

Analysis of the Diamond and Polished Diamonds Market in Russia: Consequences Under COVID-19

Grigoryeva E.E.* Evstafeva G.D. Sentizova N.R.

North-Eastern Federal University, Yakutsk 677000, Russia

*Corresponding author. Email: elena.grigoreva80@mail.ru

ABSTRACT

Research on the impact of the coronavirus pandemic is relevant to the economies and societies of the world. From a scientific point of view, this experience is unique and has not yet been applied in the modern economy. Within the framework of this article, the object of research is the industrial production of polished diamonds. One of the properties of the socio-economic system of the world diamond and polished diamond market is its dynamism, which consists in changing the parameters and structure of the system under the influence of internal and external factors. A characteristic feature of a socio-economic system (SES) is its active response to the emergence of new factors (in our case COVID-19) and the ability of SES to act actively depending on changes in numerous factors. The article presents the main points of the chronology of events of the 1st and 2nd quarters of 2020 related to COVID-19, which affected the global diamond and polished diamond market. The results of the impact of restrictive measures analysis under COVID-19 on the financial and economic activities of diamond mining and diamond cutting companies are presented in detail. Changes in business conditions for polished diamonds producers in Russia were discussed separately. We have highlighted the active reaction of the world diamond and polished diamonds market to changes in external factors.

Keywords: *Diamond mining, polished diamonds production, restrictive measures, pandemic, anti-crisis measures, consumer demand, regional dimension*

1. INTRODUCTION

The global space has once again faced the problem of the spread of a new viral infection, the methods of combating which society does not yet have. Previously, infections, diseases more dangerous to human health than COVID-19 were spreading around the world. But the restrictive measures imposed by national governments are extensive and have affected all segments of the global economy. Research on the impact of the coronavirus pandemic is relevant to the economies and societies of the world. From a scientific point of view, this experience is unique and has not yet been applied in the modern economy. Restrictive measures have caused great damage to the economy. How big are the losses, what are their consequences and how to protect the economy from the second wave of the pandemic, we should study more. Within the framework of this article, the object of research is the industrial production of polished diamonds. Polished diamonds, diamonds and jewellery are luxury goods and are not essential items. There was thus little consumer demand for them when the pandemic imposed restrictive measures. The world diamond and polished diamond market is almost "frozen", which did not happen even during the financial crisis of 2008-2009.

1.1. Relevant Scholarship

The world diamond and polished diamond market is a complex social and economic system (SES) based on the principle of interaction between the participants of the diamond pipeline [1,2,3]. The diamond pipeline in its turn forms a vertically integrated structure divided into product life cycle segments: from exploration and production of rough diamonds, polished diamonds, and jewelry production to sale of diamond jewelry.

One of the properties of the SES of the world diamond and polished diamond market is its dynamism, which consists of changing the parameters and structure of the system under the influence of internal and external factors. The characteristic property of SES is its active reaction to the appearance of new factors (in our case COVID-19) and the ability of SES to act actively depending on changes in numerous factors.

The research is based on press releases and financial reports of the diamond pipeline participants posted on the companies' official websites, among other things: DeBeers Group[4], ALROSA Group[5], Petra Diamonds Limited, Rio Tinto Group, Chow Tai Fook Jewellery Group, AsianStar, and others. The expert evaluation was conducted taking into account the opinions and positions of analytical and consulting agencies of the diamond industry: AWDC

[2], Edahn Goland Diamond Research & Data [6] and Diamond Pipeline [1].

The methodological approach to studying the diamond industry is based on the theoretical and practical scientific results of the following scientists [7,8,9,10,11] and others. Theoretical and methodological bases of the study were based on scientific works related to the issues of transformation of economic systems in conditions of modernization of the Russian economy by the following scientists [12,13,14].

1.2. Research Design and methods

In order to obtain a quantitative assessment of the impact of the pandemic on the SES of the world diamond and polished diamond market or its participants from a certain country, it is proposed to apply a methodological approach to assessing their dynamism, i.e. to determine changes in the system parameters under the influence of external and internal factors[9] and to obtain economic and social effects.

As a result of the conducted research, a methodological approach was applied to quantitatively assess the impact of restrictions on the spread of a new coronavirus infection on the financial and economic performance of key companies in the diamond and polished diamond market. In the research, the methods of content analysis, analysis of financial and economic activities, and other economic and statistical methods were applied. The selected indicators characterize the transformation of the economic system of enterprises in the diamond pipeline segments. The time period of the analysis was from 1 January to 1 June 2020 compared to the previous year. This period is chosen according to the chronology of events of the new coronavirus infection COVID-19.

The analysis was carried out according to the structure of the economic resources of the diamond pipeline economic system divided into the following components:

- land - change of conditions of diamond mining companies;
- capital - changes in the terms of diamond cutting companies;
- labor - imposed government support measures;
- entrepreneurship - implementation of digitalization of companies[15].

1.3. Paper Structure

The rest of the article is presented in the following structure. Section 2.1 presents the highlights of the chronology of Q1 and Q2 2020 events related to COVID-19 that impacted the global diamond market. Section 2.2. UPSTREAM presents the analysis results of COVID-19 restrictive measures impact on the financial and economic activities of diamond mining companies. Section 2.3. MIDSTREAM determines the trends formed in the analyzed period under current conditions at diamond cutting enterprises. Section 2.4. considers changes in business conditions for polished diamonds producers in Russia.

Section 3 presents a discussion of the results obtained in general by segments of the diamond pipeline and highlights the active reaction of the world diamond and polished diamond market to changes in external factors. Section 4 concludes the article and provides direction for future research.

2. RESULTS

2.1. Chronology of events

The chronology of COVID-19 events affecting the diamond and polished diamonds market during the 1st quarter of 2020 is shown in Figure 1.

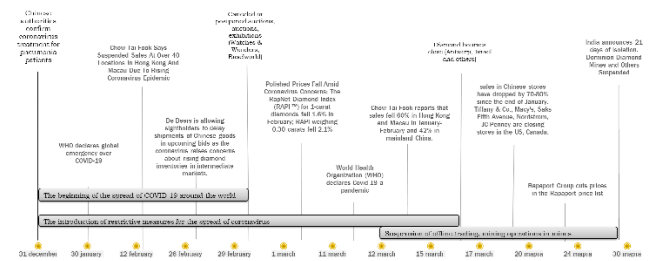


Figure 1: Chronology of COVID-19 events affecting the diamond and polished diamonds market for 1Q 2020

Following the declaration by the World Health Organization (WHO) of an emergency situation due to COVID-19, the government has taken restrictive measures against the population and economies of countries. Billions of people are self-isolated, restricted in movement. The population loses jobs, revenues decline, and expenditures are limited. The diamond industry has not escaped an economic downturn. Jewellery salons are closed, sales are suspended. International exhibitions and fairs are cancelled or postponed. Subsequently, as the global coronavirus situation worsens, WHO declares a pandemic.

Polished diamonds and diamonds prices are falling amid a serious decline in consumer demand to their lowest level since 2009. The Diamond Index from the International Diamond Exchange [1] (Fig.2) was used as a tool for tracking diamond prices. The index is calculated based on diamond prices from the world's largest diamond auctions. The maximum drop in prices was recorded at the level of 116 units as of March 25, 2020, while at present the price level has not reached the pre-crisis values.



Resource:
http://www.idexonline.com/diamond_prices_index

Figure 2: Diamond Price Index Dynamics

Another instrument, the Rapaport price list, which tracks average polished diamonds prices, on March 20, 2020, reduced polished diamond prices by almost 7% on average for all positions. At the same time, experts point out that traders and wholesalers are taking measures to stabilize polished diamonds prices, although there were practically no sales in March 2020[6].

In the second quarter of 2020, digital projects for organizing online sales of diamond goods to retail and wholesale launched, digital auction platforms for diamond sales will be developed and free webinars will be announced to help companies navigate in the current difficult conditions (Fig. 3).

Due to COVID-19 outbreaks among workers, mines and factories are suspended diamond mining and diamond cutting companies.

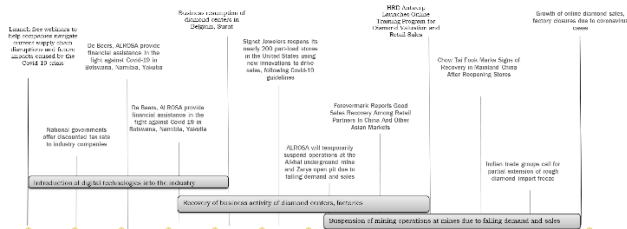


Figure 3: Chronology of COVID-19 events affecting the diamond and polished diamonds market for 1Q 2020

In May 2020, business activity in diamond centers will resume starting from Antwerp. The situation remains difficult in India, the country's isolation continues.

As it was expected, the first moves towards market recovery will come from mainland China, and it happened. In early June, polished diamond sales in China and Asian markets began to grow.

2.2. Upstream

At the beginning of 2020, diamond miners were bidding with increasing demand for diamonds at a sufficient level. This trend is characteristic of the annual increase in rough sales in January and February due to the replenishment of polished diamond manufacturers' stocks after Christmas retail sales. Diamond mining companies are able to offload their stock. When in March retail sales fell to a minimum at the closure of jewelry stores due to COVID-19, trading in diamond centers immediately reacted negatively to the situation.

As a result of the conducted content analysis of the financial and economic performance indicators of the leading diamond mining companies, it shows a downward trend in almost all indicators: revenues, production volumes, sales and EBITDA margin (Table 1). Sales of rough diamonds in the first half of 2020 decreased by 44-47%. At the same time, average prices for rough diamonds sold fell by an average of 20%. The slight decrease in Rio Tinto's revenue by only 7% is explained by the fact that in addition to diamond mining the company is engaged in mining other minerals: aluminum, iron, coal, copper, and others. The increased demand for iron made it possible to make up for some of the losses and lost profits from diamond mining. Diamond miners have announced a decline in previously published production forecasts in the range of 7% to 22%. In order to minimize the liquidity risk of companies, the following risk management measures were taken:

- monitoring expected cash flows from operating activities;
- establishment or existence of open credit lines to meet required cash flow requirements for operating activities;
- analysis of the level of liquid assets to meet the borrowing plan;
- reduction of operating costs;
- negotiating with suppliers on payment deferrals;
- an additional bond issue;
- the suspension of some investment projects.

Table 1: Results of financial and economic activity of the leading diamond mining companies obtained in the period of 6M 2020

N o.	Indicator	data	ALROSA		DeBeers		Petra Diamonds Limited		Rio Tinto	
				Change, y/y		Change, y/y		Change, y/y		Change, y/y
1	Diamond production, million carats	6M 2020	13,7	-22%	11,3	-27%	3,59	-7%	7,669	-7%
		6M 2019	17,6		15,5		3,87		8,277	
2	Diamond sales volume, million carats	6M 2020	10,1	-47%	9,2	-44%	2,895	-23%	n/a	-
		6M 2019	18,9		16,5		3,736		n/a	
3	Average realized diamond price, USD/carat	6M 2020	127	-5%	119	-21%	184	-20%	n/a	-
		6M 2019	133		151		230		n/a	
4	Revenue from diamond sales, million USD	6M 2020	991	-45%	1,000	-57%	295,8	-36%	141	-48%
		6M 2019	1,812		2,300		463,6		271	
5	Revenue, billion rubles. (million USD)	6M 2020	73,1	-43%	1,223	-54%	295,8	-36%	20,333	-7%
		6M 2019	127,9		2,647		463,6		21,809	
6	Underlying EBITDA margin, %	6M 2020	41%	-3%	49%	-6%	31%	-6%	39%	-7%
		6M 2019	44%		55%		33%		46%	

Source: Compiled by the authors on the basis of company reports posted on official websites[4,5].

2.3. Midstream

The key factor in diamond production is the dynamics of polished wholesale and retail sales, which in turn is directly dependent on consumer demand for finished goods. The main consumers of luxury goods are located in China, the USA, Japan, EU countries, and the Persian Gulf. According to the results of 2018, the key diamond manufacturers are India (80% of the market), South Africa (5%), Thailand and other countries (5%), Israel (3%), Russia (3%), China (2%), Belgium (1%) and the United States (1) [1].

One of India's major importers is the Antwerp World Diamond Center, where in April 2020, at the peak of the pandemic, trading fell to 4%. This situation was mainly due to India's continuing moratorium on rough imports and compliance with the self-isolation of factories. In May and June, trading in Antwerp is recovering and growing, but still, at the end of the first half of 2020, diamond trade halved compared to the same period in 2019.

Almost all diamond manufacturers have experienced serious problems with selling their finished goods and have suspended their production in order to avoid high stocks and reduce operating costs[6]. Midstream's goal during the pandemic was to maintain its business with a low or even 0% EBITDA margin. For comparison, we have analyzed

the profitability indicators of some diamond manufacturing companies (Table 2).

Table 2: Results of financial and economic activity of diamond manufacturers obtained in Q2 2020

Indicator	data	Chow Tai Fook Jewellery Group		AsianStar	
		HK\$ million	Change, YoY	'000Lacs	Change, YoY
Revenue	Q2 2020	56,751	-15%	46,7	-18%
	Q2 2019	66,661		57,3	
Profit before tax	Q2 2020	16,096	-14%	-0,26	-111%
	Q2 2019	18,602		2,47	
Gross profit margin	Q2 2020	28,4%	0,46%	-0,6%	-4,9%
	Q2 2019	27,9%		4,3%	

Source: Compiled by the authors on the basis of company reports posted on official websites.

Revenue of Chow Tai Fook Jewellery Group decreased by 15% to UAH 56.7 billion for Q2 2020. Margin revenue accounted for 0,46% of sales revenue. Chow Tai Fook Jewellery Group compensated for its losses in the

production of polished diamonds by selling gold jewelry with a sharp rise in gold prices in the world. The activity of jewelry production in integrated companies prevented diamond manufacturers from making a loss. For example, India's AsianStar, in a situation of restricted diamond imports and continued isolation announced in India, led to an 18 percent decline in revenue and a 111 percent decline in gross profit, resulting in a margin loss of 4,9 percent (Table 2).

In this situation, the financial and economic performance of diamond manufacturers depends on the business model used by the company. In the production of polished diamonds in crisis-free conditions margin income reaches 1-5%. Therefore, in this business, there is a practice to create a business model of the company in integration with other activities with higher marginal income (jewelry manufacturing, fashion industry, real estate, trade, and other businesses). The application of integrated business models allows reducing liquidity risks and replenishing operational losses during crises with other activities.

2.4. Midstream in Russia

In Russia, the diamond cutting industry has undergone a transformation in terms of organization and management of polished diamond production[9,17]. The uniqueness of Russia's diamond cutting industry is that after the crisis there are still enterprises in the industry that are owned by the state. For example, the diamond cutting companies JSC PO Kristall, LLC Diamonds ALROSA, and JSC Comdragmetal RS (Yakutia) have a controlling stake in the Government of the Russian Federation and the Republic of Sakha (Yakutia) respectively.

This aspect contributes to the financial sustainability of enterprises that directly receive state support measures during crisis periods (Table 3).

The diamond cutting complex operating within ALROSA Group is one of the largest diamond producers in Russia.

During the analyzed period, ALROSA Group, which includes JSC PO Crystal in Smolensk and LLC Diamonds of ALROSA in Moscow and Barnaul, showed a decrease in sales volumes to \$35.8 million of USD. In February 2020, there was a sharp decline in polished diamonds sales to 72% or from \$14.8 million USD to \$4.1 million USD. (Figure 4). According to operational data for July 2020, polished sales recovered to \$13.2 million USD[5].

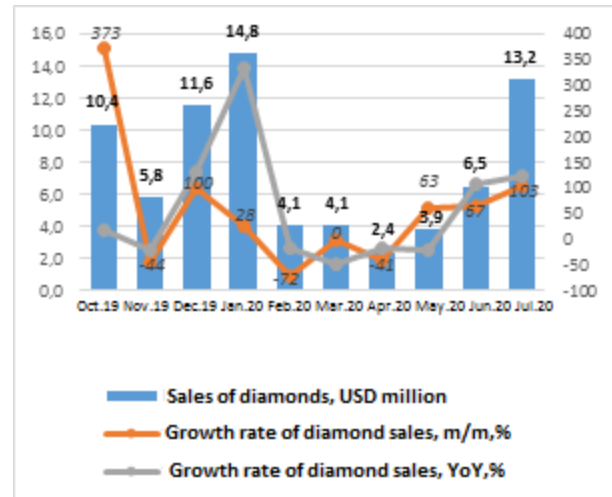


Figure 4: ALROSA Group Diamond Sales Dynamics

The situation in Russian regional enterprises is more complicated. One of the regions of Russia where polished diamonds are produced is the Republic of Sakha (Yakutia). During the pandemic, the region's diamond cutting industry leader LLC DDK (a subsidiary of KGK, India) announced the closure of its facility in Yakutsk. LLC NPK EPL Diamond also announced the transfer of its diamond-cutting production facilities to Moscow. JSC Comdragmetal RS (Ya) reduced production of polished diamonds by 60% in the first half of 2020 and intends to make adjustments to the planned figures for the production of polished diamonds in 2020. The remaining part of the region's polished diamond producers consists of individual entrepreneurs and small businesses, which also reduced their production volumes by 70-80% compared to the previous year.

3. DISCUSSION

Based on the results of the content analysis of the impact of restrictive measures due to COVID-19 on the world diamond market, the main active reactions of market participants to external factors of the economic system were identified (Table 3). The actions taken by market participants have been determined, the consequences and the effect of their reaction have been highlighted.

It should be noted that the diamond industry lags behind in terms of using digital technologies as compared to the fashion industry and tourism business. Not so long ago, the diamond industry was notable for its conservatism, closedness. Personal relationships, nepotism and trust were given priority. But things change. Digital transformation allows expanding the circle of trust, accelerate the process of information exchange, attract potential customers from anywhere in the world.

The introduction of digital technologies into the diamond market began with the development of the fourth industrial revolution, primarily in terms of introducing innovations into the technological process of production [15,16,18]. In trade and sales activity manufacturers for a long time kept

the offline sales format they were used to. Changing generations of consumers makes their own adjustments to the sales format. The use of online sales of diamond and

jewellery products expands sales opportunities, attracts potential customers and enables you to manage your presence on the Internet.

Table 3: Active response of the world diamond market to changes in external factors

No.	Factor	Action	Consequences	Effect
1	Coronavirus COVID-19 propagation	Introduced restrictive measures by the state on the movement of population to exclude contact between the population (producer, consumer)	- ban on offline sales; - remote operating mode; - industrial production has been suspended; - increased need to introduce digital technologies for contactless exchange of information, goods and services; - decline in consumer demand for diamond products.	↓offline sales; ↓ volumes of production; ↑online sales; ↑stocks; ↓Diamonds and diamonds.
2	Changing consumer tastes	Changing the generation of consumers: Milleniumimers prefer online shopping while looking for reliable information about the seller, competitive product price, and a convenient way to buy, delivery.	- development of digital business strategy; - disclosure of business information in order to increase consumer confidence; - new marketing formats, social media advertising, public faces, etc.; - development of online sales tools (mobile applications, website, delivery services).	↑online sales; - client base expansion; - creation a digital trail of information flow.
3	New laws and taxes	Government support for the industry during the pandemic: - tax and credit preferences. Maintaining demand for products	Reducing overall costs through the introduction of government support tools: - property tax credits, land tax; - postponement of tax payments; - preferential lending at a reduced rate for salary and social payments.	↓ tax burden of the business; ↓Reducing tax revenues to the local budget.

4. CONCLUSION

According to the study, the impact of restrictive measures from the pandemic has brought about more significant negative changes in the activities of diamond market participants. Over the past 30 years, a similar decline in diamond and polished production was observed only in the period 2008-2009 due to the impact of the global financial crisis. Based on the quantitative indicators of coronavirus impact assessment, it was determined that by the end of the first half of 2020 the reduction of indicators reached the minimum level of 2009. But it should be taken into account that the danger from the coronavirus has not yet been completely eliminated and a "second wave" of disease growth is expected. Consequently, the negative

consequences may continue, preventing the recovery of diamond pipeline segments.

At the same time, there is also a positive reaction of market participants to these circumstances, it is the active development of companies' digital strategies. COVID-19 restrictive measures have accelerated the digital transformation of diamond industry companies. Limited consumer access to diamond products pushed manufacturers to create new organizational, managerial, and investment mechanisms for selling their diamond products.

Forming and developing a company's digital strategy becomes a necessity and has added value as a tool to make it better [12,14,16]. The digital footprint created allows the creation of databases of producers and consumers, information flows contribute to management decision-making and the formation of strategic directions.

ACKNOWLEDGMENT

The authors express their gratitude and reverence to their research advisor Professor M. V. Nikolaev

for the gained knowledge and skills of research work [12]. This work was prepared within the framework of the project on the state task of the Ministry of Science and Higher Education of the Russian Federation titled The Patterns of Spatial

Organization and Spatial Development of Socio-Economic Resource Systems of the Northern Region (No. FSRG-2020-0010).

REFERENCES

- [1] C. Even-Zohar, Diamond Pipeline 2003-2018. IDEX Online News; Available from: <http://www.idexonline.com>
- [2] The Global diamond report. Bain and Company, Inc; 2019. p. 49. Available from: https://www.bain.com/contentassets/e225bceffd7a48b5b450837adbbfee88/bain_report_global_diamond_report_2019.pdf.
- [3] M.V. Nikolaev, E.E. Grigoryeva, P.V. Gulyaev, Assessment of risks influencing innovation activity of industrial enterprises (on example of diamond-brilliant complex), in: Eurasian Mining, vol.2, 2016, pp.6-10, DOI: 10.17580/em.2016.02.02.
- [4] The diamond insight report, De Beers; Inc; 2019. p. 56. Available from: https://www.debeersgroup.com/~/_media/Files/D/De-Beers-Group/documents/reports/insights/the-diamond-insight-report-2019.pdf.
- [5] Annual reports of ALROSA, PJSC. Official website of ALROSA, PJSC. Available from: <http://www.alrosa.ru>
- [6] The Golan Diamond Market Report – Q1 2020, Edahn Golan Diamond Research & Data, Inc; 2020. p.12. Available from: <https://www.edahngolan.com/the-golan-diamond-market-report-q1-2020>.
- [7] B.P. Radhakrishna, Diamond exploration in india: Retrospect and prospect, Journal of the Geological Society of India, vol.69(3), 2007, pp.419-442.
- [8] L. Mbayi, Turning Rough Dreams into a Polished Reality? The Development of Diamond-Processing Capabilities in Botswana's Diamond Cutting and Polishing Industry, in: The Global Diamond Industry: Economics and Development, vol.2, pp. 229-250.
- [9] E.E. Grigoryeva, External and internal factors of transformation of diamond industry of Russia, in: Smart Innovation, Systems and Technologies, Vol. 172. P.259-265. DOI: 10.1007/978-981-15-2244-4_24.
- [10] T.I. Pototskaya, International division of labor, the diamond complex: specialization and cooperation, in: Regional studies. vol.2, 2013, pp.52-60.
- [11] R. Grynberg, Some like them rough: The future of Diamond Beneficiation in Botswana, in: European centre for Development policy management (EADPM), vol. 142, EADPM, Maastricht, Netherlands, 2013, pp.2–9. DOI: <https://ecdpm.org/dp142>
- [12] B. Bhat, B. Bowonder, Innovation as an enhancer of brand personality: Globalization experience of titan industries, in: Creativity and Innovation Management, vol.10(1), 2017, pp.26-39, DOI:10.1111/1467-8691.00188.
- [13] N.Y. Samsonov, A.V. Tolstov, N.P. Pokhilenko, V.A. Krykov, S.R. Khalimova, Possibilities of russian hi-tech rare earth products to meet industrial needs of BRICS countries, in: African Journal of Science, Technology, Innovation and Development, vol.9(5), 2017, pp.637-644, DOI:10.1080/20421338.2017.1327922.
- [14] P.V. Gulyaev, Assessment of influence of large corporation performance on fiscal revenue in mining regions, in: Gornyi Zhurnal, Moscow, vol.12, pp. 23-26, 2018, DOI:<https://doi.org/10.17580/gzh.2018.12.05>.
- [15] E.E. Grigoryeva, N.R. Sentizova, Features of the Russian Raw and Cut Diamonds Business Digitalization, in: Advances in Economics Business and Management Research, vol.81, AEBMR, Paris, France, 2019, pp.131-134, DOI:10.2991/mtde-19.2019.24.
- [16] S.S. Mohtasham, S.K. Sarollahi, D.Hamirazavi, The effect of service quality and innovation on word of mouth marketing success, in: Eurasian Business Review, vol.7(2), 2017, pp.229-245, DOI:10.1007/s40821-017-0080-x.
- [17] V.V. Nikiforova, Methodological Approaches to the Assessment of Spatial Differentiation of the Basic Sectors of Subsoil Use of the Republic of Sakha (Yakutia), in: IOP Conference Series: Materials Science and Engineering, IOP Publishing Ltd, Bristol, vol.753, ch.6., 2020, DOI: <https://doi.org/10.1088/1757-899X/753/7/072008>.
- [18] N.Egorov, T.Pospelova, A.Yarygina, E.Klochkova, The assessment of innovation development in the arctic regions of Russia based on the triple helix model, in: Resources, MDPI Headquarters, Basel, Switzerland, vol.8(2), 2019, pp. 27. DOI: <https://doi.org/10.3390/resources8020072>