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Image Source: Wikimedia Commons. November 23, 2017. The scrap metal junkyard of Steenhuis Recycling B.V. Photo Credit: Donald Trung. [https://commons.wikimedia.org/wiki/File:Scrap_metal_junk_yard_Winschoten_\(2017\)_03.jpg](https://commons.wikimedia.org/wiki/File:Scrap_metal_junk_yard_Winschoten_(2017)_03.jpg)



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Transition to a circular economy in the Russian Federation

A 10-billion rubles (150-million euros) federal project aiming to facilitate the transition of the Russian economy to a circular model will be launched in Russia in 2022. The aim is to achieve 100% sorting of municipal solid waste volume and reducing the volume of waste sent to landfills by 50%¹ by 2030. Six areas of intervention are foreseen, notably reduction of waste generation, creation of infrastructure for the collection of waste for recycling, stimulation of the secondary resource exploitation, limiting the use of non-environmentally friendly packaging, creation of a traceability

system for the movement of waste, and improving environmental education. The circular economy concept emphasizes the need to use raw and used materials in a closed loop that includes both consumption and production. To this end, such a loop can be closed within the framework of eco-industrial structures (i.e., parks, chains, etc.). The basis of this closed-loop economy is a consciously organized and regulated circulation of raw materials, products and waste, acting as the main force for reducing the expansion of landfills and dumps in Russia. The aim is to achieve the use of 40% of secondary resources in construction, 50% in agriculture and 34% in industry by 2030, where the targets are comparable to those set in countries like Germany (68% of waste involved in the secondary circulation), and Sweden (49%).¹

According to 2020 data, 6.5 billion tons of waste comes from subsoil use in Russia. To maximize the use of natural raw materials with minimal environmental impact, the following steps are considered: creation of drainless technological systems based on newly introduced and promising methods for water purification systems from dissolved and suspended waste; development and implementation of recycling systems; creation of new technological processes for the production of traditional types of products with reduced waste generation; creation of closed eco-industrial structures of raw material, product and waste flows.²

Waste stream analysis show that electronic waste is one of the fastest growing and, therefore, problematic types

of waste (3-4% annual increase). The main reason for this increase is the obsolescence of old equipment and the emergence of new, more advanced and prestigious household appliances and electronics. To this end, and according to Chinese experts, the extraction of gold, silver, palladium and platinum from existing devices is 13 times more efficient compared to mining.

In Russia, product life cycle monitoring has been carried out by the federal state information system since 2022. A digital platform was developed by the state corporation Rosatom within the federal project “Infrastructure for waste management of I-II hazard classes” for the national project on ecology. The platform will allow record keeping and control over the entire life cycle of such waste - from generation to disposal or recycling. This platform links together almost 50,000 actors, notably, waste generators from various industries, transport companies, waste recycling enterprises and all interested federal executive authorities (Ministry of Natural Resources, Rosprirodnadzor, FAS, Ministry of Transport).

This federal project also involves the creation of seven eco-industrial parks - special production and technical complexes aimed at recycling industrial waste and transforming them into secondary products. These enterprises will produce metal hydroxides, salts, chlorides and sulfates. For example, an eco-industrial park will be established in the Kurgan region on the site of the former Shchuchye chemical waste disposal facility. Water and gas supply systems, the

analytical laboratory, and parts of the buildings from the old enterprise will be used in this new complex. The work of the enterprise involves closed technological cycles and maximum observance of the waste-free production principle.

The Neva ultra-modern Municipal Solid Waste (MSW) recycling complex has been operating in Solnechnogorsk (Moscow Region) since 2022. Sorting and transportation of MSW for recycling are carried out automatically. An important mission of this project is the elimination of an old garbage dump located next to the enterprise.

An eco-industrial park near the village of Nikolskoye, in the Lipetsk Region, has also been planned for. Household waste from residents of Lipetsk and the Lipetsk Region is currently disposed of at the Tsentrolit landfill, which has reached its capacity. This landfill is the cause of numerous appeals and complaints from residents of neighboring houses. The landfill is to be gradually decommissioned and reclaimed in the coming years. The new eco-industrial facility will make it possible to not only to dispose of waste, but also to recycle it. In addition, modern technologies will be applied in the construction and operation of the eco-industrial park. For instance, the isolation of the landfill body with a geomembrane; a system of leachate collecting and cleaning; and briquetting in a film. All these measures will eliminate the negative impact on the environment and public health.

Another project under construction is a polymer recycling plant, which will be put into operation near Yegoryevsk, Moscow Region, by December 2022. It will become the largest polymer recycling plant in Russia. Its production facilities will allow recycling of up to 60 thousand tons of plastic waste per year. The plant's products - flakes and granules obtained from plastic recycling - will serve as raw materials for the production of food-grade plastic, film, automotive components and building materials. The enterprise will also provide 212 new jobs for the residents of the region.

Environmental education is one of the directions taken by the "Circular Economy" federal project. For example, a joint project has been designed between the Plekhanov Russian University of Economics and the public law company Russian Environmental Operator (REO) on the development and implementation of educational programs for undergraduate and graduate students in Circular Economy (2021).³ REO was established through a Presidential Decree on January 14, 2019. Its key task is to form an integrated MSW management system in Russia. The company not only made a significant contribution to the development of educational programs, it also created a basis through which students will be able to undergo internships, gain practical skills in the field of MSW management, among others. The joint project will allow the training a cohort of specialists whose knowledge and skills will contribute to the transition to a circular economy in Russia. Students will also study green finance, public administration and state support in the field of waste management,

tariff regulation for the removal of MSW, etc. In addition, investors and industrial partners of REO will be able to make requests for the Situation Centre to develop projects in the field of the circular economy. The university will develop information platforms to control waste management in the field of housing and communal services.

In general, the transition to a circular economy is possible only through the combined efforts of businesses, the public and all levels of government. It is also important to expand public education to encourage responsible behavior of consumers in terms of waste separation and reduction of the use of single-use packaging (e.g., in cafeterias and shops). In addition, it is necessary to offer sustainable packaging alternatives, reusable bags with attractive designs and biodegradable bags, among others.

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