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Russian mineral base of gold: Current situation and future views

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Russian Federation has significant gold mining potential. Gold reserves (about 13000 t) and localized resource potential (> 40000 t) enable its long-term steady production trend growth which can be realized within metallogenic provinces in Siberian and Far East federal districts.

Gold-only deposits are the main source of gold output. Although placer deposit share is substantial (20 %), it steadily decreases and appear to be minor by 2050. By-product gold recovered from complex deposit ores accounts for nearly 16 %; in the future, this share will increase due to exploitation of porphyry Au-Cu deposits similar to Peschanka (North East Russia) and Malmyzh (Amur region).

Yana-Kolyma gold province comprising a part of Magadan region and Sakha Republic (Yakutia) is one of top-priority areas. Here, reserves of gold deposits hosting veinlet-disseminated ores in carbonaceous-terrigene complexes (Natalkinskoye, Degdekanskoye, etc.) were proved; they account for over 30 % of the total Russian reserves. Areas in the west and south of Eastern Siberia where infrastructure is relatively well-developed are also top-priority for gold mineral base development. These prospective areas provided 45 % of proven gold reserves and 30 % of Russian gold output. Gold production growth is related to Sukhoy Log deposit development and further gold output at prospective targets (Verninskoye, Nevskoye, Olympiadinskoye, Blagodatnoye, etc.).

Despite some quality advantages of Russian gold deposit ores compared to ores at deposits developed globally, mining companies will face the imminent problem of efficiently exploiting deposits where the low-grade and “refractory” ores occur. Lack of the required experience and respective science-based

technological solutions combined with current infrastructure problems (transportation, energy) lowers the rate of making decisions on start-up of new operations. Therefore, it is essential to develop and implement modern and efficient technological solutions on new deposit exploitation.

In addition, further potential of gold mining development is provided by epithermal Au-Ag deposits in Mesozoic-Cenozoic volcano-plutonic belts located in the eastern Russia. By now, several deposits (Kupol, Mnogovershinnoye, Julietta, Karamkenskoye, Aginskoye, etc.) were identified and mined here. There is geological evidence to identify not only lode but also Au-Ag deposits and other types of deposits not typical of these areas; they are widespread abroad: in rocks of activated base of volcanic belts (Hishikari, Slipper) and veinlet-disseminated type in hydrothermally altered effusive pyroclastic strata (Round Mountain, Yanacocha).

Thus, there is every reason to believe that Russian gold production will total 400 t by 2030.