Comparison of mineral valuations by international codes of CRIRSCO and GKZ for Kyrgyzstan

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Abstract. The authors compare valuations by GKS (RF State Commission of Reserves) and CRIRSKO for the transition of Kyrgyzstan to the international methods of mineral appraisal.

1. Introduction
Economic globalization, technological advance and expansion of business relations worldwide make numerous mining projects available for the international capital. All parties in this case are interested in standards for reporting of mineral resources and reserves as mining projects feature high risks.

The Committee for Mineral Reserves International Reporting Standards CRIRSCO has drastically contributed to the promotion of consistent reporting standards in the world. These standards are included in very similar codes published and accepted by the relevant professional agencies in Australia, Canada, South Africa, USA, Great Britain, Ireland, Russia and other countries.

The JORC code effective in Australia enjoys the highest success and popularity in the field of mining in the world thanks to simplicity, intelligibility and applicability to all kinds of minerals [1].

2. International approaches to the mineral valuation
Enhancing investment attractiveness and innovation potential in the mining sector needs international approaches to valuation of minerals. Productive yield of the mining industry of Kyrgyzstan in 2016 totaled 106 billion 86 million of Kyrgyzstan soms (approx 1 billion 600 million dollars). Private business invested to exploration 4.8 billion soms (approx 71 million dollars). The country spent 35.790 million soms (500 thou dollars) for replenishment of mineral reserves. The figure 1 demonstrates that the main product of the mining industry in Kyrgyzstan is gold, and its production rises.

The majority of the investors are from the developed countries and require transparent appraisals based on the international practice and the guarantorship secured by CRIRSCO. Currently CRIRSCO includes such countries and regions as (in brackets are the codes developed on the CRIRSCO standards) Australia and New Zealand (JORC), Canada (CIM), USA (SME), South Africa (SAMREC), Chile (IMEC), Europe (PERC), Russia (NAEN), Mongolia (MPIGM), Brazil (CBRR) and Kazakhstan (KAZRC).

Russian, Kazakhstan and Mongolia, the nearest neighbors of Kyrgyzstan, have already been engaged in the process of transition to the international reporting standards of mineral valuation, while Kyrgyzstan is merely making attempt to declare the transition. By now, Kyrgyzstan uses the mineral assessment system based on recommendations provided by the State Commission on Reserves (GKZ). It seems interesting to analyze the experience gained by GKZ in the transition to CRIRSCO standards in the CIS countries. For example, Russia has passed such stages as:
1990–2009—chaos in international reporting of hard minerals due to discordance on Russian and international classifications;
2006—CRIRSCO–GKZ RF working group set up for handling the problem;
2008—memorandum of understanding signed;
2009–2010—Guidelines on alignment of Russian minerals reporting standards and the CRIRSCO template prepared and approved by GKZ and CRIRSCO on Sep 28, 2010, Moscow;
2011—Russian CRIRSCO-aligned code developed for international market application.

Figure 1. Mineral produced in Kyrgyzstan in 2014–2015 (as per 2016 Annual Report of the Board of the State Committee for Industry, Power Engineering and Subsoil Use in Kyrgyzstan. Available at: http://www.gkpen.kg/)

The problems arising in international reporting of mineral resources and reserves due to inconsistency of the international classification and that of GKZ included:
— diverse perceptions of harmonization between the Soviet and international categories;
— common misunderstanding of the GKZ system and the difference between the two systems;
— expensive removal of contradictions: doubling of operations with the concurrent assessment of mineral reserves / resources by GZK and international systems.
As a result of inconsistency and chaos, the estimates of mineral reserves by GKZ and international systems differ fantastically [2].

Introduction of the CRITSCO Code in Kazakhstan proceeded in a few stages. The working group involved representatives of large producers operating on the Kazakhstan market; Chair of the Committee Mike Armitage, Chair of the Board of Directors at SRK Consulting, was the Chair of the GKZ RF–CRIRSCO Committee; Co-Chair was A. A. Nadyrbaev, Deputy Chair of the Committee of Geology and Subsoil Use of the Ministry of Industry and New Technologies in the Republic of Kazakhstan.

On June 10, 2011 Kazakhstan Mining Club held the first meeting on Harmonization of Kazakhstan and International Reporting Standards; in 2014 the CRIRSCO–Kazakhstan code was prepared; in 2015 preparation of the KAZRC code was undertaken and the memorandum of understanding was signed between the Ministry for Investment and Development and CRIRSCO. On June 14, 2016 Kazakhstan was elected to be the tenth member of CRIRSCO.

Currently there is a great discrepancy between the estimates of GKZ and CRIRSCO. The mining companies that have accepted this reporting system make more than 80 % in the total capital of the mining industry. For this reason, Kazakhstan, in order to promote investment in the mining sector, should urgently pass to international mineral valuation systems accepted by the majority of countries–investors. The process of transition can take much time which can be shortened if there is a political will. Minerals enrolled in the state balance sheet and attractable for foreign investors are compiled in Table 1.
As seen in Table 1, Kyrgyzstan holds more than 565 t of gold reserves. This fact can attract foreign investors and initiate very profitable projects under adequate, clear and plain conditions provided by the CRIRSCO codes imposing minimum requirements on international stock exchangers and intended to guarantee that the published Report of geological exploration results, mineral resources and mineral reserves contain all information necessary for the investors to evaluate advantages/benefits and disadvantages/risks connected with a mineral mining project. The current GKZ code lays extra risks and expenditures on foreign investors; in the most of them make calculations on Kyrgyzstan mining projects for foreign exchange markets.

Table 1. State balance sheet of mineral reserves of the Kyrgyz Republic

| Mineral | Reserves, t |
|---------|-------------|
| Gold    | 565.8       |
| Silver  | 480.5       |
| Copper  | 314.5 thou  |
| Iron    | 943.8 thou  |
| Mercury | 39 510      |
| Fluorite| 2 282.3 thou|
| Tin     | 186 761.4   |
| Tungsten| 117 233.2   |
| Bismuth | 5 082.6     |
| Lead    | 30.0 thou   |
| Antimony| 263 968.0   |
| Zinc    | 17.6 thou   |
| Arsenic | 65 200.0    |
| Molybdenum | 2 523.1  |
| Rare earths | 51.5 thou |

Table 2. Mineral reserves evaluated by the CRIRSCO family codes

| Mineral deposit   | Code                  | Stock exchange |
|-------------------|-----------------------|----------------|
| Taldybulak–Talass| JORC, (SAMREC)        | ASX            |
| Andash            | JORC                  | ASX            |
| Aktash            | JORC                  | ASX            |
| Zhangyr           | PERC                  | LME            |
| Bozymchak         | PERC                  | LME            |
| Chaarat           | PERC                  | LME            |
| Kutessai II       | JORC (CIM NI-43-101)  | TSE            |
| Kumtor            | CIM NI-43-101         | TSE            |
| Shambesai         | JORC                  | ASX            |
| Dzerui            | SME, PERC             | LME            |
| Kurandzhailuyu    | JORC                  | ASX            |
| Dolpran           | JORC                  | ASX            |
| Tuyuk-Kargasha    | JORC                  | ASX            |
Thus, 7 deposits are evaluated by the JORC code, and the largest deposit Kumtor is appraised the Canadian CIM NI-43-101 system. An advantage of the international codes of mineral valuation, among other things, is the rise in the value of a deposit by one third (Table 3) [3, 4].

Table 3. Advantages of the CRIRSCO code introduction

| Implementation period, months | Increment in value of deposit |
|------------------------------|--------------------------------|
| Initial cost of mineral deposit | X                              |
| Strategy (definition)         | 1–2                            |
| Scoping study                 | 2–3                            |
| Estimated reserves C₁ by GKZ  | 13–21                          |
| Estimated reserves by the JORC or N1 43-101 codes | 3–4 |
| Pre-feasibility study         | 6–12                           |
| Validation                    | 12–24                          |
| Feasibility study             | 6–12                           |
| Bankable feasibility study    | 12–18                          |
| Construction feasibility study| 10–15                          |
|                              | X×2                            |
|                              | X×3                            |
|                              | X×5                            |
|                              | X×10                           |
|                              | X×15                           |
|                              | X×20                           |
|                              | X×50                           |
|                              | X×100                          |

Many deposits have already been evaluated by the codes of the CRIRSCO family, which imposes a duty on the government to undertake early transition to the international codes of mineral valuation.

3. Conclusions

The JORC code is based on the market relations and reduction in corruption risks for investors. At the present time, augmentation of investments in the mining sector of Kyrgyzstan is connected with the earliest transition to the international codes of mineral appraisal.

The nearest neighbors—Russia, Kazakhstan and Mongolia—have already implemented such transition and overcome some problems and contradictions, which offers advantages to Kyrgyzstan to avoid the difficulties by having learnt experience of these countries.

References

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