REVISTA ESPACIOS

Recycling as a Special Factor of the Russian Economy Growth in the Formula of Neo-Industrial Development

El reciclaje como factor especial del crecimiento de la economía rusa en la fórmula del desarrollo neo-industrial

Ludmila Aleksandrovna KORMISHKINA 1; Evgeniy Danilovich KORMISHKIN 2; Dmitry Aleksandrovich KOLOSKOV 3

Content

ABSTRACT:

The article is dedicated to the study of recycling as a special factor of economic growth in conditions of the national economy transformation towards a neo-industrial society. The actuality of the problem is due to objective economic laws and leading trends of the modern era (primarily, the strengthening of global manifestations of environmental constraints on economic growth) and, on the other, stagnation in the export-raw material growth model in Russia and slipping of the country's economy into an autonomous recession.
Keywords: sustainable development, environmental damage, resource crisis, recycling

RESUMEN:

El artículo se dedica al estudio del reciclaje como un factor especial de crecimiento económico en las condiciones de transformación de la economía nacional hacia una sociedad neo-industrial. La realidad del problema se debe a las leyes económicas objetivas y a las tendencias principales de la era moderna (principalmente, el fortalecimiento de las manifestaciones globales de las limitaciones medioambientales en el crecimiento económico) y, por otro, el estancamiento en la exportación-materia prima modelo de crecimiento en Rusia y el deslizamiento de la economía del país en una recesión autónoma.
Palabras clave: desarrollo sustentable, daños ambientales, crisis de recursos, reciclaje

1. Introduction

1.1. Introduce the Problem

Against the backdrop of a discussion among leading foreign and Russian scientists and experts in the field of economic study in connection with the causes, nature and consequences of the global financial and economic crisis of 2008-2009, interest in the problems of economic growth is again growing in the scientific community. Currently, the pages of the economic literature discuss issues related to the choice of directions of economic policy and the formation of a new paradigm of socio-economic development, with the quality of economic growth and significant changes in the sources and factors of securing the latter (Grigoriev, 2014; Gubanov, 2012; Jackson, 2013; Stiglitz et al., 2016; Fuchs, 2016; Soros, 2012).

Note that initially the task of transition to a different type of socio-economic development, based on a qualitative growth of the economy, was proclaimed back in the 1970sin the reports to the Club of Rome ("Limits of Growth", "Beyond Growth"). With all the diversity of positions in this discussion, it seems expedient to single out those that justify the need to harmonize the new development model with the general trends and laws of the modern era, "... to be sure that society is on the highway of progress, moves forward, and does not stand still or retreats Back» (Gubanov, 2014). Undoubtedly, the priority among these patterns and trends now belongs to those that are environmental. In this regard, an increasing number of scientists see the essence of real economic growth in the need to resolve the contradiction between the objective need to build up the economic potential that meets the growing material needs and the excessive increase in the economic burden on natural complexes, which is accompanied, on the one hand, by the reduction of non-reproducible natural resources, and, on the other hand, by pollution of the environment and deterioration of the ecological situation (Lvov, 2002; Meadows, 2012).

In conditions when the ecological aspect of life activity, connected with the production relation of society to nature, has acquired imperative significance, a new conceptual approach to economic development is needed that does not oppose the economy to nature, does not alienate them from each other, does not confront them as antagonists, but unites them, Transforms into a mutual unity. In our opinion, this demand is met by the neo-industrial paradigm of modern development, developed by the Russian economic school (Gubanov, 2012; Tatarkin and Andreeva, 2016), based on the fundamental laws of nature and society and integrating the achievements not only of humanitarian but natural sciences.

New industrialization - digital, science-intensive, technetronic - are based on the principles of humanistic development and the dominance of social capital; It is aimed at an active, not passive attitude towards the environmental aspects of social life; On the formation of a new society for which in the first place is the reproduction of man and the quality of life, and not profit. In this sense, from the point of view of the neo-industrial paradigm, not every GDP growth is a boon to society. If it is accompanied by deindustrialization of the productive forces, an increase in the "ecological footprint" and environmental damage, inefficient use of accumulated human potential, etc., then such GDP growth should be considered a destabilizing factor in the development of the national economy (Shafronov, 2015).

By contributing to the discussion outlined above, the authors of this article will try to look at the problem through the prism of recycling as a special factor ensuring the neo-industrial filling of the growth of the national economy for its sustainable socio-economic development (Tabekina and Fedotova, 2013; Malysheva, 2013).

1.2. Explore Importance of the Problem

The current socio-economic situation in Russia, characterized by a prolonged deterioration in the level of economic activity (Shirov and Gusev, 2015), indicates the stagnation of the export-raw material growth of economic growth. We believe that the key problem of this growth model

is insufficient and irrational use of the country's potential for economic development. Monetary and raw material growth of GDP, caused by the inflation of petrodollars and pumping out natural resources, exhausting and polluting the environment, reproduces the disintegration of wildlife and the economy, raw materials and technologies, extracting and processing sectors of industry, short- and long-term interests, monetary and commodity proportions, accumulation and consumption, property and income, science and production, etc. (Amosov, 2016; Gubanov, 2016).

In the designated quality, the positive dynamics of GDP directly indicates the growth of the economy without its development, strengthening the manifestations of the so-called geosphere growth limits, and, ultimately, forms a systemic backwardness of the national economy of Russia.

Under the circumstances, the exit of the Russian economy from a full-scale recession to the path of sustainable development is impossible without abandoning the export-raw material growth model in favor of a new industrialization, one of the distinctive features of which is that "... the aspect of socio-economic development is taken in organic unity with the ecological, and the recycling of resources and their closed economic circulation are included in the corpus of its essential features"(Gubanov, 2014). In the situation of planetary manifestations of environmental constraints on economic growth, in our opinion, only the new industrialization, the immediate result of which is to achieve the technetronic level of development of the productive forces, is able to include internal driving forces, new sources and factors of economic growth and development of Russia, providing a fundamental solution to the above problem of "growth limits".

1.3. Background/Literature Review

In recent decades, the increased attention of the scientific community has been rightly attracted by issues related to promising post- and neo-industrial societies. At the same time, the developers of the new economic paradigm pay special attention to the question of the relationship between economic growth and ecology. This issue is studied by economic schools and trends, among which the most significant, in our opinion, are the following: the theory of "zero" growth, negatively assessing the consequences of high growth rates for the environment (D.Meadows, G.Forrester, G.Malinetsky); theories recognizing the effectiveness of state regulation in overcoming the negative consequences of market functioning for the natural environment (R. Barr, U. Jenks, K. Deutsch); institutional theories of economic growth, which consider the imperfection of the system of state and public institutions as reasons for the growth of environmental problems (Nureev, 2008); "new growth theories", recognizing the compatibility of the latter and measures aimed at protecting the environment (Lukas, 1988; Romer, 1996). In a number of the representative works of the Russian economic school, the issues related to the achievement of the ecological and economic balance (V.Bartov, S.Bobylev, N.Gazizullin, K.Richter, A.Romanov) are comprehensively and thoroughly studied.

At the same time, in the above theories, in fact, the meaning of the just thesis about the "limits of growth" introduced into the scientific revolution in 1972 in the first report of the Club of Rome prepared by a group of authors headed by D. Meadows actually remains abstract or unspoken. Awareness of the necessity and importance of theoretical comprehension of this aspect of the problem under study (the invincibility of environmental constraints for a very specific type of economic growth) is due to the recognition of the neo-industrial paradigm of modern development. The latter, among other things, focuses on the functional role of the process of accumulating social capital in the movement towards a neo-industrial society, linking it with increasing the social responsibility of the state, business and society (including environmental responsibility) and creating a system for the reproduction of human potential that is adequate to the requirements of the modern era (Gubanov, 2014; Popov, 2015).

The study of the above tendencies and interconnections makes it possible to specify the content

of a new type of economic growth caused by the dominance of social rather than private capital (profit) in the economic system, which aims to climb to the advanced heights of modern development, is focused on an active, not passive attitude to the environmental aspects of production and social life, on preserving the environment and improving the quality of life (Kormishkina et al., 2016).

In the context of the neo-industrial paradigm, there is a growing scientific and practical interest in recycling processes that, in the former model of the national economy development, have traditionally been relegated to the background. Various issues related to the essence, functions and attractiveness of recycling are studied by both foreign (A. Amussen, R. Anderson, Van Den Berg, A. Clayton, L.-J. Stone, P. White, L. Faber, J. Elkingston, et.al.), and Russian scientists (O. Balatsky, L. Abramov, O. Bryantsev, A. Dushin, V.Dyubanov, O.Romanova, A.Tatarkin, K.Richter, L.Kamenik, G.Malinitsky, A.Karlik and others).

Within the framework of the proposed study, the European concept (international initiative) "3R" (Reduce, Reuse, Recycle), which involves an integrated approach to solving the problem of growing waste and energy efficiency, thanks to the recycling of waste and the creation of a recycling "closed cycle" production (Tatarkin et al., 2013). This approach to recycling actualizes issues related to the institution of private-state partnership, as well as clustering of the economy.

It should be noted that despite the successful implementation of the "3R" concept in a number of developed economies in recent decades, the problem of reducing production and consumption wastes, their maximum return to secondary sales around the world, remains the focus of specialists' attention. The subject of the discussion was a new category - "waste resources" (Kamenik, 2012, 2015; Malinitsky, 2014; Humphreys et al., 2011).

1.4. State Hypotheses and Their Correspondence to Research Design

The export-raw material model of the national economy, established in Russia, is accompanied by a low quality of economic growth due to its negative impact on state and public institutions; it exacerbates the problem of ecological growth limits. These problems can be solved by implementing a new, neo-industrial development model that provides genuine innovation, greening (weak sustainability), and the inclusiveness of economic growth in the country. At the same time, a special factor and an indicator of the neo-industrial filling of the economy growth is recycling, the scope of which is acquiring a wide scale.

2. Methodology

2.1. Systematic Approach

A systematic approach that allows us to logically harmoniously present various and interacting theories and institutions, in their entirety, providing an opportunity to identify "core" problems within the framework of the issues under study. In accordance with this approach, defined as the quality of methodological basis of the study, the following principles are supposed to be used:

- Social inclusiveness (the principle of the operation of social capital, conditioned by the idea of an inclusive society in which all human welfare, including an ecologically clean environment, is available to everyone);
- General principles of the movement towards sustainability of the economy and ecology; to neo-industrial development, conditioned by the definition (in a broad sense) of the concepts of sustainable and neo-industrial development;
- The principles of public-private partnership, the implementation and compliance of which contributes to the establishment in the economic system of the dominance of social rather than private capital

(the orientation toward obtaining nationally significant rather than private results, cooperation, economic and social responsibility), etc.

2.2. Econometric Model

Econometric model, including a number of regression equations and constructed for the purpose of empirical evaluation of the dependence of real economic growth on natural resources (the degree of their availability in the country and exports). The regressions are constructed using the least square method (LSM) and the two-step least squares method (2LSM). The indicators of economic growth are GDP per capita. The methodological basis of the indicated econometric model was the study of foreign and Russian scientists within the framework of the so-called "curse of natural resources" concept, which was a continuation of the well-known works of J. Sachs and A. Warner (1997, 2001), E. Papyrakis and Gerlach (2003).

3. Results

Retrospective analysis and systematization of different views on economic growth make it possible to consider it as an integral element of economic development and a necessary condition for raising the level and quality of life of the population. Herewith, from the viewpoint of the theory of reproduction and neo-industrial development, under the economy growth, it is necessary to understand not short-term fluctuations in the real volume of production relative to the natural value of the latter, but long-term changes in the natural level of the real volume of social production associated with the development of productive forces (Kormishkina et al., 2016). With this approach to the definition being studied, the export-raw material model of the national economy that was established in Russia, accompanied by the deindustrialization of the productive forces and the weakness of state and public institutions, becomes here the main constraint on real economic growth, complicating the solution of environmental and resource problems of the XXI century (Jackson, 2013).

To confirm the validity of this conclusion, the authors of this article constructed an econometric model that illustrates an empirical assessment of the impact on the economic growth of the country's natural resources and their export dependence on their interrelation with the quality of state institutions. This assessment, among other things, is also important for confirming the effect of the so-called "curse of natural resources" in the national economy. It should be recalled that the latter is associated not only with the displacement of non-primary branches of the economy, which in the long run are the engine of economic growth due to higher labor productivity than in the natural and raw materials sectors, but also with the quality of state and public institutions (Kunitsova et al., 2005). The theoretical and methodological basis of such an econometric model is described in Paragraph 2.2 of this article, and the variables used (with World Bank indicators) are presented in Table 1. The indicators of economic growth are GDP per capita.

Table 1. Variables used in the econometric model and their description

Variable name conventions	Variable description	The source of information
Minxp	The average share of annual exports of mineral resources in the RF GDP for 1992-2014.	World Bank GDP data
Latitude	Absolute value of the geographical latitude of the country, takes the value from 0 to 1	La Porto et al

Tariff	The average tariff rate for imported goods for 1992-2014.	World Integrated Trade Solution System
Isubsoil	The log of proven reserves of mineral resources in Russia in 2000, in US dollars per capita	World Bank
Goveffect	The indicator reflects the quality of public services and the degree of independence from political pressure. Measured from -2.5 (weak) to +2.5 (strong)	World Governance Indicators
Lgdp91	The logarithm of GDP per capita in 1991	World Bank
Presid	Binary variable: 1 (presidential regime); 0 (parliamentary regime)	World Bank
Plur00dp	Binary variable: 1, if the parliament chooses according to the rule of relative majority; 0 - under the conditions of a proportional rule	Kunitsova J. and S. Rose-Ackerman. Electoral Rules and Constitutional Structures as Constraints on Corruption//British Journal of Political Science. 2005, #35.P.573-606.
G9214	Average GDP growth per capita in the Russian Federation for 1992-2014.	Russian Statistical Yearbook

Source: compiled by the authors on the basis of the
materials presented in the column "The source of information"

Table 2 shows the results of assessing the impact of the country's own mineral resources and export dependence on the latter on the quality of state institutions. Here the following control variables are taken: political regime in the country (presid), electoral rules (Plur00dp) and customs duties, denoting the openness of the economy.

Table 2. Regression analysis of the dependence of the
system quality of state institutions on natural resources

Variables	Regressions received		
	(1)	(2)	(3)
const	−0,100***(0,031)	−0,081***(0,030)	−0,100***(0,027)
isubsoil	0,015***(0,003)	0,015***(0,003)	0,022***(0,003)
presid	0,034**(0,016)	0,023(0,020)	
plur00dp	−0,003 (0,016)	−0,002(0,016)	
tariff	0,001 (0,002)		

goveffect		−0,011(0,011)	−0,038***(0,010)
Number of observations	56	56	72
F-statistic	7.46***	7.72***	24.64***
R2	0.43	0.44	0.52

Note: Dependent variables for all minxp are regressions. All LSM are regressions.
A standard error is indicated in parentheses. The indicated *, **,
*** are statistically significant at the 10-, 5-, 1% level, respectively.
Source: compiled by the authors.

From regression (1) it follows that the presidential political regime tends to be more dependent on natural resources than the parliamentary one. With it, availability the country's own mineral resources, as a rule, is accompanied by a deterioration in the quality of the state institutions system, for the simple reason that there are much more opportunities for the political lobby of elites, and the latter, in turn, attracts the possibility of rapid enrichment through exports natural resources.

Regression (2) emphasizes the importance of controlling variables that are responsible for the political regime in the country. Without such control, as follows from regression (3), the quality of institutions is significant at 1% level. Therefore, the data of Table 2 emphasize that effective and high-quality state institutions in the country lead to a decrease in exports of natural resources, and, therefore, reduce dependence on them.

The data in Table 3 gives an idea of the dependence of economic growth on the country's own mineral resources and on their exports. It is noteworthy that the export of natural resources, irrespective of the studied method, has an insignificant effect on economic growth. The most significant of the factors studied that affect the economy growth is the quality of state institutions. In addition, based on the results of the calculated regressions, it can be asserted (at the 10% level of significance) that the very presence of the country's own mineral resources increases the potential of economic growth.

Table 3
Regression analysis of the dependence of the economic growth
of the Russian Federation on the export of natural resources

Variables	Regressions received		
	(1)	(2)	(3)
Const	4.491***(0.887)	8.290***(1.720)	16.826***(6.038)
Minxp	−1.801***(1.330)	4.206 (6.107)	0.310(3.609)
Isubsoil	−	0.015 (0.099)	0.139*(0.079)
Lgdp91	−0.261***(0.107)	−0.863***(0.230)	−2.101**(0.860)
Goveffect	−	1.047***(0.376)	3.055(1.568)
Endogenic variable		Minxp	Goveffect

	87	57	72
Number of observations	87	57	72
F-statistic	4.19**	3.95***	4.31***
R2	0.09	0.12	0.02

Note: Dependent variable for all regressions - g9214. Regression (1) - LSM; Regression (2) - (3) -2LSM. The standard errors are indicated in brackets. The indicated *, **, *** are statistically significant at the 10-, 5-, 1% level, respectively.
Source: compiled by the authors.

In this context it is important to note that the beginning of the XXI century. Was marked by a virtually universal decline in the rates of economic growth and economic crisis, including a tangible (not only for the world, but also for Russia) depletion of the natural resource base; an aggravation of the contradiction between the need to meet the growing material needs of the population and the excessive build-up of anthropogenic pressure on natural complexes.

Today, Russia's image of a country rich in raw materials no longer corresponds to the real state of affairs: with the current production level, by 2020, the global economy is predicted to be provided by 19 types of natural resources out of 22 basic ones, and the Russian Federation - 16; in 50 years - respectively 11 and 8, for 2100 on our planet, according to forecasts, there will be only 8 types of resources, the Russian Federation - 4 (Kamenik, 2012).

According to the German Federal Institute for Geosciences and Natural Resources (GNR), the current potential for oil reserves in the world, for which there are technical options for extraction, does not exceed 157.3 billion tons of resources, and at the current level of consumption of this resource, only for 40 years. As for Russia, in the last 10-15 years, the volume of the increase in the explored reserves of oil and gas was below the level of their annual production. Newly prepared reserves, concentrated mainly in medium and small fields, are difficult to access, and at cost, as a rule, exceed the existing ones by an order of magnitude (Krivorotov, 2014).

In this situation, the policy and ideology of "rich country's raw materials" is difficult to recognize as legitimate, since it is one of the main obstacles to economic growth in Russia, especially in power-consuming industry (Krivorotov, 2014). In this regard, two issues should be placed at the center of attention of the scientific community and practitioners: (1) a change in the foundations of civilizational development - the transfer of the economy from the traditional natural resource model of resource provision to the industrial reproduction model of raw materials (Fuchs, 2016); (2) rejection of the export-raw material model of the national economy in Russia.

At the same time, according to official statistics, more than 85 billion tons of waste accumulated in Russia alone; only for 2010-2015. there was an growth in the formation of production and consumption wastes by almost 1.8 times; the total volume of the latter in 2015 was 5,060 million tons, of which over 110 million tons are dangerous (Environmental Protection in Russia, 2016); the rates of education of the latter (15-16% per year) outstrip the dynamics of the Russian GDP.

The bulk of production and consumption waste is concentrated in landfills and numerous unauthorized landfills, which in turn are dangerous sources of air, soil, plant, underground and surface water pollution. A special problem is the uncontrolled burial of hazardous wastes (medical, bioorganic, pesticides and herbicides, overdue mineral fertilizers), which pose a threat to public health. According to Federal Service for Supervision of Natural Resource Usage statistics, at present there are more than 24 thousand waste disposal facilities in the Russian Federation, of which no more than 8% of the objects correspond to the requirements.

The data shown in Fig. 1 inform the reader of the magnitude of the "ecological footprint" in the

countries of the world in 2013.

Figure 1
"Ecological footprint" in 2013 in different countries
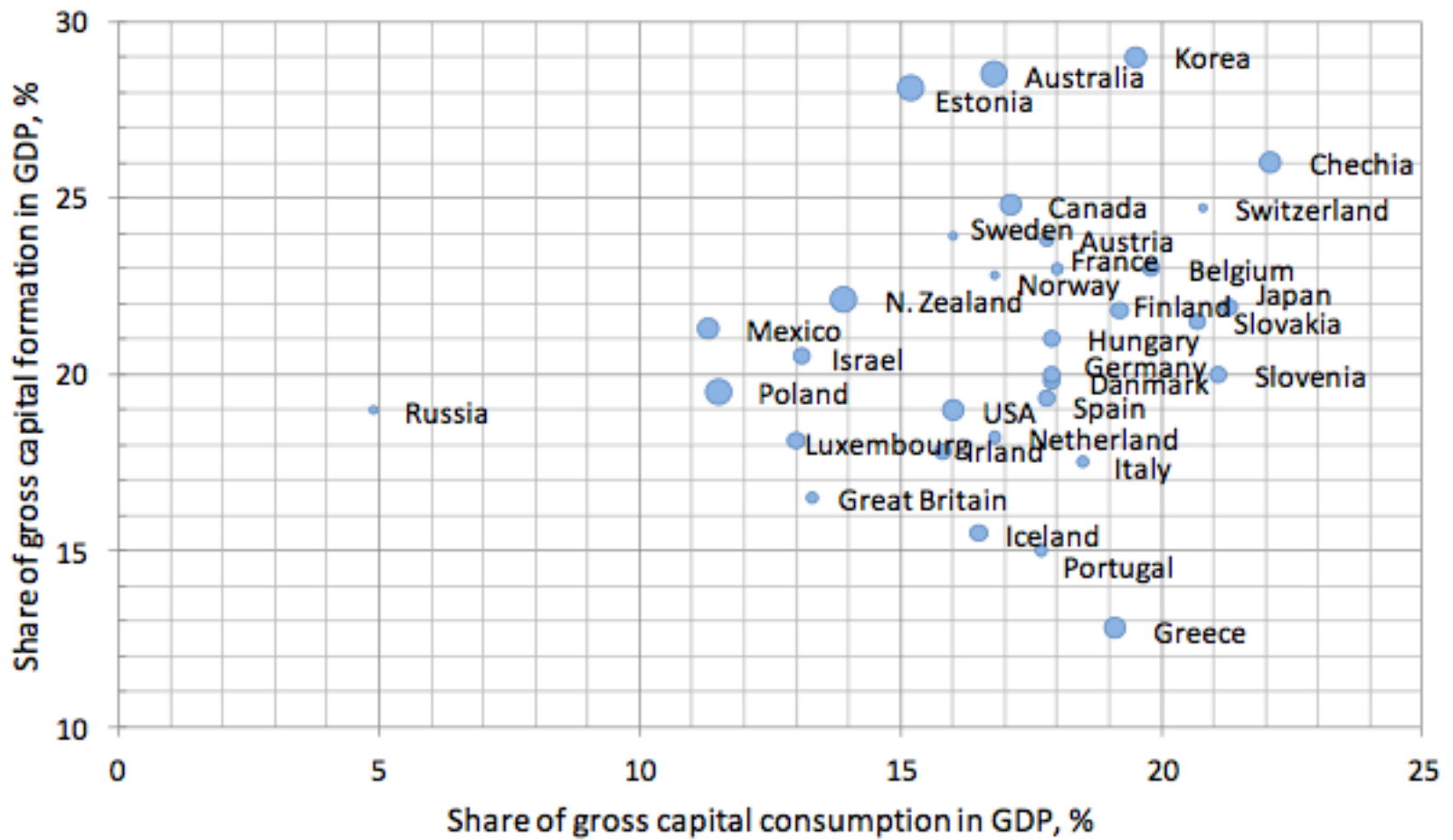
Source: compiled by the authors on the basis of the following materials: National accounts of Russia in 2007–2014. Statistical handbook. Moscow: Rosstat, 2015; OECD. Investment (GFCF) (indicator), OECD. DOI: 10.1787/b679367. http://stats.oecd.org/. Paris, 2016.

Of course, this situation has a very negative impact on the pace of economic growth and its quality, contrary to the principles of the neo-industrial (in fact, sustainable in the broad sense) development of countries. As R. Fuchs rightly notes (2016), "Therefore... it is necessary to make every effort to reduce the ecological legacy of mankind, while increasing the well-being of the broad masses". At the same time, this situation indicates possible reserves in the form of unused production and consumption wastes to create a new raw material base for expanded reproduction on an innovative basis and neo-industrial expansion of economic growth. These reserves of replenishment of raw materials have specificity (they are reproducible in contrast to natural resources, they complete a cycle of transformations), which indicates the possibility of "normalizing" the problem of "environmental growth constraints" due to the transition to an industrially reproducible type of raw materials based on recycling. In this connection, it seems appropriate to note that the society has an analogue of a solution to such a fundamental and large-scale civilizational task - the creation of an industrially reproducible food base instead of natural food provision (Kamnik, 2015).

The term "recycling" is usually applied to the utilization of waste in the case of the use of the resulting secondary materials, including their original designation (Fesenko, 2011). At the same time, reclamation means the elimination or reuse of wastes, their constituents or materials.

In accordance with the system of standardization, recycling is the process of returning waste, discharges and elections in the process of technogenesis. There are two options for waste recycling: (1) reuse of waste for the same purpose, as material access; (2) return the waste after appropriate treatment to the production cycle.

The authors of this article position the treatment of recycling in a broad sense, according to which the studied definition is regarded as an environmentally oriented closed system of

commodity production, which has the ability to return the generated waste and consumption waste, through reuse, into economic circulation, including a set of measures to minimize waste generation.

It is important to note that in the implementation of the neo-industrial paradigm of modern development, which prioritizes the socially responsible behavior of the state, business and society, the interests of social capital over the "selfish motives" of private capital (Gubanov, 2012), resource recycling is advanced as an indicator of the progressiveness of a new stage of socio-economic development (Popov, 2015). Against this background, recycling of resources, in our opinion, can be considered as one of the most important factors of the neo-industrial expansion of the economy growth, since it meets the known criteria of the latter - innovation, inclusiveness, environmental friendliness (Kormishkina, 2016). The following theoretical justification can be given to the theoretical proposition:

1.Industrially reproduced raw materials base, of course, cannot do without appropriate innovative technologies, which in the future will have an ever-growing demand. It should also be taken into account that all products obtained as a result of industrial reproduction of raw materials are high-tech, and therefore competitive products, the demand for which will also increase.

According to the official data of the Bureau for International Coordination in the field of recycling (BIR), about 600 million tons of materials are processed annually in the world, 1/3 of which are subject to export trade; secondary resources already today cover 40% of the needs of world industry; the annual turnover of the global processing sector is $ 160 billion; private companies annually invest $ 20 billion in study in the field of recycling.

To the above, we add that Russia's growing need for innovative, supernova innovative technologies in a wide range of directions aimed at industrial reproduction of raw materials is due, inter alia, to the need to solving import substitution issues (For reference: 90% of the environmental equipment is purchased by Russia) (Trunin, 2015).

2. Creating a closed cycle economy - a real economy of the 21st century. Will positively affect the creation of a large number of jobs, which is in line with the principle of social inclusion (the principle of social capital), which is currently being actively implemented in the most advanced of the industrialized countries. The income growth through the creation of new high-tech jobs enhances the accessibility of social benefits to a broader population, including such benefits as education, health, labor qualifications, clean living environment, etc.

3. Active development of recycling processes contributes to reducing environmental costs and losses, which, undoubtedly, are of public nature rather than a private. It is about such serious environmental challenges that are inherent in the traditional natural resource provision model, such as: CO2 emissions, global warming, changes in the water cycle, ocean acidification, pollution of water sources, etc. Against this background, recycling appears as a key condition for the implementation of a new social philosophy, the opposite of the inherent philosophy of private profit inherent in the export-raw material model of the national economy (Tables 2, 3).
1. Extraction of fuel and energy minerals; 2. Metallurgical production and production of finished metal products; 3. Production and distribution of electricity, gas and water; 4. Transport and communications. 5. Manufacture of coke and petroleum products; 6. Mining of other minerals; 7. Manufacture of other non-metallic mineral products; 8. Chemical production; 9. Provision of other communal, social and personal services; 10. Agriculture, hunting and forestry; 11. Manufacture of food products, including beverages and tobacco; 12. Cellulose and paper production, publishing and polygraphist activity; 13. Wood processing and wood handicrafts production; 14. Vehicles and equipment production.

Figure 2
Indicators of investments in the original capital, aimed at protecting the environment,
the current costs of major capital works of original capital and emissions by type of economic
activity in 2013 and 2014
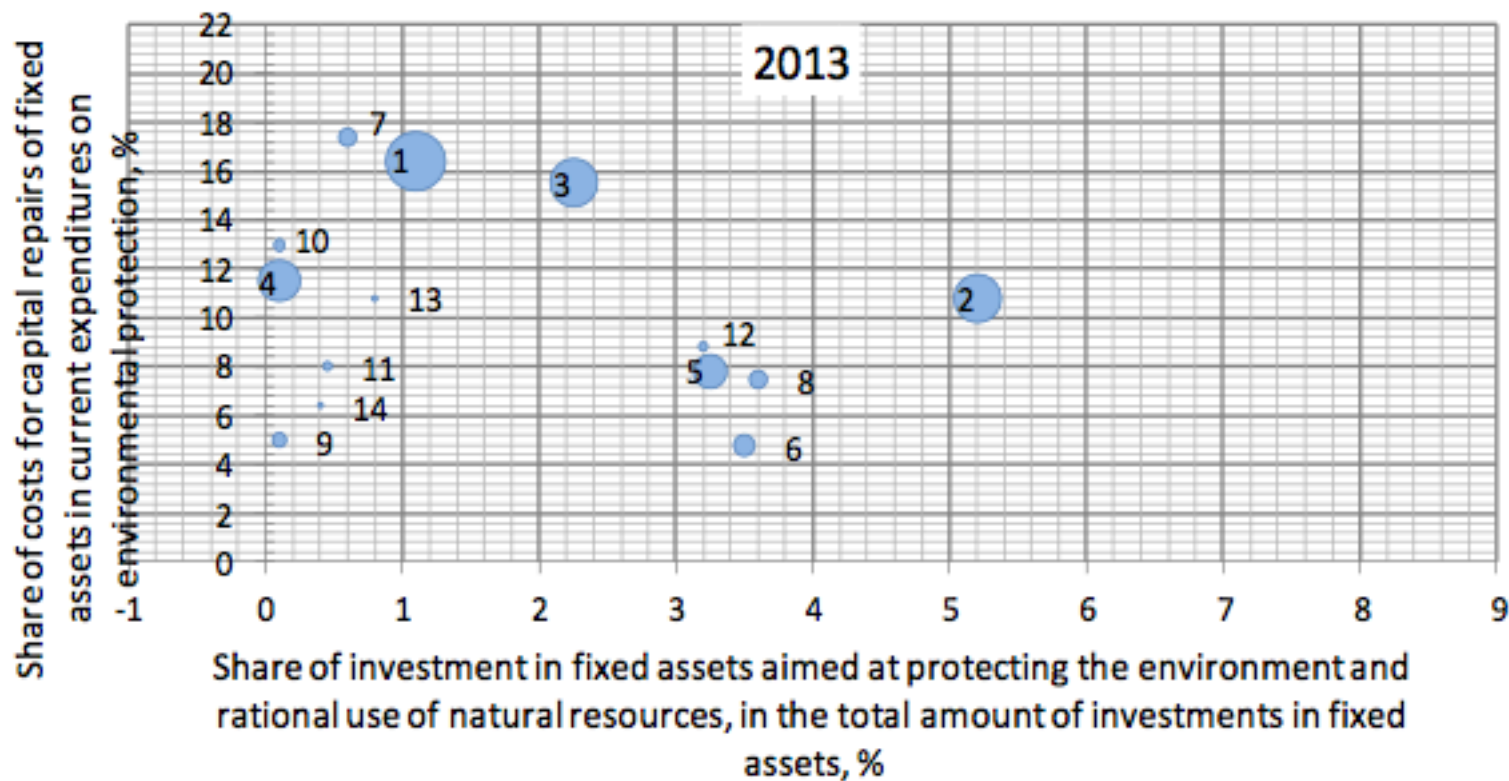
Emissions of pollutants into the atmosphere from stationary sources, thousand tons
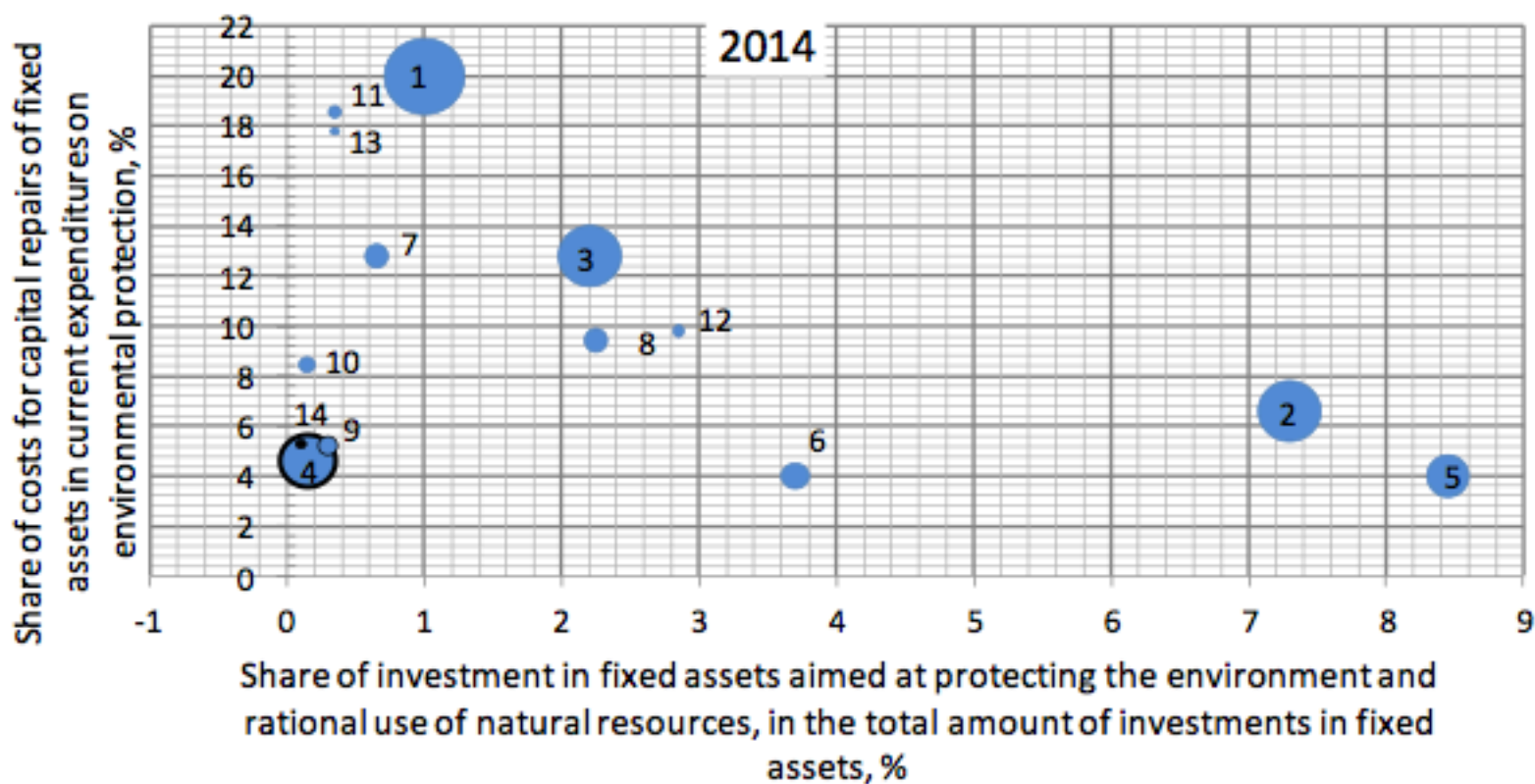

Source: Environmental Protection in Russia 2016:
Statistical collection. Moscow: Rosstat, 2016, 95 p.

This, in our opinion, is the basis for positioning recycling as a special factor in neo-industrial growth (and development) that can solve the above-mentioned problem of "environmental growth constraints".

It makes sense to note that in the Russian Federation, an integrated approach to solving the problem of growing waste and energy efficiency began to be implemented only in 2014 after the Federal Law # 458-fl "On Amendments to the Federal Law" On Production and Consumption Wastes" was put into effect. Despite the fact that in the adopted normative legal acts there is a trace of the desire of state institutions to solve accumulated problem in the field of waste management, many of its aspects remain unresolved. For example, the introduction of

standards for utilization occurred without proper definition of the term "utilization". In the Russian legal and regulatory documents, it unites all the main methods of handling waste products of production and consumption, without indicating their priority. As a consequence, waste management is narrowed and reduced in the Russian economy only to two methods - burial and disposal - against the known five used, for example, in the EU countries (neutralization and disposal at the landfill, energy recovery, processing, reuse, prevention and waste minimization).

Figure 3
Education, use, decontamination and disposal of production
and consumption waste in the Russian Federation
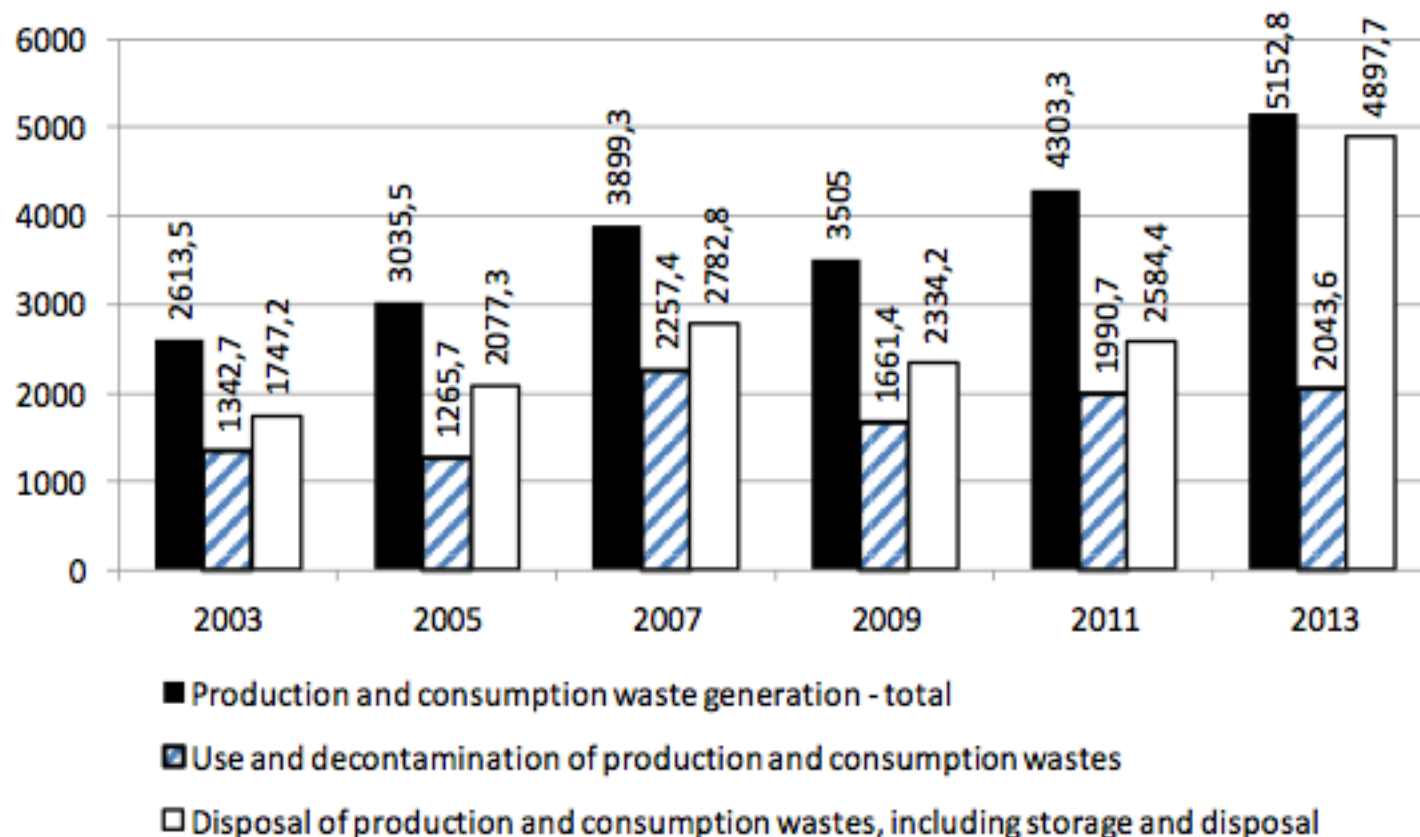
Source: Federal State Statistics Service

In addition, today there is virtually no infrastructure for collecting, sorting and recycling production and consumption wastes, and its creation is supposed only indirectly - through accumulation of funds that will come from utilization charges within the so-called "tax maneuver" (Senchagov, 2013). Until now, there is no plan in Russia to create facilities for waste disposal, which is determined to a large extent by the inadequacy of real investments, including investments in original capital aimed at protecting the environment and rational use of natural resources (Fig. 2).

In these conditions, it is not necessary to talk about the transition of the Russian economy to recycling. As the data in Fig. 3, the priority method of disposing of production and consumption wastes remains burial and temporary accommodation, which has increased by more than 180% in ten years (Trunin, 2015).

All of the foregoing cause a significant lag in the Russian economy in terms of resource provision and prevents the neo-industrial filling of economic growth as a condition for successfully solving the problem of "growth limits".

4. Suggestions

With regard to today's Russian realities, a further inertial expectation of improving the socio-economic situation in the country will lead to an increase in negative trends and processes, including in the sphere of exploitation and renewal of the mineral resource base, in the state of the environment. To reverse the situation and transfer the economy to the rails of expanded

reproduction on an innovative basis, it is necessary to abandon the export-raw material model of the national economy and stimulate the neo-industrial expansion of economic growth. Against this background, the socio-economic attractiveness of the recycling processes grows up, the development of which increases the country's opportunities for successfully solving import substitution issues for a wide range of products, and in the long term contributes to the formation of the economy of the future-the economy of a closed cycle (Kamenik, 2015). With regard to the current stage for the expansion and effective functioning of the recycling industry in the Russian economy, in our opinion, the following measures are necessary:

1. Improvement of the regulatory and legal framework in the field of waste management. The priority measure here should be the adoption of a special resolution of the Government of the Russian Federation, which establishes the creation of a Russian system of secondary material resources. It is necessary to amend the legislation in the form of a new federal law "On Secondary Resources" or amendments to the RF Tax Code that determine the status of payments for the use of packaging and payments for reimbursement of costs for the collection and processing of certain types of products after use; to develop and introduce into effect a special normative legal act for tariff rates for calculating payments for the use of packaging and for reimbursement of expenses for the collection and preliminary processing of certain types of products after use.

 Note that the inclusion in 2014 of the last version of the current Federal Law "On Production and Consumption Waste" (adopted in 1998) of Article 4 "Waste as an Object of Ownership" characterizes the fundamental change in the state level of the attitude towards recycling. However, it still does not have these cost estimates, and therefore the provision "Waste as an Object of Ownership" is not filled with economic content. With such a legislative framework, one does not have to talk about the existence of a viable economic mechanism for realizing the recycling of resources.

2. Growing in the share of so-called environmental investments (Jackson, 2013) in the total volume of emerging innovative type investments. The priority areas of such investments are:

- Increasing the efficiency of the resources use resources, which leads to their provision (for example, energy efficiency, waste reduction, and recycling);
- Replacement of traditional technologies with clean or low-carbon technologies (for example renewable energy sources);
- Formation of an independent segment of the market of innovative technologies in the sphere of industrial reproduction of raw materials in a wide range of directions;
- Ecosystems improvement.

3. Creation of management effective form of the recycling area. On the importance and scale of the problem, effective management of recycling should be based on the principles of public-private partnership, the most important tool of the mixed economy that allows to realize the potential of business; while maintaining the control functions of the state sectors of the economy that determine national security (Emelyanov, 2013). Based on the above, state innovation-implementation corporation becomes an effective form of management of recycling. Moreover, its creation seems to be expedient for the reason that the formation of a new industrially reproducible raw material base (as well as the existing natural resource base) is an important link in ensuring national security. It will be appropriate to recall here that rational nature management as an integral direction characterizing the natural resources use is among the priority directions (altogether 8) for the development of science, technology and technology of the Russian Federation (the list was approved by the Presidential Decree of 07.07.2011).

4. Training of personnel capable of developing innovative recycling technologies and servicing them in practice.

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5. Conclusion

It is necessary to understand and accept the fact that production and consumption wastes are a

new resource and raw materials base that will become the basis of the economic development of the society in the near future. In this connection, recycling, which creates a new raw material base for reproduction, is one of the most important factors in the neo-industrial expansion of economic growth.

In present-day Russia, recycling should become one of the priority directions of modernization of the national economy, and for business - an actual vector of development.

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1. The Department of Economics, Ogarev Mordovia State University, Saransk, Russian Federation. kormishkinala@mail.ru

2. The Department of Economics, Ogarev Mordovia State University, Saransk, Russian Federation. econtheory@mail.ru

3. The Department of Economics, Ogarev Mordovia State University, Saransk, Russian Federation. kda1977@mail.ru