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Testimony on “Effect of the President’s FY 2013 Budget for the U.S. Geological Survey on  
Private Sector Job Creation, Hazard Protection, Mineral Resources and Deficit Reduction”  
SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES  
NATURAL RESOURCES COMMITTEE  
UNITED STATES HOUSE OF REPRESENTATIVES  
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My name is Jonathan G. Price. I am the Nevada State Geologist and Director of the Nevada Bureau of Mines and Geology, which is the state geological survey and a research and public service unit of the Nevada System of Higher Education at the University of Nevada, Reno. As a member of the Board of Directors of the Society for Mining, Metallurgy, and Exploration, Inc. (SME), I am testifying today on behalf of that organization. SME is an international society of professionals in the minerals industry and related areas of academia and government. The SME membership is over 14,000 strong, with members in 85 countries and a staff of 42 located in Englewood, Colorado.

Thank you for this opportunity to comment on the budget of the U.S. Geological Survey (USGS) and the value of their programs.

Please allow me to begin by stressing two observations, based largely on analysis of data collected by the USGS: (1) global demand for mineral resources is at an all-time high, and (2) China is the world’s leader in the development of mineral resources. These observations present challenges, threats, and opportunities for the U.S. The four graphs at the end of my written testimony illustrate these observations. The historical data for global copper production (Figure 1) shows a rapid increase in annual mine production in the last two decades. Similarly, we are in the midst of the biggest gold-mining boom in history (Figure 2). China’s remarkable growth is illustrated by historical iron-ore production (Figure 3), and China’s dominance of global mining and the production of value-added mineral products, such as steel, is shown in Figure 4.

Although conservation and recycling can lessen the demand for newly mined mineral resources, the increases in both global population and average standard of living require more mining. Domestic resources for most mineral commodities occur in the U.S., where they are mined using the world’s best practices for environmental stewardship and the health and safety of workers and the public. The USGS has a vital role in documenting domestic production and reserves, in the context of international supply and demand, and in assessing the likelihood of future discoveries that will add to the mineral and energy resources of our country. The USGS also has a vital role in support of the Department of Interior’s stewardship of public lands.

SME has summarized some key points about mineral resources and related job creation in the following statements:

- “The U.S. depends on minerals for economic growth and development, and for national security and defense.

- Public lands are an important, long-term source of essential minerals.
- Access to public lands for mineral exploration and development has become more difficult as large tracts of land have been designated for other uses.
- Mineral-bearing areas on public lands are routinely withdrawn or restricted from development before comprehensive resource inventories and economic assessments have been made.
- Access to public lands provides the U.S. the opportunity to find and produce essential minerals, to significantly offset foreign mineral dependence, to decrease a growing trade deficit, to create skilled jobs, and to help solidify the nation's economic security.
- Mineral exploration and development usually require a relatively small footprint and can be considered a transitional land use that can occur concurrently or sequentially with other public resource uses.
- When mineral development occurs it must be held to the highest technical and regulatory standards in order to limit the environmental impact."

The President's budget proposes an overall cut of 8% (relative to fiscal year 2012 or 13% relative to fiscal year 2011) to the USGS Mineral Resources Program (Subactivity under the Energy, Minerals, and Environmental Health Activity). SME opposes this cut. The National Minerals Information Center of the USGS is the only organization that collects data and reports on overall nonfuel mineral production throughout the U.S. and globally. This information is vital for analyzing economic trends and ensuring supplies of materials needed for national defense and economic development. The work of the National Minerals Information Center is considered to be an essential government function in two 2008 National Academy of Sciences reports (titled *Minerals, Critical Minerals, and the U.S. Economy*, and *Managing Materials for a Twenty-first Century Military*) and in a 2011 report by the American Physical Society (titled *Energy Critical Elements: Securing Materials for Emerging Technologies*). These recent external reports have documented the importance of continuing to collect and analyze these data for both the economic health and national security of America. We believe these are programs and functions that should not be cut.

The President's budget would eliminate the Mineral Resources External Research Program, which would be a mistake, because the USGS would lose collaboration with subject experts they lack. Many of these experts are at our nation's universities, where engineers, geologists, and environmental scientists who will work in mining-related jobs in government, industry, and academia are being educated. The small amount of funding for this competitive external research program helps maintain the workforce pipeline in these vital fields.

The President's budget for the Mineral Resources Program contains a new item for Rare Earth Element Research. SME believes that it is crucial to reestablish a domestic rare earth production industry to help secure the nation's clean energy future, reduce the U.S. vulnerability to material shortages related to national defense, and maintain our global technical and economic competitiveness. The new USGS effort should help stimulate development of domestic resources, and SME supports inclusion of this item in the USGS Mineral Resources Program, but without an overall cut.

SME depended on the USGS for accurate mining-workforce data when compiling information for the National Academy of Sciences study on “Emerging Workforce Trends in the U.S. Energy and Mining Industries.” The USGS data confirmed that although only one-quarter of one percent of the U.S. workforce (~350,000) is employed by the mining industry, those industry workers contribute to the starting point for the value chain that regularly accounts for between 10 and 15% of the nation’s economy. In order to continue to provide that significant value to the U.S. economy and meet the growing demand for minerals, the mining industry needs a huge influx of skilled and properly trained workers to offset the projected 52% loss of skilled senior labor in the next 15 years. This stunning conclusion could not have been formulated without the efforts of the USGS to compile the needed data on the mining industry.

The USGS is responsible for assessing the mineral- and energy-resource potentials on public lands. SME believes that public lands should remain open and available for mineral exploration and development unless Congressional withdrawals or administrative actions are clearly justified in the national interest. A thorough geological and economic assessment, led by the USGS, should be made before any land is withdrawn. Given the lack of current and recurring geological assessment of many withdrawn areas, it is uncertain what minerals, and in what quantity and quality, occur on such lands. Periodic reassessments, led by the USGS, should be made of these lands.

The President’s proposed budget for the USGS’s Energy Resources Subactivity is approximately 10% higher than what was enacted in fiscal year 2012. The new emphasis on understanding geological and environmental issues regarding hydraulic fracturing is welcome, because this research will likely help develop relatively inexpensive resources of natural gas and may expand oil and geothermal resources. The proposed budget, however, has a decrease in funding for the National Coal Resources Data System. Coal continues to be a major supplier of inexpensive electricity for America. Research on new technologies for reducing carbon dioxide emissions, storing carbon dioxide underground, and adapting to climate changes is needed, because coal and other carbon-based energy fuels (including unconventional sources of oil and natural gas) are likely to dominate the global energy supplies for many years. Whereas the Energy Information Administration in the Department of Energy does a good job of collecting statistics on domestic energy production, the USGS’s role in long-term forecasting of energy supplies (including fossil fuels, nuclear fuels, and geothermal resources) is unique and necessary for long-term planning.

The President’s budget proposes an overall increase for the National Cooperative Geologic Mapping Program, which is good. This program supports a wide variety of applications, many of which relate to energy and mineral resources and hazard protection. The benefits of new geologic maps far outweigh the costs, as documented by economic studies in Illinois and Kentucky. States match funds for the STATEMAP portion of this program, and universities match funds for the EDMAP portion, which also helps maintain the workforce pipeline of geologists needed in industry, government, and academia. An example of the value of geologic mapping in Nevada is the discovery of the Carlin gold deposit in 1961. The geologic mapping was done by USGS geologists in a cooperative program with the Nevada Bureau of Mines and Geology, but the discovery was made through the additional investment by the private sector for drilling and assaying. Mining companies in Nevada have produced tens of billions of dollars’ worth of gold and silver from deposits of this type and have directly and indirectly provided tens

of thousands high-paying jobs. There is still much mineral wealth to be found in the U.S., and the National Cooperative Geologic Mapping Program is helping to identify prospective areas for exploration by the private sector.

The USGS Natural Hazards Program is also important to mining in the U.S., because USGS hazard-monitoring activities inform mining operations about local hazards, and because USGS hazard research adds to fundamental understanding of rock mechanics and slope stability, important factors in both surface and underground mining.

Overall, the USGS is a critical federal agency that is responsible for ensuring that accurate, fact-based, non-partisan domestic and international mineral information is available to its stakeholders.

Thank you, again, for this opportunity to comment on the value of USGS programs.

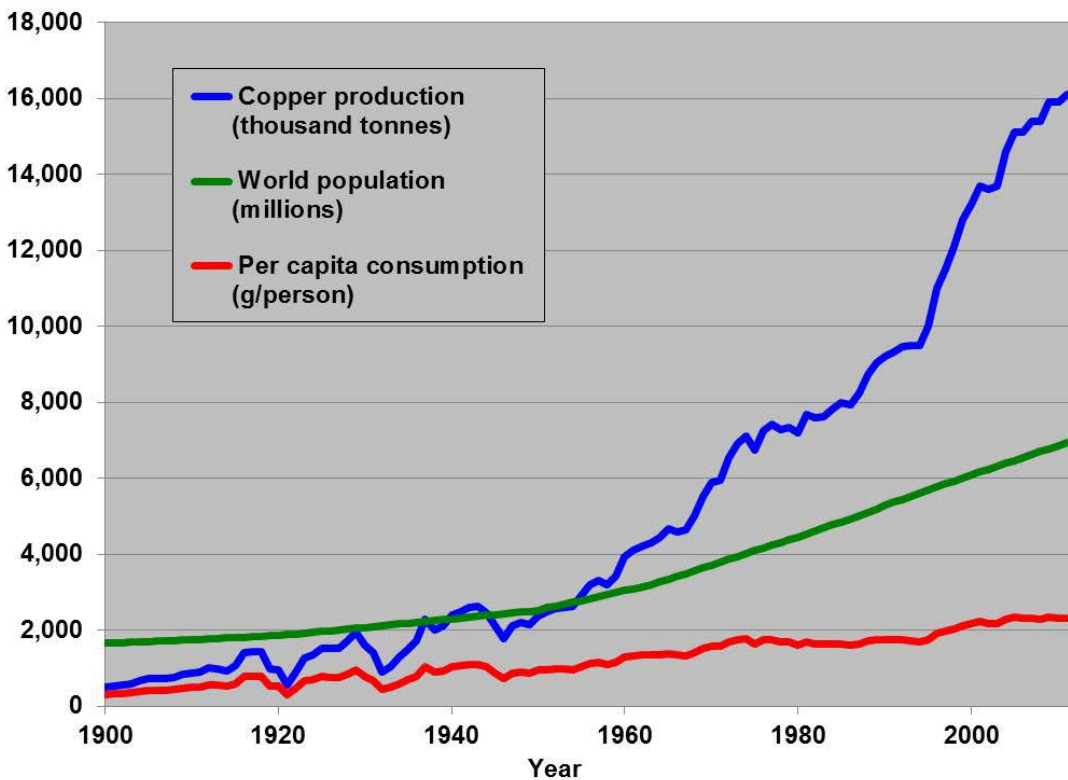


Figure 1. Global production of copper compared with world population and per capita consumption (production divided by population), a measure of average standard of living, from 1900 to 2011 (mineral production data from USGS). Demand for nearly every mineral and energy commodity is high, in part because of increasing world population and in part because of increasing standards of living in many parts of the world. While world population increased four-fold from 1900 to 2011, per capita copper consumption increased eight-fold, such that annual copper production in 2011 was 33 times more than in 1900. Global copper production in 2011 was a record high, at 16.1 million metric tons, approximately the same as the cumulative historical production, since 1906, from the Bingham Canyon copper mine in Utah. Copper is used primarily to conduct electricity. Domestically, the leading copper-producing states in 2011 were Arizona, Utah, New Mexico, Nevada, and Montana, and copper was also recovered from mines in Idaho and Missouri. Internationally, leading copper producers in 2011 were Chile (34%), Peru (8%), China (7%), the United States (7%), and Australia (6%).

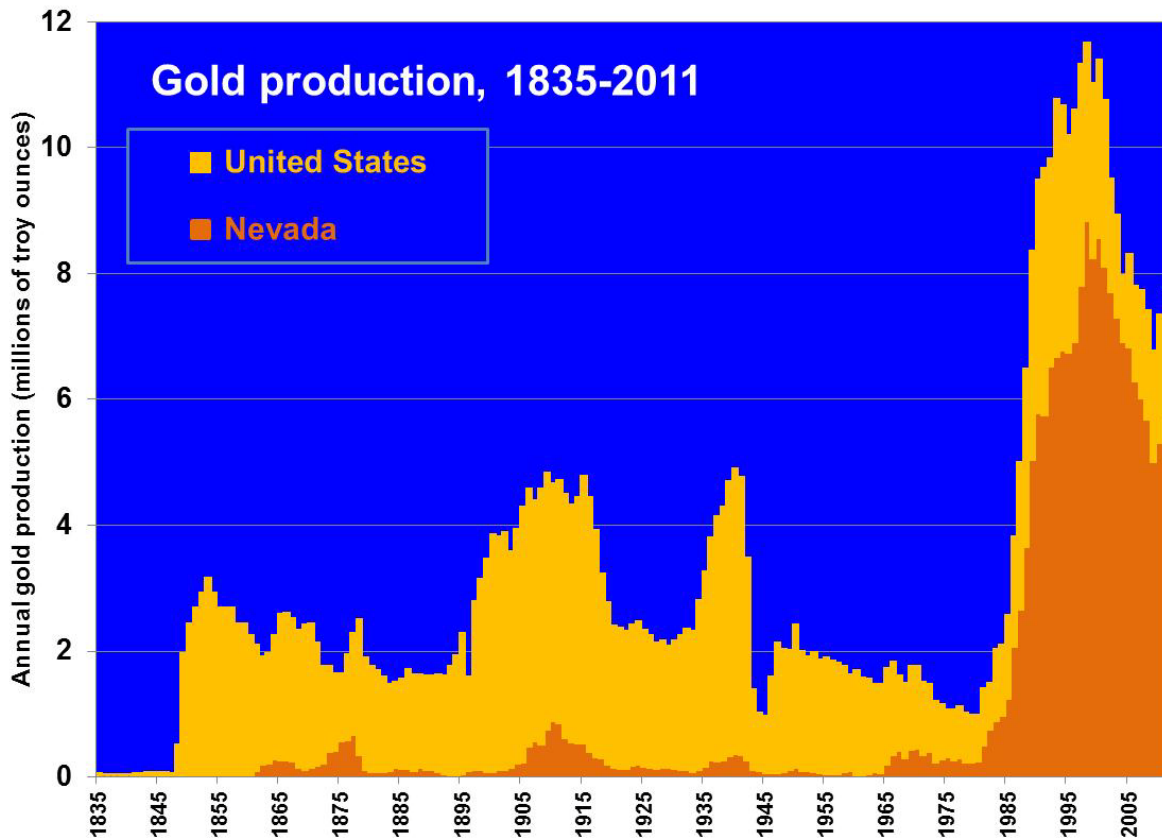


Figure 2. Domestic gold production from 1835 to 2011 (data from USGS and Nevada Bureau of Mines and Geology Special Publication 21). The biggest gold-mining boom in both American and world history, which started in 1981, continues today. Annual global gold production reached an all-time high of 2,700 metric tons (86.8 million troy ounces) in 2011. Although used primarily as money (investments in bullion and jewelry), gold also has important industrial uses as an electrical conductor in cell phones and computers, and as a heat reflector in energy-saving applications. Leading countries in 2011 were China (13% of the global total), Australia (10%), the United States (9%), Russia (7%), and South Africa (7%). Domestically, the leading gold-producing state is Nevada; other current producers include Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, South Dakota, Utah, and Washington; and South Carolina may return as a producer in the near future.

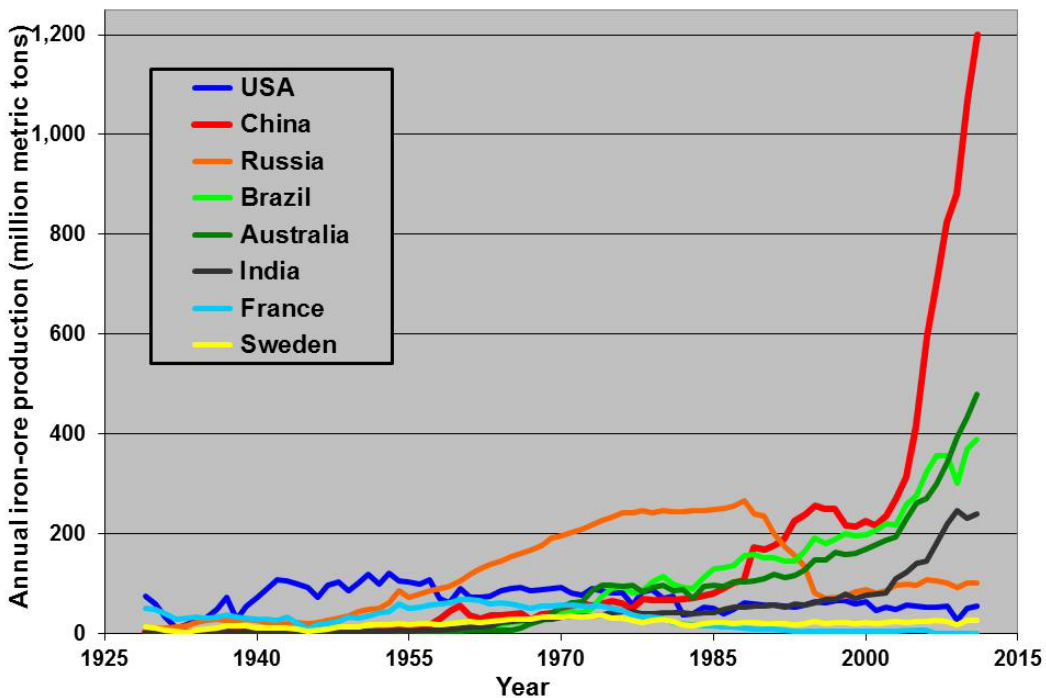


Figure 3. Iron-ore production by country (in millions of metric tons) from 1929 to 2011 (data from USGS). Global annual iron-ore production also reached an all-time high in 2011, 2.8 billion metric tons. Iron is used primarily in steel. Most of the iron-ore production from Australia and Brazil has fed the steel industry in China. Domestically, iron ore is currently mined primarily in Michigan and Minnesota.

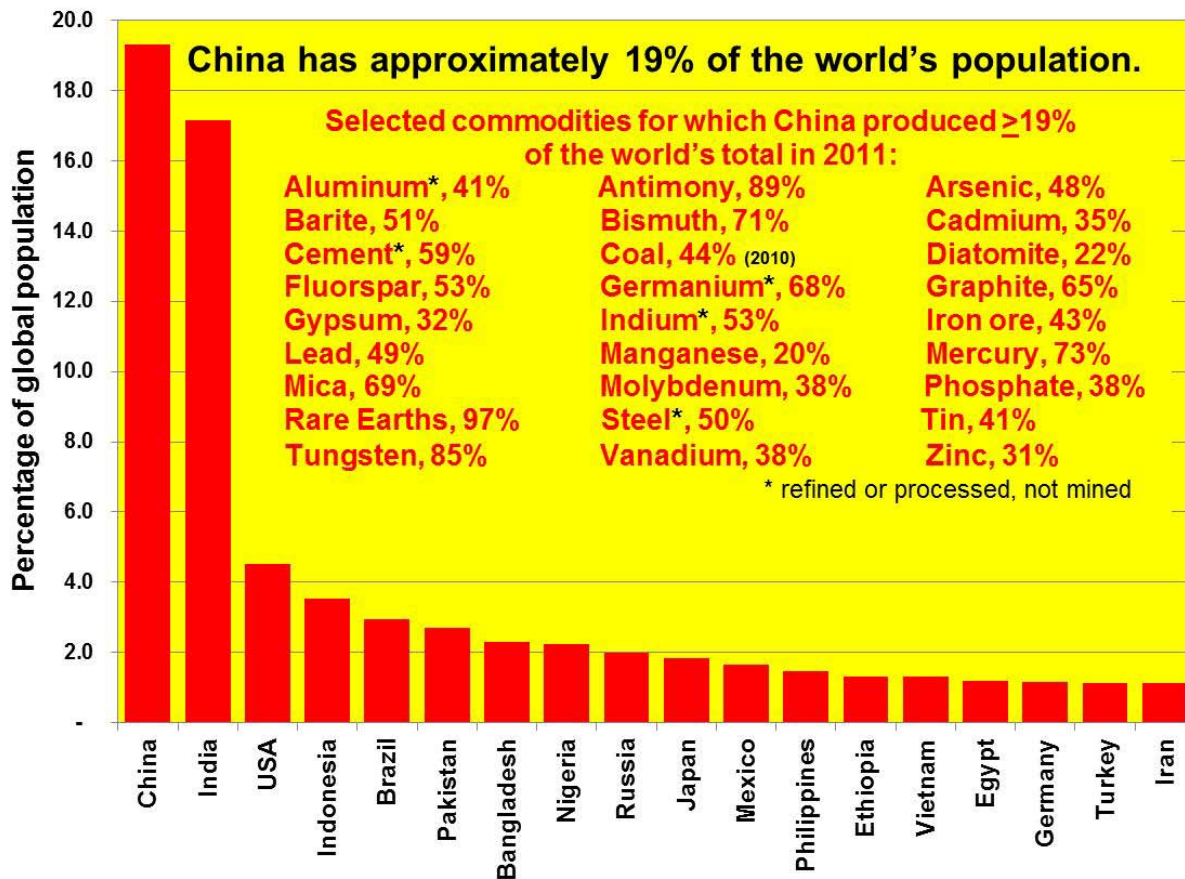


Figure 4. Percentage of global population by country. With approximately 19% of the world's population, China produces well over 19% of the world's supply of many mineral and energy commodities, some of which are highlighted on this graph (population data from CIA, coal production data from EIA, other mineral commodity data from USGS). No other country currently leads in the production of as many mineral commodities as China.