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**ЗАРУБЕЖНЫЙ ОПЫТ И ВОЗМОЖНОСТЬ
ПРИМЕНЕНИЯ ПРИНЦИПОВ ЦИКЛИЧЕСКОЙ
ЭКОНОМИКИ В ЛЕСНОМ СЕКТОРЕ РОССИИ**

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Аннотация.

Циклическая экономика, или экономика замкнутого цикла, циркулярная экономика представляет собой альтернативный вариант классической линейной экономики, в основе которой лежит такой принцип, как «производство продукции – ее использование – утилизация». К задаче экономики замкнутого цикла можно отнести наиболее широкое использование возобновляемых ресурсов, а в идеальном варианте – переход к безотходному производству. Неоднократное применение одного и того же продукта в качестве сырьевого ресурса поможет минимизации экономического ущерба окружающей среде.

По мнению экспертов европейских стран, переход к циклической экономике, может не только снизить неблагоприятное воздействие на окружающую среду, но и минимизировать производственные затраты за счет уменьшения количества применяемых первичных ресурсов, стимулировать возникновение новых рынков, а это, в свою очередь, будет способствовать, как созданию новых рабочих мест, но и повышению благосостояния общества.

Реализация циклической модели экономики окажет влияние, в том числе на использование и распределение благ среди населения, источник которых – лесные ресурсы. Лес играет важнейшую роль в регулировании климата, сохранении биологического разнообразия и управлении водными ресурсами. Лесные экосистемы представляют собой источник биопродукции. Данная продукция поможет заменить невозобновляемые ресурсы, но при этом она сможет воссоздавать и восстанавливать качество своих ресурсов естественным образом. Таким образом, лесной сектор находится в стратегически выгодном положении для содействия формирования и развития экономики замкнутого цикла и реализации всех ее принципов.

Ключевые слова: лесной сектор, линейная экономика, экономика замкнутого цикла, отходы, отрасли промышленности, производство, модель.

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FOREIGN EXPERIENCE AND THE POSSIBILITY OF APPLYING THE PRINCIPLES OF THE CIRCULAR ECONOMY IN THE FORESTRY SECTOR OF RUSSIA

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Abstract.

Circular economy is an alternative version of the classical linear economy, which is based on such a principle as "production – its use – disposal". The task of the circular economy can be attributed to the widest use of renewable resources, and ideally – the transition to waste-free production. Repeated use of the same product as a raw material will help minimize the economic damage to the environment.

According to experts from European countries, the transition to a circular economy will not only help to reduce the negative impact on the environment, but also to minimize production costs by reducing the amount of primary resources used, stimulate the emergence of new markets, and this, in turn, will help both create new jobs, but also increase the welfare of society.

The implementation of the cyclical model of the economy will have an impact, among other things, on the use and distribution of benefits among the population, the source of which is forest resources. Forests play a critical role in climate regulation, biodiversity conservation and water management. Forest ecosystems are a source of bioproducts. These products will help to replace non-renewable resources, but at the same time they will be able to recreate and restore the quality of their resources in a natural way. Thus, the forestry sector is in a strategic position to contribute to the formation and development of the circular economy and the implementation of all its principles.

Key words: forestry sector; linear economy; circular economy; waste; industries; production; model

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Introduction

For many centuries, man has caused enormous damage to the environment: endless emissions of liquid, solid and vaporous waste into the atmosphere, deforestation. In pursuit of material well-being, we lose the most valuable thing – the environment in which we live. Therefore, the task of transition of enterprises to non-waste production or the transition to a circular economy is currently relevant.

In a resource-scarce world, the transition from a linear system in which raw materials are used to exhaustion, to a closed system, in which they are reused, is crucial.

In the modern industrial economy,

under the economy of the closed cycles imply a model in which spent materials are sent for recycling or released into the biosphere without harmful effect. The desire to perceive waste not as useless garbage, but as useful resources – this is the key feature of the "circular economy", acquiring special meaning on the way to fully waste-free production [RBC, 2022].

The purpose of this study is to assess the possibility of constructing models of the circular economy cycle in the forestry sector.

Materials and research methods. The following methods were used during the research:

– empirical methods of cognition to

identify cause-and-effect relationships and describe social and resource-environmental problems of the development of modern society;

– an evolutionary approach to the study of the inevitability of the transformation of the sustainable development paradigm under the influence of the formation of ecosystems;

– a scientific-metric method for the study of scientific achievements in the field of the sustainable development paradigm, and the formation on this basis of the theory of circular economic systems.

Main part

Walter Stahel (Swiss analyst, specialist in circular economy) gave the world the expression "from cradle to cradle", meaning a closed cycle. The term "cradle to cradle" is preferred to the terms "circular economy" or "cyclical economy" because they use the word "economy". Looking at the economic side of the issue, one can understand that even the smallest cycles – reuse, refurbishment, modernization and re-marketing of products and components in the industry – bring big financial benefits. The reason for this is the minimum cost for the buyer and the maximum profit for manufacturer [Vorotnikov A.M., 2022].

Cyclical business models are changing the direction of the movement of products and materials throughout the economy, thereby helping to reduce the negative impact of the extraction, use and disposal of these materials on nature. It is not only about improving a specific production cycle or factory, but in general about changing the process of production and consumption. For example, not just managing natural resources more efficiently, but not using them at all. There are five main areas of such business models.

1. Model of cyclic supply – replacement of traditional (primary) sources of raw materials with renewable or biological materials, recycled materials.

2. Recycling model – recycling of waste into recyclable materials with subsequent use.

3. Life extension model – slows down the turnover of products in the economy,

thereby reducing the rate of generation of new waste.

4. Sharing model – joint use (sharing) of one product by different consumers, which reduces the demand for new products.

5. Service models – built around providing services rather than selling products, encouraging the development of environmentally friendly products and responsible consumption.

At the same time, we cannot say that the scope of these areas is rigidly established: many companies combine one or another business model. For example, an enterprise can produce certain products, process them and at the same time provide certain services within the framework of the "green" economy. Also, business models do not exist in isolation – if one company chooses a certain direction for itself, its partners can choose a related business model [Aleksandrova V.D., 2019].

Recently, the UK Ellen MacArthur Foundation published an influential report on the concept of a closed loop based on McKinsey's analysis. By developing products designed to reuse and remanufacture components, or by moving to business models, based on exchange, rental, rent, and not on ownership, alone European manufacturers could save \$630 billion to 2025 year. The report mainly looks at durable goods, such as washing machines. Now the MacArthur Foundation is engaged in a new research, targeted for goods of daily demand.

The concept of a regenerative economy is based on the fear of possible depletion of many natural resources. And yet by 2030, the global middle class is expected to grow by 3 billion people. The rich not only consume more, they consume differently. They tend to buy more highly processed branded products that require more energy and resources and more packaging.

The linear economy is not aimed at reducing these costs. Even efficiency gains will not provide enough goods at affordable prices. “ As production efficiency increases, energy and material inputs per dollar of GDP decrease, but the link between consumption

and resource depletion persists. The concept must be reviewed at the systemic level.”

Everyday goods account for 35% of the world's material costs and about 75% of municipal waste. The total cost of materials is \$3.2 trillion. The industry is able to increase the share of processing with today's 20% before 50% without significant applications of bioproducts and a complete rebuild chains of supplies.” [Features of the formation..., 2022].

For example, biogas or agricultural nutrients can be obtained from food waste. By-products of brewing can be turned into animal feed. Old clothes can be made into insulating materials or recycled into yarn to make new clothes. Packaging can be recovered for reuse and recycled for other uses. As the report says, companies could realize \$700 billion in savings through material recycling.

According to some estimates, by 2050 there will be three billion new more consumers, and this will dramatically increase the level of competition and the degree of exploitation of economic resources. Also, recent world surveys show that the majority of manufacturing company executives foresee raw material shortages and/or uninterrupted supply. Many of these materials are important for the production of high-tech products, which, in my opinion, are vital for economic growth.

In developed countries, citizens on average consume 1,764 pounds (800 kg) of food and drink per year, 265 pounds (120 kg) of packaging and 44 pounds (20 kg) new clothes and shoes, and 80% of it ends up in incinerators, landfills and of sewage. In a circular economy, instead of extracting millions of tons of new resources, there is recycling, using and recovering as much as possible. This is done to reduce the burden on the environment, this is obvious; but it is also a relief for companies facing an increasing scarcity of resources.

China is adopting a law to promote a circular economy – an economy based on renewable resources; South Korea has adopted the Green Growth Strategy); Japan is

building the Right Material Cycle Society. What these countries have in common is the new concepts of national development, which, in particular, provide for a radical change in waste management systems, focusing on the maximum extraction of secondary resources from waste and their use in industrial production to replace natural minerals [Batova N., Sachek P., Tochitskaya I, 2020].

For Russia, which currently consumes energy (per unit of produced GDP) 10 times more than, for example, Germany, the benefits from such solutions may be even more significant: according to our estimates, up to 15% of GDP. Due to the fact that modern Russian infrastructure is so obsolete that it requires replacement in any case, Russia, through the use of breakthrough clean technologies in the process of economic modernization, can create a new infrastructure, ready for the third industrial revolution, faster than other countries [6].

The principles of circular economy are aimed at the economic, social and environmental well-being of people. These principles are universal for all countries along with the generally recognized vector of development aimed at reducing greenhouse gas emissions and decarbonizing the economy. In this case, Russia's focus on raw material extraction and lack of clear plans for its reduction creates risks of cooperation with developed countries, which have made commitments to achieve zero emissions by 2050.

The implementation of the concept of a circular economy will affect the use and distribution of the benefits of forests among the population. While some circular economy activities based on the use of forest ecosystem services (such as timber harvesting or recreational services) primarily benefit local communities, others (such as change mitigation, biodiversity, soil and water conservation) have impacts in a broader regional and global context.

Countries with large forest areas and a developed timber industry will use forests for income and employment, while other countries may derive major economic benefits

from recreation and tourism or the provision of ecosystem services to people living in urban areas [Muravyova M.A., 2019].

It is obvious that sustainable forest management is necessary for the successful contribution of the forest sector to the circular economy, and the principles of the circular economy contribute to the sustainable use of forest resources.

Let us consider the possibility of building circular economy models.

In Russia there is a wide range of enterprises in different industries. For our model we have chosen enterprises from four industries, base industries are connected with forestry sector of economy:

1. forestry.

The purpose of forest management is an effective forest policy that provides multipurpose, rational, non-depleting use of forests and forest resources. This requires:

- effective realization of the rights of use and disposal of forests;
- Effective protection and regeneration of forests.

2. Wood processing.

Wood processing enterprises established for the production of round wood

on the leased areas. Clearcutting can be performed at their production facilities, and sorting is performed at logging sites. Almost the entire volume of roundwood can be processed into logs, sawn timber, and blanks for the production of molded products.

3. Construction.

Here the newest technologies and proven methods in the spheres of socially-oriented business, public-private partnership, agency cooperation of construction, geodesic, hydrological and engineering-communication directions and social design are used.

4. Rural economy.

Carried out directly by agriculture, hunting and the provision of services on these territories; food production, including beverages, vegetable growing.

The mechanism of this cycle is as follows: woodworking enterprises provide materials, such as timber, to construction firms; they, in turn, supply agriculture with sawdust, necessary for fodder. Natural processes produce manure, which is used to fertilize trees in forestry. The grown trees move on to the wood processing stage, and the cycle closes.

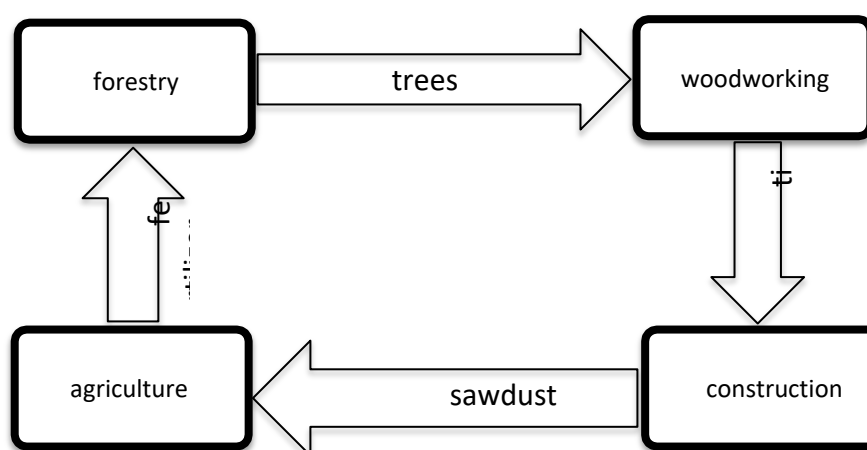


Рис. Модель циркулярной экономики
Fig. Circular economy model [Kenzina V.Yu., 2015]

Observance of the principles of circular economy in the forest sector will help to conserve available forest resources through the effective and rational use of planting

stock; increase the level of comprehensive use of wood resources through their involvement in the secondary consumption cycle (processing of wood waste at all stages of the

production process and in related industries); increase profitability of the forest sector through the production of high value-added products, and reduce the anthropogenic impact on the environment

Conclusion

Thus, the circular economy is an alternative model in which, instead of extracting millions of tons of new resources, as many as possible are recycled, reused, and reclaimed. It helps conserve natural resources and energy while relying on the cooperation of various economic actors. It can result in significant time gains (in the years ahead) to find solutions to natural resource scarcity. The construction of such a model is possible, but the organization of the interconnection of enterprises is quite difficult due to the lack of public policy, legislative framework and other things.

Ultimately, the transition to a markedly more resource-efficient economy, in which the environmental damage associated with production and consumption will be markedly lower than in the current one, will require a deep understanding of the life of these cyclical business models. Public policy can play an important role in overcoming barriers to the competitiveness of these models.

For example, ensure that the costs of producing and consuming a product for the environment are fully reflected in market prices.

Promote cooperation along the entire production chain within and between sectors of the economy. For example, create industrial clusters, support online material markets, create a recycling certification system, and so on.

Ensure that legal and regulatory frameworks are appropriate to promote cyclical models, rather than promoting the status quo.

Improve information and education programs to explain to citizens the unintended consequences of their behavior as consumers. This includes indirect steps such as product labeling requirements.

Finally, directly support the production

of or demand for circular economy products. The first includes the introduction of environmental design standards, extended producer responsibility, and targeted funding for research and development. The second – differentiation of VAT rates, product labeling standards and even special "green" public procurement [Trofimova P.E., Danilov D.Yu., Belyakov G.P., 2018].

Based on the above, we can conclude that the circular economy is a current trend in a number of European countries. The introduction of circular economy allows to reduce the negative impact on the environment, create additional jobs and reduce the material costs of producing new goods. Our country is not a leader in this trend. But Russia's transition to a circular economy is important and significant both at the national and global level. After all, our country's place in the world depends on it. Therefore the task of the state is to actively study this global trend, stimulate innovations, develop technologies in this field, create educational programs and train personnel, actively explain the principles of circular economy and sustainable development at all levels of the educational process.

Список литературы

1. Александрова В.Д., 2019. Бизнес-модели циркулярной экономики // Международный журнал гуманитарных и специальных наук. 2019. №5-1. [Электронный режим] Режим доступа: <https://cyberleninka.ru/article/n/biznes-modeli-tsirkulyarnoy-ekonomiki> (дата обращения: 28.04.2022).
2. Батова Н., Сачек П., Точицкая И., 2020. Циркулярная экономика в действии: формы организации и лучшие практики // BEROC URL: http://www.beroc.by/webroot/delivery/files/PP_5_rus.pdf (дата обращения: 24.04.20).
3. Воротников А.М., 2022. В России начинается переход к циркулярной экономике замкнутого цикла // Экологический пресс-центр [Электронный режим] Режим доступа: URL: <http://ecopress.center/page4186642.html> (дата обращения: 25.04.2022).
4. Кензина В.Ю., 2015. Построение экономики замкнутого цикла // VII Всероссийская

научно-практическая конференция молодых ученых с международным участием «Россия молодая». 2015. [Электронный режим] Режим доступа: URL: <https://science.kuzstu.ru/wp-content/Events/Conference/RM/2015/RM15/pages/Articles/IEU/2/23.pdf> (дата обращения: 24.04.2022).

5. Муравьева М.А., 2019. Инновационное развитие как основа стабильного роста лесного сектора экономики // Финансовая жизнь. 2019. № 3: 26-29.

6. Особенности формирования инфраструктуры экономики знаний: компетентностный подход / Journal of Economic Regulation (Вопросы регулирования экономики). [Электронный режим] Режим доступа: <http://cyberleninka.ru/article/n/osobennosti-formirovaniya-infrastruktury-ekonomiki-znaniy-kompetentnostnyu-podhod> (дата обращения: 16.04.2022).

7. РБК, 2022. [Электронный режим] Режим доступа: <https://trends.rbc.ru/trends/green/5d66893d9a794755efbdf2d> (дата обращения: 17.04.2022)

8. Семьяникова О. А., 2020. Циклическая экономика в России и странах зарубежья // Актуальные исследования. 2020. №8 (11): 115-117. [Электронный режим] Режим доступа: <https://apni.ru/article/632-tsiklicheskaya-ekonomika-v-rossii-i-stran-zar> (дата обращения: 20.04.2022)

9. Трофимова П.Е., Данилов Д.Ю., Беляков Г.П., 2018. Переход России к циркулярной экономике // Решетневские чтения. 2018. №. [Электронный режим] Режим доступа: <https://cyberleninka.ru/article/n/perehod-rossii-k-tsirkulyarnoy-ekonomike> (дата обращения: 28.04.2022).

10. Palahí, M., Pansar, M., Costanza, R., Kubiszewski, I., Potočník, J., Stuchtey, M., Nasi, R., Lovins, H., Giovannini, E., Fioramonti, L., Dixon-Declève, S., McGlade, J., Pickett, K., Wilkinson, R., Holmgren, J., Trebeck, K., Wallis, S., Ramage, M., Berndes, G., Akinnifesi, F.K., Ragnarsdóttir, K.V., Muys, B., Safonov, G., Nobre, A.D., Nobre, C., Ibañez, D., Wijkman, A., Snape, J., Bas, L. 2020. Investing in Nature as the true engine of our economy: A 10-point Action Plan for a Circular Bioeconomy of Wellbeing. Knowledge to Action 02, European Forest Institute. efi.int/sites/default/files/files/publication-bank/2020/EFI_K2A_02_2020.pdf.

References

1. Aleksandrova V.D., (2019). Business

models of the circular economy // International Journal of the Humanities and Special Sciences. 2019. No. 5-1. URL: <https://cyberleninka.ru/article/n/biznes-modeli-tsirkulyarnoy-ekonomiki> (Accessed 04 May 2022). (in Russian)

2. Batova N., Sachek P., Tochitskaya I., (2020). Circular economy in action: forms of organization and best practices // BEROC URL: http://www.beroc.by/webroot/delivery/files/PP_5_rus.pdf (Accessed 04 May 2022). (in Russian)

3. Features of the formation of knowledge economy infrastructure: a competence-based approach / Journal of Economic Regulation (Issues of regulation of the economy). URL: <http://cyberleninka.ru/article/n/osobennosti-formirovaniya-infrastruktury-ekonomiki-kompetentnostnyu-podhod> (Accessed 04 May 2022). (in Russian)

4. Kenzina V.Yu., (2015). Building a circular economy // VII All-Russian scientific and practical conference of young scientists with international participation "Young Russia". 2015. URL: <https://science.kuzstu.ru/wp-content/Events/Conference/RM/2015/RM15/pages/Articles/IEU/2/23.pdf> (Accessed 04 May 2022). (in Russian)

5. Muravieva M.A., (2019). Innovative development as a basis for stable growth of the forestry sector of the economy // Finansovaya zhizn. 2019. No. 3. S. 26-29. (in Russian)

6. Palahí, M., Pansar, M., Costanza, R., Kubiszewski, I., Potočník, J., Stuchtey, M., Nasi, R., Lovins, H., Giovannini, E., Fioramonti, L., Dixon-Declève, S., McGlade, J., Pickett, K., Wilkinson, R., Holmgren, J., Trebeck, K., Wallis, S., Ramage, M., Berndes, G., Akinnifesi, F.K., Ragnarsdóttir, K.V., Muys, B., Safonov, G., Nobre, A.D., Nobre, C., Ibañez, D., Wijkman, A., Snape, J., Bas, L. (2020). Investing in Nature as the true engine of our economy: A 10-point Action Plan for a Circular Bioeconomy of Wellbeing. Knowledge to Action 02, European Forest Institute. efi.int/sites/default/files/files/publication-bank/2020/EFI_K2A_02_2020.pdf. (Accessed 04 May 2022). (in Russian)

7. RBC, 2022 [Electronic resource]: <https://trends.rbc.ru/trends/green/5d66893d9a794755efbdf2d> (Accessed 04 May 2022). (in Russian)

8. Semyannikova OA Circular economy in

Russia and foreign countries // Actual research. 2020. No. 8 (11): 115-117. URL : <https://apni.ru/article/632-tsiklicheskaya-ekonomika-v-rossii-i-stran-zar> (Accessed 04 May 2022). (in Russian)

9. Trofimova P.E., Danilov D.Yu., Belyakov G.P., (2018). Russia's Transition to a Circular Economy // Reshetnev Readings. 2018. no. URL: <https://cyberleninka.ru/article/n/perehod-rossii-k-tsirkulyarnoy-ekonomike> (Accessed 28 April 2022). (in Russian)

10. Vorotnikov A.M., (2022). Transition to a Circular Circular Economy Begins in Russia // Ecological Press Center URL: <http://ecopress.center/page/4186642.html> (Accessed 04 May 2022). (in Russian)

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