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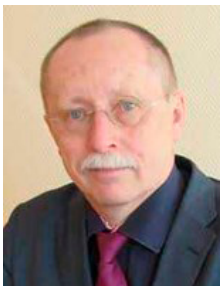

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Abstract

In Russia, the term 'circular economy' appeared relatively recently and most often a circular economy means a waste recycling system. Circular economy is a socio-technical system, which contains technical, economic and social subsystems. St. Petersburg is a city of federal significance, which ranks second in Russia after Moscow in terms of population. The population is more than five million people. Circular economy stakeholders on a federal and regional levels, networks and associates in circular economy are presented. Big international events in circular economy and related topics in St. Petersburg are reviewed. Legislative framework, four cases and international projects in the field of circular economy and related topics in St. Petersburg are analysed. Policy recommendations are made. The importance of international cooperation programmes can act as instruments to support emerging innovation business in the field of circular economy, increases substantially. Significant attention should be paid to the social subsystem of the circular economy.

Key words: St. Petersburg, Russia, circular economy, sustainable development, renewable energy sources, socio-technical system

1. Introduction

Circular economy is a new vector of global sustainable development. In Russia, the term 'circular economy' appeared relatively recently and today there are several variants of translation. Interest to the circular economy is growing, not only the number of mentions in publications has increased, but also individual articles devoted to foreign experience and the possibilities of its application in Russia have been published. However, in Russia, most often a circular economy means a waste recycling system. In connection with the adoption on December 25, 2018 of amendments to the Federal Law 'On Production and Consumption Waste' of June 24, 1998 N 89, the Russian Federation is transitioning to a new system for handling solid municipal waste from January 1, 2019. In this regard, the main attention of the federal and regional authorities in this area is aimed at creating an effective system for the separate collection and accumulation of waste, while the issues of further involvement of these wastes in the production process are not given due attention. The overall management of this task is carried out by the Ministry of Natural Resources and Environment of the Russian Federation, which created for this purpose an interdepartmental working group on May 8, 2021. Corresponding measures are being implemented at the regional level as well. In St. Petersburg, such measures are concentrated around the Territorial Scheme for the Management of Production and Consumption Waste, which was approved by the order of the Committee for the Improvement of St. Petersburg and around the creation of a Regional Operator for waste management that is approved by the Committee for Natural Resources, Environmental Protection and Environmental Safety of St. Petersburg.

In 2016, the Russian Federation signed and in 2019 adopted the Paris Climate Agreement, within the framework of which, in November 2020, the President of the Russian Federation issued a decree on reducing greenhouse gas emissions. The year 2017 was declared the Year of Ecology in Russia. The purpose of this decision is to draw attention to the problematic issues existing in the environmental sphere and to improve the state of environmental safety of the country.

As a result of the year of ecology, focus attention, state interests, expert discussion shifted towards environmental problems. In 2017, more than 33,000 events were held in the country, in which about 22 million participants took part. Changes have been made to a number of federal laws.

Currently, the above topics are considered by regional and federal authorities as separate ones. Accordingly, these topics are managed separately, and their goals, objectives and activities are not coordinated in any way. At the same time, building an effective circular economy is a complex problem that largely intersects with the problems of ecology and environment protection, resource conservation, bio- and green low-carbon economy and mitigation to climate change.

The main aim of the current report is to demonstrate that there is an area of intersection between waste management, energy efficiency and environmental protection. The joint development of these issues will allow obtaining a synergy, which will give an additional impetus to the development of a circular economy.

Circular economy is a socio-technical system, which contains technical, economic and social subsystems. The technical subsystem should provide equipment and technologies for recycling production and consumption waste in a row material for further use in production process. The economic subsystem must provide financial and organisational frameworks for generating profits from recycling. The social subsystem should provide non-economic motivation of the stakeholders of both waste collection and the use of recycling results. This system is based on a normative base that contains of interconnected federal and regional documents. These documents should cover all levels of management, from the strategy of the federal level to issues of stimulating the activities of concrete enterprises involved in the circular economy. At the same time, there are no approved normative documents that would directly regulate the issues of circular economy and provide the necessary tools for its development in Russia.

This report contains four parts and two appendices. The first part is devoted to the general approaches used in Russia for analysis and synthesis of the circular economy as a system. The second part shows how the general principles of circular economy are implemented in St. Petersburg. Examples are given of the implementation of various aspects of the circular economy in the collection and sorting of household, industrial and hazardous waste, as well as in the implementation of complex energy saving projects. The third part is devoted to analysis of existing normative base of a circular economy as a system, which is necessary to provide effectiveness of this system. Based on results of conducted analysis, policy recommendations for federal and regional authorities have been formulated.

2. The circular economy in Russia

The concept of the transition of the Russian Federation to sustainable development was adopted in 1996. The Concept of Long-Term Socio-Economic Development of the Russian Federation from 2008 traces the trends towards a circular economy. The document sets out strategic goals in the field of environmental policy for the period up to 2030.

The main objectives of this direction are: the development of secondary production, the creation of ecological technology parks for sorting, recycling or reuse of waste, and reducing the number of landfills. It is planned to reduce the volume of disposal of household waste and increase the level of disposal.

Experts identify several factors contributing to the development of a circular economy in Russia:

- availability of renewable energy sources;
- a large area of forests on the territory of Russia;
- the growth of the use of industrial environmental technologies; and
- development of recycling technologies and the sharing economy.

However, there are also factors hindering development: slow introduction of innovations, state support of extractive industries, institutional factors, et cetera.

The circular economy is based on changing the system of production and consumption, creating solutions that save resources, rethinking the concept of 'resources' and its place in the economic and production system.

The principles of the circular economy are aimed at the economic, social, environmental well-being of people.

Circular economy principles are as follows: changes in the design and use of products that contribute to an increase in their life cycle, reducing emissions in supply chains, return of energy losses inherent in the product, and conservation of carbon in soils.

The 2030 Agenda for Sustainable Development in Russia (Agenda 2030; which includes the Sustainable Development Goals SDGs). Circular economy principles will enable the achievement of several SDGs: SDG 2: Zero hunger, SDG 6: Clean water and sanitation, SDG 7: Affordable and clean energy, SDG 8: Decent work and economic growth, SDG 11: Sustainable cities and communities, SDG 12: Responsible consumption and production, SDG 13: Climate action, SDG 14: Life below water, SDG 15: Life on land, and SDG 17: Partnerships for the goals.

There is a national project 'Ecology', started in 2019, the goal of which is to reduce the amount of waste entering landfills. The Accounts Chamber of the Russian Federation notes that the national project has not worked out the issues of climate change, restoration of soil quality, and measures for environmentally safe waste disposal are insufficient. Within the framework of the 'garbage reform' project, it is planned to build or reconstruct 868 'garbage' objects, 700 of them are new.

According to the state report on the state and protection of the environment, the specific indicator of waste generation per GDP in 2020 was 78.4 tonnes per 1 million Russian Roubles, which is 33% higher than in 2015. The circular approach to production will help solve the problem of the high carbon intensity of the economy, in particular the energy sector, which, according to the Federal State Statistics Service (RosStat), accounts for almost 80% of all greenhouse gas emissions.

Since 2010, the specific indicator of total waste generation per unit of GDP has increased by about 20%, i.e. there is a tendency of 'anti-decoupling' at the macro level, when trends in the consumption of natural resources and the production of pollution are ahead of GDP. This tendency is characteristic of linear economics, it prevents the formation of circular economy.

Currently, RosStat is carrying out a large coordination interdepartmental work to adapt the SDGs to Russian statistics. The department has created a special platform for the SDGs. A significant part of the global indicators received their own interpretation.

Circular economy indicators are currently being developed jointly by RosStat and the Analytical Center for the Government of the Russian Federation.

The Russian volume of spending on environmental protection is 0.8-0.9% of GDP in 2019-2020, and investments in fixed assets aimed at environmental protection – about 1% of all types of economic activity in Russia.

3. The circular economy in St. Petersburg

St. Petersburg is a city of federal significance, which ranks second in Russia after Moscow in terms of population. It is the largest administrative, industrial, cultural, scientific centre of the North-Western Federal District and the Leningrad Region, an important transport hub. It is located in the north-west of the European part of Russia. In the west, it is washed by the Gulf of Finland of the Baltic Sea. The area is 1,400 square kilometres. The population is more than five million people. Administrative-territorial division: 18 districts, including 81 municipal districts, 9 cities, and 21 settlements (see Appendix 1 and Appendix 2).

Investments in environmental protection and commissioning of facilities amounted to RUB 6,295.1 million in 2019 while the GDP of St. Petersburg amounted to RUB 5,125.0 billion in 2019.

3.1. Four illustrative cases in the circular economy

Currently in Russia, there is no general interpretation of the term 'circular economy' which is equally understood by all experts. In this regard, four cases below describe examples of various aspects of the circular economy with a broad interpretation of this term.

Case 1 is devoted to the system of waste management, Case 2 is connected to disposal of salt as a hazardous waste, Case 3 is connected to heat recovery technology and Case 4 demonstrates a complex solution for resource conservation within remote facilities located in cold climate.

Case 1: In 2011, the Avtopark Spectrans No 1 association (http://spest1.ru/deyatelnost/pererabotka) built and put into operation an automated waste sorting complex operating on the principles of resource saving in St. Petersburg for the first time in the country. This useful experience was also digitally developed in 2020 in St. Petersburg at a new production site. For the first time in Russian practice, the Autopark Spectrans No. 1 company has implemented a robotic waste sorting technology with a capacity of 150,000 tonnes per year.

Case 2: The process of desalination of sea and groundwater is a difficult problem of disposal of salt as a hazardous waste, which is generated in large quantities. In St. Petersburg, the specialists of the TWELL (http://www.twellgroup.ru/mmsc) company, guided by the principles of circular economy, developed and patented (March 2008) the formulation of heavy-duty composite concrete. The working name of the composite is magnesia-mineral-salt composition (MMSC). The technology is not only an effective way to dispose the salt waste, but also an excellent building material. Super concrete based on MMSC is not afraid of sea water and can be used in the construction of marine, port facilities, alluvial areas. In addition, highly toxic chemical and even low-level liquid radioactive waste can be packaged and safely stored in the MMSC matrix. Appropriate tests have been carried out.

Case 3: The Russian academician has developed a unique technology for the production of Polarsol heat exchangers. The technology is an environmentally friendly and economically viable solution for heat recovery purposes. The versatile Polarsol technology allows the simultaneous use of thermal energy from the sun, thermal energy from air, water and earth, as well as from waste water (low-potential heat). Polarsol makes it easy to convert thermal energy into cold (relevant for hot regions and summer months in the northern hemisphere of the planet), closing the circulation of heat / cold in industrial and residential premises. This is the cheapest kWh of heat / cold in the world: at the cost of 1 kW of electrical energy, the output is about 5-6 kW of heat / cold.

Case 4: The resort Krasnoe Ozero, located 95 km from St. Petersburg, has an autonomous power supply system for remote facilities located in cold climates, called Infinite Freedom (https://infinitefreedom.ru). The hotel building with the system of autonomous electricity, water, heating for 22 rooms on 600 square metres. At the moment, the managers of this project have an idea to implement the system in another building.

The first case demonstrates an example of the long-term activity of the authorities of St. Petersburg to

develop a regional system for the collection and separation of industrial and household waste in order to involve them in industrial circulation. Now, this system is actively developing as part of the all-Russian system.

The second and third cases demonstrate inextricable link between innovation and recycling: efficient recycling requires the development and use of innovative technologies that accompany the recycling process.

The last case shows that joint applying of different aspects of circular economy principles and energy saving for a complex object can provide synergy and increase efficiency of applied solutions.

3.2. The sharing economy in St. Petersburg

New circular economy business models are based on second-hand markets, product service systems (PSS) and the local sharing economy. In St. Petersburg with a population of more than five million people, especially among young people, the sharing economy has become very popular. Car sharing, consumer-to-consumer (C2C), self-employed services (P2P) and rental businesses are developing very quickly in St. Petersburg.

Table 1. Main sharing economy platforms in St. Petersburg

Carsharing	Yandex Drive, Delimobil, Belka Car
Carpulling	BlaBlaCar
Consumer-to-consumer (C2C)	Avito, Youla
Self-employed services (P2P)	You Do, Profi.ru
Individual mobility - scooters, bicycles	Whoosh, Samocat, Urent, Smart Bike, Bolt
Housing sharing	Cian, Avito, AirBnB
Office sharing	Regus, Workki, SOK, Wework, Deworkacy
Crowdfunding	Planeta.ru, Boomstarter
Rental business	Next2U.ru, RentMania, Avito

The IKEA company, whose shopping centres are located in large cities of Russia, accepts old furniture, textiles (towels, bed linen and dressing gowns) and baby changing tables and cribs, recycles them and gives new life to things. Customers hand over old furniture for recycling and receive a coupon from 1,000 to 5,000 Russian Roubles (depending on the category of furniture) for purchases at IKEA.

New life to old things (under recycle or trade-in programmes) is also given by H&M, Monki, Rendez-Vous, Spasibo! containers and stores, Lepta charity foundation, Vtoroe dyhanie Foundation (UNIQLO, Oysho, Zara, Bershka). Clothes and other things can be donated in the sharing groups Otdam v dar Peterburg or on the DaryDar portal.

Household appliances are accepted by Ecotaxi, Zelenka Project, ArtEko Export Service, Pererabotkinskaya Eco-service, Vtorichka raw materials collection point, separate collection stations, as well as large household appliances stores.

Sharing economy is transforming not only large industries, but also the usual rituals, and the way of life in a big city. Today people have begun to think about reasonable consumption.

4. The legislative framework of the circular economy

4.1. Russia

Russia is implementing the provisions of the Paris Agreement on Climate of December 12, 2015, adopted by the 21st session of the Conference of the Parties to the UN Framework Convention on Climate Change. The Paris Climate Agreement was signed on April 22, 2016 in accordance with Government Decree No. 670-r of April 14, 2016.

The law introduces the concept of 'target indicator for reducing greenhouse gas emissions', which will be set by the government taking into account the absorbing capacity of forests and other ecosystems, as well as the need to ensure sustainable and balanced socio-economic development of the country (Paragraph 1, Article 6). At the intergovernmental negotiations on the adoption of the Paris Agreement in 2015, Russia achieved the inclusion of a separate article in the agreement on the contribution of forests to CO2 absorption.

Federal Law No. 89-FZ 'On Production and Consumption Waste', Paragraph 2 of Article 3: "*The directions of state policy in the field of waste management are priority in the following sequence: maximum use of raw materials; prevention of waste; reduction of waste generation and reduction of the hazard class of waste in the sources of their generation; waste treatment; recycling; waste neutralization*." Designing products with a long-life cycle without waste and pollution.

The Ministry of Natural Resources and the Environment of the Russian Federation 'On topical issues of the implementation of the extended producer responsibility (EPR), importers of goods': EPR is aimed at controlling packaging and increasing the percentage of its processing, despite the fact that "*waste disposal means the use of waste for the production of goods (products), performance of work, rendering services, including the reuse of waste, including the reuse of waste for its intended purpose (recycling), their return to the production cycle after appropriate preparation (regeneration), as well as the extraction of useful components for their reuse (recovery)*."

Federal Law No. 89-FZ, Paragraph 2 of Article 3:"*The directions of state policy in the field of waste management are priority in the following sequence: maximum use of raw materials and materials; prevention of waste generation; reduction of waste generation and reduction of the hazard class of waste in the sources of their formation; waste treatment; waste disposal; waste disposal.*"

Federal Law No. 296-FZ of July 2, 2021 'On Limiting Greenhouse Gas Emissions' defines the basis for legal regulation of economic and other activities resulting in greenhouse gas emissions (gaseous substances of natural or anthropogenic origin that absorb and re-emit infrared radiation) and aims to create conditions for the sustainable and balanced development of the Russian economy while lowering the level of greenhouse gas emissions.

We can state that at the moment in Russia a number of laws have been adopted that, in their most general form, establish strategic goals and indicators of their achievement for a number of areas that are related to the circular economy (climate change mitigation, energy efficiency, waste management, et cetera.). However, goals at the regional or industry level have not been established, and the mechanisms for achieving these goals have not been worked out in details.

When discussing the formation of such mechanisms at the sectoral level, as a rule, the main attention is paid to the issues of finding funds necessary for organising recycling. For example, the automotive industry uses a recycling levy that car manufacturers have to pay. It is assumed that the collected funds will be used for the recycling of old cars and the involvement of the results of this utilisation in industrial circulation. In practice, this levy is seen as an additional tax that increases the cost of cars, but its use for recycling cannot be traced.

Another example can be the area of waste collection and processing, in which measures for the technical re-equipment of waste collection and processing points are being actively implemented. At the same time, there are no regulatory documents that form the economic component of the system and determine its main business processes. Today, the only economic regulator of the collection and disposal of waste are tariffs for their removal, which is a necessary but insufficient condition for the effective operation of the economic mechanism.

4.2. St. Petersburg

The Law of St. Petersburg 'On the Strategy of Social and Economic Development of St. Petersburg for the Period up to 2035': "*The transition to a circular economy will contribute to the achievement of the general goal of Strategy 2035 - ensuring a stable improvement in the quality of life of citizens and sustainable development of the city*".

There are governmental documents at the city level:

1. The Concept of the development of the territorial system of environmental monitoring in the territory of St. Petersburg for the period up to 2030.
2. Environmental policy of St. Petersburg until 2030 (http://www.infoeco.ru/index.php?id=110).
3. Resolution of the Government of St. Petersburg dated June 17, 2014 No. 487 (as revised on March 26, 2021) 'On the state programme of St. Petersburg landscaping and environmental protection in St. Petersburg'.

The Strategy of the socio-economic development of St. Petersburg for 2035 includes 'Development of innovative and technological activities in St. Petersburg' (priority 'City of innovations') and 'Increasing the level of living comfort in St. Petersburg' (priority 'Comfortable city'). These priorities meet the principles of a modern smart city, environmental economic development of St. Petersburg until 2035, as well as strategic directions: ensuring sustainable economic growth (industry), improving the quality of the urban environment (the system of communal infrastructure and energy, environmental safety and landscaping, solving environmental problems). Energy and energy saving priority directions for the development of science and technology in St. Petersburg are included in the Resolution of the Government of St. Petersburg dated 08.08.2011 No. 1138.

The above allows us to state that the regulatory and legal framework for circular economy in St. Petersburg is a kind of regional reflection of the federal level: general goals and indicators have been approved, but concrete mechanisms for their achievement have not been worked out.

Examples of such mechanisms that existed in the past in the Soviet Union and are now actively used in the EU countries (for example, in Finland) are the stimulation of the recycling of glass containers in the production of drinks, the collection of aluminium cans and plastic bottles from the population at the commercial basis, collection of waste paper, etc. In modern Russia and St. Petersburg, these mechanisms are very rare. To create them, a detailed analysis of the best foreign practices and their adaptation to Russian and St. Petersburg conditions is required.

5. Policy recommendations

In Russia, the principles of a circular economy are accepted and supported by the expert community, but they are not directly formulated in regulations as binding. In order to give an additional impetus to the development of the circular economy in Russia, it is necessary to adopt appropriate regulatory documents at the federal and regional levels. These documents should create the foundations of the economic subsystem of the circular economy in order to involve production and consumption waste in industrial circulation and create conditions for a profitable business for all participants of this process.

The creation of effective economic subsystem for recycling, in turn, will stimulate further development of technical and technological innovations for circular economy, which are emerging or exist now but are not demanded by the market. In these conditions, the importance of international cooperation programmes, such as ENI Cross-Border Cooperation and Interreg programmes, which can act as instruments to support emerging innovation business in the field of circular economy, increases substantially. Regional authorities should consider applications related to circular economy, applied for these programmes as priority for St. Petersburg.

In the formation and development of this market, significant attention should be paid to the social subsystem of the circular economy. This subsystem should be based on methods of non-economic motivation of stakeholders to provide the demand of the circular technologies and products. The most open to the perception of these methods are young people (schoolchildren, students, young professionals and aspiring entrepreneurs). It is necessary the further development of interaction with this target group in relation to the problems of the circulation economy: integration of circular economy

topics in bachelors and masters education in universities in St. Petersburg, circular economy related events in the Federal Center Sirius and its regional branch Academy of Talents in St. Petersburg, target events realised by regional stakeholders.

For the further development of circular economy in Russia in general and in St. Petersburg in particular, it is necessary to improve economic mechanisms for supporting circular economy using tax preferences and subsidising companies directly involved in circular economy, as well as using the administrative resources of regional authorities to stimulate the introduction of circular economy projects at regional enterprises. Best practices of neighbouring countries differ from Russia in these topics should be studied. To use this best practice for further development, it is necessary to conduct comparative analysis of the used approaches and achieved results. In turn, to conduct such a comparative analysis, it is necessary to harmonise approaches and management methods, accepted in both sides of the border including statistical indicators used for evaluation of the level of development of circular economy.

The above allows us to outline the directions of joint work of Russian and foreign organisations in the circular economy development.

References

BBC1 (2021). Business in biotechnology and circular economy. https://biocircularbusiness.com. Retrieved 10 December 2021.

BCEF (2021). Балтийский форум экономики замкнутого цикла. http://ru.bcef.info. Retrieved 14 December 2021.

Bellona (2021). Как Россия переходит к циклической экономике. Цифры. Факты. Мнения. https://bellona.ru/2021/10/20/ekonomika-budushhego-teper-i-v-rossii/. Retrieved 29 November 2021.

Bobylev S. N. and Solovyeva S. V. (2020). Circular economy and its indicators for Russia. The world of new economy. https://wne.fa.ru/jour/article/view/271. Retrieved 29 November 2021.

Circular Economy: possible reality or unattainable future? (2021). http://ecopeterburg.ru/wp-content/uploads/2020/07/OS-СПЕЦВЫПУСК_ENG.pdf. Retrieved 29 November 2021.

Davydova Angelina (2021). У российских лесов выявлены резервы. Коммерсантъ. 17 February 2021. https://www.kommersant.ru/doc/4693543. Retrieved 29 November 2021.

Delchet-Cochet Karen (2020). Circular Economy: From Waste Reduction to Value Creation. Wiley-ISTE.

EcoProfi (2021). Циркулярная экономика на уровне города. Сборник статей. 2021. https://www.ecoprofi.info/docs/circular_economy_at_the_city_level_ru_2021.pdf. Retrieved 10 December 2021.

EcoSairila (2021). Circular economy centre https://ecosairila.fi/en/home/. Retrieved 10 December 2021.

Game of Goals (2021). https://gog.greenmobility.ru. Retrieved 14 December 2021.

Green Mobility Handbook (2019). International Centre for Social and Economic Research "Leontief Centre". http://mobility.leontief-centre.ru/65/. Retrieved 10 December 2021.

IKEA (2021). https://www.ikea.com/ru/ru/this-is-ikea/sustainable-everyday/circular-concept/furniture-take-back-pub4ca978c0. Retrieved 10 December 2021.

InfoEco (2021). Комитет по природопользованию, охране окружающей среды и обеспечению экологической безопасности. https://www.gov.spb.ru/gov/otrasl/ecology/current_activities/cooperation_information/. Retrieved 10 December 2021.

International Green Mobility Award (2021). https://www.greenmobilityaward.com. Retrieved 10 December 2021.

Kalchenko Olga, Evseeva Svetlana, Evseeva Oksana and Plis Kristina (2019). Circular economy for the energy transition in Saint Petersburg, Russia. https://doi.org/10.1051/e3sconf/201911002030. Retrieved 29 November 2021.

Laws of St. Petersburg (2021). Законы Санкт-Петербурга. https://www.gov.spb.ru/law/?d&nd=888800018. Retrieved 14 December 2021.

Pathways to Net Zero: The Impact of Clean Energy Research. Elsevier. https://www.elsevier.com/__data/assets/pdf_file/0006/1214979/net-zero-2021.pdf. Retrieved 14 December 2021.

PetroStat (2021). https://petrostat.gks.ru/storage/mediabank/nAWskJYb/Санкт-Петербург%20в%202019%20году.%20Статистический%20ежегодник.pdf. Retrieved 10 December 2021.

RosStat (2021). https://rosstat.gov.ru/folder/11194. Retrieved 10 December 2021.

SDGs (2020). Цели устойчивого развития в Российской Федерации. https://rosstat.gov.ru/storage/mediabank/ERqpLbXV/Цели%20устойчивого%20развития%20в%20Российской%20Федерации,%202020%20-%20сборник.pdf. Retrieved 10 December 2021.

Sharing Economy (2021). Экономика совместного потребления в России 2020. Испытание на прочность. https://raec.ru/activity/analytics/9845/. Retrieved 10 December 2021.

Strategic Forum (2021). XIX ANNUAL STRATEGIC PLANNING LEADERS FORUM OF THE REGIONS AND CITIES OF RUSSIA. https://forumstrategov.ru/?lang=eng. Retrieved 10 December 2021.

Sustainable Development Russia (2020). Добровольный национальный обзор хода осуществления Повестки дня в области устойчивого развития на период до 2030 года. Аналитический центр при Правительстве Российской Федерации. https://sustainabledevelopment.un.org/content/documents/26421VNR_2020_Russia_Report_Russian.pdf. Retrieved 10 December 2021.

Appendices

Appendix 1. Some stakeholders of circular economy in Russia and St. Petersburg

Federal level

Stakeholder	Involvement/functions	Links
Ministry of Natural Resources and Environment of the Russian Federation	Overall management of the circular economy issues. Creation of the federal system for the separate collection and accumulation of waste.	https://www.mnr.gov.ru/
Ministry of Economic Development of the Russian Federation	Development of strategic documents to achieve the national development goals of the Russian Federation.	https://www.economy.gov.ru/

Regional level

Stakeholder	Involvement/functions	Links
Committee for Nature Use, Environmental Protection, and Ecological Safety of St. Petersburg	Management of municipal solid waste management reform. Coordination of ENI CBC and Interreg Baltic Sea Region (BSR) projects in circular economy and related topics.	https://www.gov.spb.ru/gov/otrasl/ecology/
Committee for the Improvement of St. Petersburg	Development the territorial scheme for the management of production and consumption waste.	https://www.gov.spb.ru/gov/otrasl/blago/
Committee for Industrial Policy, Innovations and Trade of St. Petersburg	Support of innovations in the field of circular economy.	https://cipit.gov.spb.ru/
Committee for Energy and Engineering Support of St. Petersburg	Overall management of energy sector of St. Petersburg including renewable energy and energy efficiency.	https://www.gov.spb.ru/gov/otrasl/ingen/
St. Petersburg State budgetary institution Centre of Energy Saving	Monitoring of regional system for energy audits. Target measures for promotion of resources saving behaviour among the youth.	https://gbuce.ru/
International Centre for Social and Economic Research (Leontief Centre)	Russian National Subcommittee of the BSR Interreg programme (promotion of circular economy among the Interreg priorities).	https://leontief-centre.ru/

Networks and associates

Stakeholder	Involvement/functions	Links
Environmental Partnership Association (AsEP)	Interaction between environmental entrepreneurship and industrial enterprises in order to introduce modern environmental technologies and services.	https://www.ecoprofi.info/ru/asep
All-Russian Society for the Protection of Nature (VOOP)	The oldest public environmental organisation in Russia. Organisation of a number of all-Russian environmental projects.	http://voop-rf.ru

Stakeholder	Involvement/functions	Links
Russian Association of Regional Energy Saving Centres	Coordination of activities for improvement the performance of regional centres and the successful implementation of state policy in the field of energy saving and energy efficiency in the territory of the Russian Federation.	n/a
St. Petersburg Cleantech Cluster for urban environment	Participation in ENI CBC and Interreg projects with networking as main input.	https://spbcleantechcluster.nethouse.ru/

Large international events in circular economy and related themes in St. Petersburg

Stakeholder	Involvement/functions	Links
All-Russian Forum (Strategic Planning in the Regions and Cities of Russia)	Strategy development of territories including circular economy themes (annual event).	https://forumstrategov.ru/
St. Petersburg International Economic Forum	A renowned international forum for discussion of best practices and issues on a wide range of topics, including circular economics (annual event).	https://forumspb.com/
International Forum (Ecology of the Big City)	The purpose of the Forum is to promote and introduce innovative environmental protection equipment and technologies in Russia that contribute to saving of natural resources, strengthening environmental safety and improving the quality of life of the population in large cities.	https://ecology.expoforum.ru/
Baltic Circular Economy Forum 2021	The first relatively big matchmaking event in Russia focused on circular economy, sustainable development and green energy solutions	http://www.bcef.info/
International Environmental Forum 'Baltic Sea Day' 2021	The event continues a number of big international forums devoted to discussion of environmental challenges addressing climate change and the need for sustainable management of water basins and other topical issues in the Baltic Sea Region.	https://vasab.org/event/international-environmental-forum-baltic-sea-day-2021/
Nordic Weeks 2021 – Ecology	Joint events of the Nordic countries in the North-West of Russia	https://nordicweeks.ru

Appendix 2. Some international projects in the field of circular economy and related themes in St. Petersburg

Project acronym	Project full name	Link
	South-East Finland – Russia Cross Border Cooperation Programme 2014-2020	
BBC1	Business in Biotechnology and Circular Economy: This project promotes the opportunities for bio-economy and circular economy companies, research and development organisations, and educational institutions in Southeast Finland and Northwest Russia to make use of the EcoSairila development platform for collaboration in the border zone.	https://biocircularbusiness.com
Cata3Pult	Finnish Russian public-private-partnerships (PPP) catalysing new green business.	https://www.ecoprofi.info/ru/cata3pult
Cool4City	Clean green city by smart waste management.	https://gnf.fi/en/cool4city/
EnviTox	Environmental impact of the Krasny Bor toxic waste landfill.	http://envitox.spb.ru
Green ReMark	Green energy regional markets development.	https://www.greenremark.com/
Green InterTraffic	Enhancing environmental safety of road intertraffic in the border areas of Russia and Finland applying innovation solutions.	https://greenintertraffic.ru/
LaLaPeTe	Upcycling innovations and environmental awareness.	http://www.lalapete.info
RAINMAN	Towards higher adaptive capacity in urban water management.	http://projects.gtk.fi/rainman/project/
SHEM-WP	Innovative Natural Solutions of Shungite & EM – technology for Water Purification.	http://helcom.ru/projects/shem_wp
StartUpConnect	Facilitation of start-up, entrepreneurship and SME cooperation in the cross border region.	http://startupconnect.info
	Interreg Baltic Sea Region programme 2014-2020	
AREA21 AREA21+action	Baltic Smart City Areas for the 21st Century in action.	https://area21-project.eu
BIS project Baltic Industrial Symbiosis	Baltic Industrial Symbiosis: The aim of the project is to combine companies' efforts in using wastes of one partner as a resource for others. The project stipulates for peer-to-peer exchange practices between industrial symbiosis managers. It develops new business and financial models. Council for industrial symbiosis is created within the project as a platform for dialogue and experience exchange. Participants (companies): Danone Russia, Fazer group, Bushe, Münhell, Severnaya Krevetka (Northern Shrimp), Kronidov, NORD PULP, Tosnensky Mixed Feed Factory, Meat processing plant Tosnenskiy, BIOCAD, Karelprirodresurs, Trading and entertainment complex Grand Canyon, Smart SREDA, Enviro.	https://tyreman.ru/bis_en

Project acronym	Project full name	Link
BSR Water Project Platform	Platform on integrated water co-operation.	https://www.bsrwater.eu
CAMS Platform	Climate Adaptation and Mitigation Synergies in Energy Efficiency Projects.	https://www.trea.ee/cams/
Circular PP	Circular Public Procurement	http://circularpp.eu
EcoDesign Circle EcoDesign Circle 4.0	Circular Design as a driver of innovation in the Baltic Sea Region.	https://www.ecodesigncircle.eu
LUCIA	Lighting the Baltic Sea Region.	https://lucia-project.eu
Estonia-Russia Cross Border Cooperation Programme 2014-2020		
NarvaWatMan	Water Management of the Narva River: harmonization and sustention.	https://www.narvawatman.com
Nordic Council of Ministers		
Green Mobility	Towards Clean, Healthy and Accessible Environment. The project unites the cities and experts, who implement innovative projects and sustainable development strategies aimed to improve urban mobility, reduce greenhouse gas emissions and air pollution, and create comfortable, accessible, attractive and green public spaces.	https://www.greenmobilityaward.com

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