



Analysis of the current state and prospects of the gold mining industry in Russia

Análisis del estado actual y las perspectivas de la industria minera de oro en Rusia

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ABSTRACT:

The article investigates changes in the dynamics of demand and supply in the world gold market during 2015-2016. The authors determine factors crucial for the current state of the global gold mining, as well as trends and main challenges that bear production risks for gold mining enterprises: being not ready for future growth, low productivity and limited access to capital, cost overrun when implementing investment projects, etc.

Keywords gold mining, gold supply and demand, feedstock of gold mining enterprises

RESUMEN:

El artículo investiga los cambios en la dinámica de la demanda y la oferta en el mercado mundial del oro durante 2015-2016. Los autores determinan los factores cruciales para el estado actual de la minería mundial del oro, así como las tendencias y los principales desafíos que soportan los riesgos de producción para las empresas mineras de oro: no estar preparados para el crecimiento futuro, baja productividad y acceso limitado al capital, saturación de costes al implementar proyectos de inversión, etc.

Palabras clave minería aurífera, suministro y demanda de oro, materia prima de las empresas mineras de oro

1. Introduction

Investors traditionally consider investments in gold and gold mining assets both in terms of revenue generation and risks hedging. The price of gold and, thus, profitability of the gold mining industry, is closely related to the situation in the currency markets and represents one of the indicators of global currency risks.

The specifics of the mining industry development including the gold mining industry have been analyzed by a number of international scientists such as: R. Baumgartner, M. Berry, N. Hanson, S. Howard, S. Walters, etc., as well as Russian researchers: V.T. Borisovich, S.G. Kashuba, A.E. Natalenko, A.P. Stavsky and many others.

The Russian gold mining industry is one of the world leading ones and has some specifics which will be considered in this paper. Gold mining is one of the most promising sectors of the Russian industry as it has significant growth potential. According to the State Register of Mineral Reserves, the volume of gold reserves in Russia exceeds 13.1 thousand tons [6](#), which makes Russia one of the top three leading countries in this field: Russia has 14% of the world's explored gold reserves [7](#). According to the Union of Gold Miners, the inferred gold resources exceed the explored reserves by more than three times, which, along with vast unexplored areas, implies a great growth potential regarding the volumes of proven reserves and gold mining.

However, our country is rich not only in gold resources, but reserves that are concealed in the production waste occurring during the exploitation of mineral deposits. According to experts, by 2016 Russia accumulated

about 110 billion tons of industrial waste in dumps and stockpiles, which is the largest potential source of various mineral components, for instance, rare earth and precious metals (Kashuba, Ivanov and Dudkin 2017). After the 1998 crisis and the adoption of the law "On Precious Metals and Precious Stones" which cancelled the obligation to sell gold to the State Depository for Precious Metals (Gokhran) and allowed companies to manage the gold they extract at their discretion, the volume of gold mining in Russia has been growing rapidly. For instance, from 2010 to 2016, the volume of domestic gold production increased by 34% which is twice as fast as the world production.

Today, Russian gold mining is the industry best integrated into the world economy. Russian companies are among the most efficient on the global stage. By the volume of gold produced, Russia has been occupying the confident third position since 2013 (with a world market share of 7.9%), taking a back seat to such well-established leaders as the People's Republic of China and Australia.

The year 2016 presented relatively favorable conditions for the gold market. Compared to 2015, the world gold production increased by 0.4%, i.e. up to 3222 tons. It should be noted that there was a slowdown in growth rates over the last 3 years. The increase in production was registered in China by 3.5%, in Australia by 8.4%, in Russia by 9.9%, etc. The biggest reduction occurred in South Africa (27 tons), Peru (23.5 tons), etc.

Having analyzed the pace of the annual increase in gold production in the leading countries – China, Australia and Russia, – we can conclude that our country demonstrates a better performance by this indicator. For instance, in 2015, the growth rate in Russia and Australia if compared to the previous year was, respectively, 1.9 and 1%, whereas China showed a decrease by this indicator by 5.9%. In 2016, the situation changed for the better, which is confirmed by the fact that in the countries considered the growth rate increased to the previous year: in Australia – by 4%, Russia – 1.6%, China – 0.8%, respectively.

Let us consider the changes that occurred in the dynamics of supply and demand in the world gold market during 2007-2016. In 2016, the total supply of gold increased by 109 tons compared with the total for 2015 and amounted to 4,511 tons in 2016, which implies an increase by 2.5%. However, according to analysts (Thomson Reuters GFMS Report 2017), the growth was fairly insignificant. Growth rates declined by about half every year over the last 3 years. Partly, this was due to a reduction in supplies from new mines, which entails the expected decline in production in 2017.

The total demand for physical gold was going down for three years running and fell by 18% in 2016. This was mainly due to a sharp decline in the production of jewelry due to the collapse of jewelry manufacturing markets in India and China; however, other sectors demonstrated a lower demand last year too. In 2016, the demand for jewelry in Russia continued to go down: the fall estimated 12%; nevertheless, the decline rate was noticeably slower than in 2015. This was made possible due to the recovery of the silver market.

Net purchases of the formal sector fell to 257 tons, mainly resulting from a decline in China's demand. Russia purchased 201 tons. For 2017, the forecast was 250 tons, which was associated with the dollar strengthening and the positive trends in the commodity sector as a whole stimulating gold sales in developing countries.

Let us consider the situation with prices for precious metals, including gold, developing in the world market. The analysis showed that the prices for precious metals in 2016 were higher than the LBMA forecast: gold by 11% – 1251, silver by 12% – 17.14, platinum and palladium by 8% – 987 and 613.72 US\$/OZ respectively. The LBMA forecast for 2017 is gold – 1244, silver – 17.77, platinum – 1014 and palladium – 762 US\$/OZ.

Having studied economic papers presenting the opinions of researchers, analysts and experts in the gold mining industry, we can conclude that the current state of the global gold mining industry is determined by the following factors (Ruyga and Teterin 2015):

- the fall of the world prices for gold, starting from 2013;
- excessive supply of gold in the world market caused by high volumes of production in China;
- falling production of large gold mining enterprises due to the two factors mentioned above.

2. The situation in Russia's gold mining industry

Russia is one of the richest countries regarding gold reserves. Over the entire history of the Russian state, the country has mined over 18,000 tons of gold. Currently, there are 475 gold mining enterprises in the Russian Federation. The six largest companies (producing over 10 tons of gold per year) are Polyus (PJSC), Polymetal Int., Kinross Gold, Yuzhuralzoloto GC (JSC), Petropavlovskplc and Nordgold N.V. mining about 50% of Russian gold. In addition to that, it is worth noting that the top 5 largest gold mining companies in Russia are at the same time the largest companies with foreign participation.

Thirty five large companies (those producing over 1 ton of gold per year) account for at least 75% of the total gold production in the country. Other 440 companies, approximately, produce less than 25% of the total volume of gold in Russia. The eight largest gold mining enterprises currently own the largest gold deposits of the country. Currently, there are no unallocated deposits, which led to Russian enterprises expansion abroad:

for example, Polymetal to Kazakhstan and Armenia, Highland Gold – to Kyrgyzstan.

It should be noted that gold prospecting has been carried out quite actively in recent years. As of January 1, 2016, Russia has 13,800 tons of gold reserves in situ, which allows the country to take a confident position among the three global leaders in this field. In 2016, there was a growth in gold reserves by about 1,255 tons. If talking about trends, they are additional exploration and reassessment of existing deposits, exploration of flanks and deep horizons. This convincingly explains how such an impressive growth occurred: Olimpiadinskoye deposit – 792 tons of gold, Verninskoye – 221.7 tons of gold, Kuranakh group of deposits – 82.4 tons of gold. However, experts working in the field, as well as researchers, feel concern that the number of new big deposits is still quite small.

Analyzing the last 10 years of the development of the gold mining industry in Russia, we can identify two outcomes: firstly, a twofold increase in the volume of gold produced in the country; secondly, the leading role of large national and global corporations in the industry, driving out small companies controlled by the state.

It should be mentioned that for the seventh year running, Russia has been increasing mining of both gold ore and placer gold, which enabled the launch of new and modernization of existing facilities. In general, despite the decline in world prices, the situation in the gold mining industry is more than favorable for Russian producers. In the conditions of devaluating national currency, the production costs of domestic gold producers are also going down. Many costs for gold mining and labor costs are calculated in rubles, and do not change with the dollar exchange rate. In this regard, there is a certain advantage for Russian gold producers in the short term which predetermines the intensification of gold mining in contrast to the declining world trend.

At the end of 2016, three Russian companies – PJSC Polyus, Polymetal and Nordgold, – were among the TOP-20 leading gold producers in the world, taking the 9th, 18th and 19th places respectively.

In an interview to Gold and Technology Journal, Chairman of the Gold Miners Union S.G. Kashuba said that Russia's gold mining industry had taken full advantage of the ruble devaluation during 2015-2016. One can clearly see this in the operating costs of Russian companies, if compared with the costs of companies that work abroad. This refers both to the cost of production (TCC), and the aggregate cost (AISC), i.e. taking into account the supporting capital investment and exploration costs (Kashuba 2017).

Below there are the data on Russia's production of gold bullions and derivatives sold abroad during 2014-2016 (Table 1).

Table 1
Production of gold in the Russian Federation (David 2007)

| | 2014 | 2015 | 2016 | Changes over 2016/15 | |
|--|--------|--------|--------|----------------------|-------|
| | | | | ±, kg | ±, % |
| Gold bullions production | | | | | |
| Extractive | 230664 | 232341 | 238825 | +6484 | +3 |
| Accompanying | 16240 | 16604 | 14754 | -1850 | -11 |
| Extractive + accompanying | 246904 | 248945 | 253579 | +4634 | +2 |
| Secondary | 35812 | 38474 | 35014 | -3460 | -9 |
| Total: | 282716 | 288991 | 288593 | -398 | -0.14 |
| Gold in the derivatives of mineral raw materials, sold outside the customs territory of the Russian Federation | | | | | |
| Novoshirokinsky MPP, HGM, Zabaykalsky Krai | 1747 | 1716 | 2504 | +788 | +46 |
| Maiskiy MPP, PolymetalInt, Chukotka Autonomous Region | 4049 | 3035 | 2696 | -339 | -11 |
| Serebro Magadana, Polymetal, Magadan Region | 984 | 701 | 839 | +138 | +20 |

| | | | | | |
|--|--------|--------|--------|-------|------|
| Polyus (PJSC) | 224 | 382 | 2556 | +2174 | +569 |
| Sarylakh MSP, GeoPromining, Sakha Republic (Yakutia) | 281 | 515 | 230 | -285 | -55 |
| Total: | 7285 | 6349 | 8825 | +2476 | +39 |
| Total gold production | | | | | |
| From mineral raw materials | 254189 | 255294 | 262404 | +7092 | +3 |
| From secondary raw materials (scrap) | 35812 | 38474 | 35014 | -3460 | -9 |
| Total: | 290001 | 293768 | 297418 | +3632 | +1.2 |

Gold is mined in 25 Russian regions, with eight of them having the largest share of production (over 10 tons per year). By the end of 2016, these regions produced 212 tons of gold which amounted to almost 86% of the gold mined in the Russian Federation (Table 2).

Table 2
Gold production by Russian regions, kg (David 2007)

| | Value of indicators by year, tons | | | | | | | 2016/ 2015 ±% |
|--------------------------------|-----------------------------------|--------|--------|--------|--------|--------|--------|---------------------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | |
| 1. Krasnoyarsk Krai | 36069 | 39548 | 44001 | 47326 | 47236 | 49994 | 55058 | +10 |
| 2. Chukotka Autonomous Region | 24883 | 20057 | 17988 | 21361 | 30337 | 30548 | 28820 | -6 |
| 3. Magadan Region | 15627 | 15350 | 19587 | 21092 | 23847 | 23604 | 27314 | +16 |
| 4. Sakha Republic (Yakutia) | 18586 | 19378 | 20826 | 21951 | 23139 | 25344 | 23505 | -7 |
| 5. Amur Region | 19808 | 29111 | 28671 | 30664 | 29312 | 25946 | 22863 | -12 |
| 6. Irkutsk region | 16040 | 16990 | 18921 | 20595 | 22112 | 22104 | 22502 | +2 |
| 7. Khabarovsk Krai | 15215 | 13799 | 14799 | 20416 | 20540 | 18225 | 19847 | +9 |
| 8. Zabaykalsky Krai* | 6502 | 7459 | 8567 | 9452 | 9638 | 11219 | 12107 | +8 |
| Extractive total for 8 regions | 152730 | 161692 | 173360 | 192857 | 206161 | 206984 | 212016 | +2.4 |
| Extractive total for Russia: | 177262 | 188074 | 200700 | 221071 | 236413 | 238658 | 247650 | +3.8 |
| Also: accompanying | 12676 | 14538 | 15457 | 16005 | 16240 | 16604 | 14754 | -11 |
| Supplementary | 12592 | 7906 | 8532 | 17764 | 35812 | 38474 | 35014 | -9 |
| Total: | 202530 | 210518 | 224669 | 254839 | 288465 | 293768 | 297418 | +1.2 |

As we can see, three regions took leading positions in gold production (the Krasnoyarsk Krai, the Chukotka Autonomous Region and the Magadan Region) and accounted for 40 to 45 percent of the precious metal mining over the considered period.

Having analyzed gold mining and production in the world market and in the Russian Federation, we could identify the following trends.

1. Over the past 3 years, the global gold mining has been growing at a slower pace, especially in 2015. In the Russian market, the production of gold in 2016 occurred at a higher rate compared to a number of leading countries (for example, in Russia – 1.6%, in China – 0.8%).
 2. Increase in the export of gold concentrates which resulted from the growth of the relevant indicators at Polyus and Novoshirokinsky MPP (Highland Gold Mining). For instance, in 2015 the export of concentrates amounted to 6.3 tons, whereas in 2016 this indicator estimated 8.8 tons, i.e. a 39% increase.
 3. Decrease in Russia's production of gold from secondary raw materials from 38.5 tons to 35.0 tons, or by 9%.
 4. Decrease in Russia's production of accompanying gold during the development of complex polymetallic deposits (production in 2016 corresponded to the level of 2011).
 5. Additional exploration and reassessment of existing deposits in the territory of the Russian Federation, exploration of flanks and deep levels during gold prospecting.
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3. Challenges for Russia's gold mining industry

Acknowledging the steady increase in gold mining and production in Russia, researcher I.R. Ruyga determined the factors that hinder the competitive advantage of Russian gold mining companies. In his opinion, the internal factors are associated with high depreciation of fixed assets, difficult geological and geo-economic conditions of the development of many deposits, high logistics cost, low productivity of labor, companies being not ready for innovation, etc. The external factors manifest themselves in a largely intensified expansion of China and other Asian countries, high energy prices, expensive loans and others (Ruyga and Teterin 2015).

In its analytical paper (EY Report "Business Risks..." 2017), Ernst & Young Company identifies three main problems that pose risks to mining operations, including the gold mining industry: being unprepared for future growth, low productivity and limited access to capital.

The increase in productivity that ensures a long-term economic effect is still the most important condition for maintaining and strengthening a company's potential in the gold mining industry. The study showed that this task can be solved only by introducing breakthrough innovations. Companies that take these issues seriously and welcome innovation will be able to reach a qualitatively new level of efficiency. Activities on increasing productivity should be carried out with a long-term perspective in mind.

Most analysts and experts working in this field rightly believe that access to capital is the key survival factor for mining enterprises. Currently, commercial banks fully finance placer and ore mining in the country, whereas the state represented by the State Depository for Precious Metals finances some companies to a limited extent.

In the conditions of the recession in the industry, gold mining companies are finding it increasingly difficult to attract financing (Zaernyuk and Snitko 2016). In addition, the sanctions that were imposed against Russia in 2014 significantly limited banks and companies' access to the international capital market. However, after their introduction the internal growth potential was still quite high as in 2015 and 2016 the industry was supported by high ruble price for gold. Nevertheless, this potential is running out, while the sanctions are still there and, most likely, will not be canceled in the foreseeable future.

As long as large producers can improve their financial situation by selling assets and cutting capital costs, small and medium-sized enterprises are forced to look for funds elsewhere, with equity investors unwilling to take risks and potential lenders having an extremely selective approach. At present, alternative financing schemes are becoming more widespread, and they are often more complex, expensive and risky.

To date, only a few leading Russian companies can procure sufficient self-financing for their development: they are Polyus, Polymetal, Kinross, Nordgold, Yuzhuralzoloto and Highland Gold Mining. According to a number of authoritative experts and specialist, if we consider the leading Russian companies, all companies ranking below the fifth or sixth place face financing difficulties in one form or another. The total number of enterprises in the gold mining industry is a little below 500, and all of them need some development. At the same time, it is very difficult to obtain bank financing, even for enterprises that produce 1 ton of gold per year (Kashuba 2017).

Companies producing less than a ton, in fact, may procure no financing for development. Small and medium-sized gold mining enterprises are forced to seek funds elsewhere, facing the unwillingness of equity investors to take risks and an extremely selective approach from potential lenders.

Thus, we can conclude that in general all gold mining companies experience the lack of financing, i.e. not only small and medium-sized, but also companies that are significantly above the average level.

In the current situation, it is extremely important for gold mining companies to take an unbiased look at their financial position and consider strategic opportunities for attracting financing in the future so that they can

perform their short-term and long-term obligations at all stages of the project implementation. This can be achieved through careful preparatory work involving consistent efforts to reduce risks and constant monitoring of the dynamics of the financial market.

Gold is the only mineral the prospecting of which in the medium term is viable if covered by the federal budget. First, it is the most demanded mineral (along with oil) among mineral developers. Secondly, the variety of deposit types and the conditions of their formation opens very broad prospects for searching for gold deposits in many Russian regions. Thirdly, prospecting in promising areas identified upon previous regional studies financed from the federal budget will enable a quick and objective assessment of the effectiveness of investing public funds in the projects that are financed by private companies all over the world (Natalenko, Pak and Stavsky 2015).

Let us consider one more challenge, fairly significant for the gold mining industry, i.e. cost overrun due to the implementation of capital-intensive projects and reliable feasibility studies. As the international study conducted by Ernst & Young showed, although enterprises are constantly improving their competence in the implementation of large-scale projects, in 69% of cases they experienced cost overrun which averaged 62% of the declared budget (EY Report "Business Risks..." 2017). Exceeding the established budget and time limits negatively affects both the return on the invested funds and the overall performance of the companies.

The situation can be changed only by adopting a fundamentally new approach that will enable to achieve the set strategic goals and to ensure the level of profitability that shareholders and investors expect to receive. The measures should involve the following three aspects:

- introduction of advanced management and reporting systems with organized early warning signals, allowing early identification and effective minimization of possible risks;
- creation of sufficient reserves in case of exceeding the established budget and time limits during the life cycle of the project;
- better preparation for unforeseen situations due to competent scenario planning.

In addition to that, it is necessary to solve the problem of using the mining waste accumulated large quantities in the production and processing (also called technogenic waste). Most developed countries (USA, Canada, Great Britain, South Africa, Spain and others) pursue a policy of saving their resources by intensive processing of technogenic waste, disposing of industrial waste, and developing technologies for their processing. For example, in South Africa, 3.5 tons of gold and 696 tons of uranium a year are produced from dumps of gold recovery factories with a gold content of 0.53 g/t and uranium of 40 g/t. Currently, Russia cannot initiate a large-scale development of man-made mineral formations due to breaches in legal regulations. Processing of technogenic raw materials is also hindered by the fact that large mining enterprises consider it primarily as a way of long-term storage of mining and industrial waste and, to a lesser extent, as secondary mineral resources. Moreover, the RF Law "On Subsoil" [8](#) does not define the notion of "man-made reserves". Gold mining companies are interested in making additional amendments to this Law apart from defining the term "man-made reserves", which will make it possible to start the development of legacy placer without holding contests and auctions, as well as to obtain the permission to conduct mining operations at man-made placers without geological study of the subsurface within the boundaries of the mining allotment granted in accordance with the license.

In addition to that, there is an acute problem of replenishment of raw material resources of gold mining enterprises since budget funds do not suffice for prospecting and appraisals that are required for the discovery of new deposits. Exploration is the key stage for the industry and the current volume of investment in this is not sufficient. At present moment reserves are growing due to additional exploration and revaluation of old deposits, but this cannot continue for a long time. Gold mining companies are ready to invest their own funds in geological prospecting at the exploration stage, but this requires state support, in particular, making it simpler for mineral developers to obtain new facilities for both prospecting and evaluation, and for exploration and development. As for licensing, Russia has a too complicated procedure of approval of all types of projects, as well as the process of passing all the examinations, including the Directorate-General for State Environmental Review (Glavgosexpertiza), and this problem should be solved in the near future.

We believe that the state should also use certain instruments to stimulate gold mining from exhausted placers in all regions of the country; to ensure the implementation of a sufficient amount of research and development work to create the scientific basis for forecasting and searching for concealed gold deposits; to carry out, from the federal budget, the required volume of gold prospecting in prospective areas identified through regional and case studies.

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