

International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle: Exploration, Mining, Production, Supply and Demand, Economics and Environmental Issues - IAEA CN-216

Contribution ID: 141

Type: **Poster**

Comparing recent uranium supply scenarios

Wednesday, June 25, 2014 5:00 PM (0 minutes)

For more than one decade –even after the Fukushima accidents - an increase in global nuclear energy generation capacity is widely expected. At the same time a variety of uranium supply scenarios were published by industry, academics or international organizations, drawing different pictures of future uranium supply. They were created with the background of a uranium market facing several challenges. First an excursion in the uranium market price, in 2007, then reduced nuclear growth expectations after 2011, at least in non-Asian countries, also implying considerable changes to the supply side.

For this publication a meta-study was carried out identifying, evaluating and comparing different recent scenarios on the availability of uranium. While there are some differences in the frame conditions (e.g. the expected uranium demand, the time frame, the considered mining projects,...), there are also notable similarities in these scenarios. This concerns long lead times for mine openings as well as the dependence on large mining projects (e.g. Olympic Dam, Cigar Lake). Generally, a decline in production in about 10 years is assumed, and thus the necessity of the timely development of mining projects is pointed out. In addition the omission of uranium from Russian nuclear weapons and the chances of keeping the changes in secondary supplies in balance with primary production have been widely discussed. Here, the production growth in Kazakhstan but also the role of the current market situation are central aspects. As another aspect the possible contribution from unconventional resources is of interest, particularly against the background of rising production costs for conventional resources.

Finally, it shall be reflected how well older scenarios were able to map the reality and which trends could or could not be anticipated. It is relevant to identify which aspects in the development of mining capacities are essential for security of supply, and can therefore be regarded as critical or less critical, and especially which impacts can be expected from the delay of projects.

Overall, it has to be noted that the availability of uranium will have a significant impact on growth prospects of nuclear energy, probably much more than publically discussed.

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Session Classification: Poster Session

Track Classification: Uranium markets and industry