAL INITIATIVES OF GLOBAL RENOWN.

“Now, we principally rely on the bottle-to-bottle process to recycle bottles. It enables us to process bottles into food granules to manufacture new food packaging,” said Oleg Simkin. “The flake-to-resin process (FTR) is another technology we are implementing. It allows for combining primary and secondary feedstock to manufacture granules. Going forward, these technologies are set to increase the share of recycled PET materials in Russia.”

He believes that the Russian market for recycled PET materials is in its infancy as we came to recognise the need to sort out and recycle waste a short while ago. For now, we sell mostly to global majors processing recycled feedstock into packaging. Such companies are committed to maintaining the positive image of a socially responsible business in line with their sustainable development policies.

Clear PET granules made of used plastic bottles at Plarus.

For instance, Unilever presented its new product made of 100% recycled PET at a recent conference. “I believe that Russian companies are also starting to follow these trends as they realise that consumers now value socially responsible businesses, and this trend is set to gain momentum year after year,” added Oleg Simkin.

Packaging manufacturers also rely on the circular economy principles. According to Alexander Ladan, Director of Neo-Pack, the company already recycles most of its waste, striving to make a thinner film to reduce primary feedstock consumption. On top of that, Neo-Pak started producing mono-layer films which are more suitable for recycling.

Progress, a waste recycling facility in Roshal (Moscow Region).

“Unfortunately, the current Russian infrastructure for waste collection is not efficient in separating plastics from other wastes,” said Alexander Ladan. “Until recently, the government has been reluctant to promote the use of secondary materials, but the trend has reversed as the country embarks on a large-scale reform to recycle municipal solid waste. We speak out against excessive consumption and believe that each and every one must act and change their ways in order to solve the plastic waste problem.”

PolyER, a manufacturer of polymer food packaging, also relies on secondary PET materials and plans to increase their share in the manufacturing process.

“Now, the share of secondary feedstock stands at c. 15%, something we plan to increase by investing in recycling equipment,” said Tatiana Vladimirova, PolyER’s representative. “Regretfully, our progress is slow due to the low quality and lack of secondary feedstock suitable for recycling.”

Sort and Use mobile waste collection points in Moscow.

Sustainable development at SIBUR

SIBUR also adheres to the modern principles of sustainable development and circular economy. In 2017, the Company published its first sustainability report highlighting SIBUR's green goals, specifically:

– ensuring deep conversion of associated petroleum gas and rich components in the natural gas in lieu of dirty burning;

– leveraging advanced eco-friendly technologies all along the value chain and openly adhering to the principles of environmental responsibility;

– increasing output of petrochemicals which are more eco-friendly than similar materials throughout their life cycle; and

– contributing to the development of circular economy and recycling of polymer materials.

SIBUR's mobile environmental laboratory performs air quality checks.

SOME TIME AGO, SIBUR LAUNCHED THE REACTOR ONLINE PLATFORM LINKING ALL PARTIES INVOLVED IN RECYCLING – GENERATORS, TRANSPORTATION SERVICES AND RECYCLING FACILITIES.

In 2019, SIBUR established its Sustainable Development function which aims to monitor and implement best practices, promote a circular economy, lead the way in the climate agenda, and look for solutions to use recycled materials in the manufacturing process.

This year, SIBUR updated its Environmental Strategy. The Company is finalising the integration of sustainable development goals into its business strategy and growth plans for business units. Now, the Company focuses on three areas:

– developing targets for both SIBUR and its business units to reduce greenhouse gas emissions while considering transition to renewable energy sources;

– implementing a procedure to evaluate investment projects based on greenhouse gas emissions (with business units required to develop investment projects and their growth plans based on the new greenhouse gas emissions and to consider carbon dioxide reuse in the manufacturing process); and

– developing educational content for suppliers and customers on how to reduce carbon footprint all along the value chain.

"SIBUR's business model is unique, which makes it difficult to specify any existing emission standard," said Maxim Remchukov, Sustainable Development Director at SIBUR. "No doubt, all companies strive to reduce this figure. We at SIBUR consider it our top priority to determine a reduction target for direct and indirect emissions as well as to develop an internal metric. We also plan to engage with our supply chain to reduce carbon footprint."

SIBUR pursues polymer recycling projects, too. As a recent example, the Company launched the Reactor online platform linking all parties involved in recycling – generators, transportation services and recycling facilities. A year earlier, SIBUR and Wilson presented the first-ever eco-friendly basketball made of recycled plastic bottles which became an official basketball of the VTB United League.

The eco-friendly ball made of recycled plastic bottles became an official basketball of the VTB United League.

The Company actively supports Russia's transition to the circular economy principles. In particular, SIBUR participates in the nation-wide Sort It Right initiative. The project aims to foster a partnership between NGOs, businesses, government agencies, municipal authorities, other organisations and individuals to develop and implement best separate waste collection practices, raise environmental awareness and encourage the correct disposal of household waste.

SIBUR also supports initiatives to install containers and reverse vending machines for separate waste collection in Moscow and promotes public initiatives in social media, the blogosphere and leading mass media. The Company holds lectures on circular economy for students and schoolchildren. SIBUR also created the Nature Path project in Tobolsk and shot environmental films for Channel One, Russia 1 and Science 2.0. SIBUR and the MSU school implemented a joint project to develop a mobile app promoting circular economy.

Pavel Lyakhovich, SIBUR's Managing Director, and Sergei Donskoi, Head of the Ministry of Natural Resources and Environment of Russia, hold a T-shirt made of recycled plastics as part of the Sort It Right project, 2017.

On top of that, SIBUR participates in some environmental initiatives of global renown, including Responsible Care, REACH Regulation, and the European Chemical Industry Council. At Interplastica 2018, SIBUR hosted a round table discussion, signed a number of environmental agreements, and joined Operation Clean Sweep – a PlasticsEurope initiative that aims to prevent the loss of polymer particles during production and logistics processes. "SIBUR's initiative to implement the circular economy principles deserves respect and all-round support. Not long ago, our specialists attended a SIBUR event and saw for themselves how the company was implementing these principles in practice," commented Alexander Ladan, Director of Neo-Pack.

"Plastics are all but fully recyclable. The circular economy is about creating a cycle and reusing, not about abandoning plastics," added Maxim Remchukov.