

The Future of Nuclear Energy: Facts and Fiction Chapter III: How (un) reliable are the Red Book Uranium Resource Data.

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The Future of Nuclear Energy: Facts and Fiction Chapter III: How (un)reliable are the Red Book Uranium Resource Data?

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For more than 40 years, the Nuclear Energy Agency of the OECD countries and the International Atomic Energy Administration of the United Nations have published a biannual document with the title "Uranium Resources, Production and Demand". This book, known as the "Red Book", summarizes data about the actual and near future nuclear energy situation and presents the accumulated worldwide knowledge about the existing and expected uranium resources. These data are widely believed to provide an accurate and solid basis for future decisions about nuclear energy. Unfortunately, as it is demonstrated in this paper, they do not. The conventional worldwide uranium resources are estimated by the authors of the

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Red Book as 5.5 million tons. Out of these, 3.3 million tons are assigned to the reasonable assured category and 2.2 million tons are associated with the not yet discovered but assumed to exist inferred resources. Our analysis shows that neither the 3.3 million tons of "assured" resources nor the 2.2 million tons of inferred resources are justified by the Red Book data and that the actual known exploitable resources are probably much smaller.

Despite many shortcomings of the uranium resource data, some interesting and valuable information can be extracted from the Red Book. Perhaps most importantly, the Red Book resource data can be used to test the "economic-geological hypothesis", which claims for example that a doubling of uranium price will increase the amount exploitable uranium resources by an even larger factor. The relations between the uranium resources claimed for the different resource categories and their associated cost estimates are found to be in clear contradiction with this hypothesis.

Comments: 19 pages, 8 tables

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