

MAINTENANCE OF CAPACITIES TO PRODUCE COMMODITIES

TOTAL SET OF INDICATORS

Sustainable Mineral Roundtable Preliminary Indicator List

(Italics Indicates Priority Indicator)

PC 1. Resources

PC 1.1 *Lands Available for Access for Exploration, Development, and Protection*

This indicator provides information to examine access to resources and lands. The indicator will identify the percentage of Federal lands that are unavailable, severely protected, moderately available, or available for exploration and development activities, and the indicator will also identify lands that are available to possibly be set aside for additional protection areas.

PC 1.2 *Average Grade of Ores Produced*

Measures the trend in the grade of commodity specific ores to be produced in the United States. This shows the changing grade of the ore available for future supply and also the trend of technologic improvements that has allowed for ores of varying grades to be produced over time. This indicator also relates to changing energy and capital requirements, as the lower the concentration of the ore, the more energy and capital it takes to extract the same quantity of end product.

PC 1.3 *Identified Resources*

Measures resources whose location, grade, quality, and quantity are known or estimated from specific geologic evidence and is available in such concentration that commercial extraction is either presently or potentially feasible. Identified resources are the pool from which future reserves (known economically recoverable resources) are drawn.

PC 2. Exploration Capacity

PC 2.1 *Annual Drilling Length*

Annual drilling length covers one segment of exploration activity by measuring the annual feet drilled by the energy and minerals sectors. It is used as an indicator of exploration activity for the energy sector, and, to a lesser extent as a result of data irregularities, for the minerals sector as well. Because there is a long lag time between the time an energy or mineral deposit is discovered and the time it reaches production status, it is important to look at long-term trends in exploration activities. The information provided by this indicator may be used to evaluate whether current exploration activities may be sufficient to generate future energy and mineral supply on a timely basis.

PC 2.2 *Annual Amount Budgeted for Exploration*

The goal of the information provided by this indicator is to measure the amount spent on exploration activity in the United States by the energy and mineral sectors. This is important from a sustainability perspective as domestic exploration expenditures relates to possible future domestic energy and mineral development. Unlike annual drilling length data, this measure covers the expenditures for costs at all stages of exploration, from initial reconnaissance mapping, sampling, or geophysics, to late-stage exploration associated with deposit development. In the case of the energy sector, expenditure data is available. In the case of the minerals sector as a result of data availability, amount budgeted for exploration is used as a proxy for actual expenditure.

PC 2.3 *Discovery Rate Per Dollar of Exploration Expense*

Measures the amount of effort expended, in this case in terms of dollars spent, to discover a given quantity of a commodity. This is important from a sustainability perspective because it gives an indication of the possible level of effort required to discover additional energy and mineral resources.

PC 2.4 *Annual Exploration Rig Use*

Measures the active exploration drilling rig count and corresponding drilling rig use, which is the ratio of active to available exploration drilling rigs. This indicator provides information to analyze the short-term ability of the United States to rapidly meet increased demand for domestic oil and gas production.

PC 2.5 *Annual Domestic Coal Leases and Licenses*

Active coal exploration leases and licenses for coal on public lands are used as a proxy for the trend of exploration in the coal industry. This occurs because coal exploration expenditures and drilling data are not available. The information presented by this indicator can be used to show the trend of exploration activities to replenish future domestic coal resources.

PC 3. Production (Extractive) Capacity

PC 3.1 *National Supply Mix of Energy and Mineral Commodities*

Illustrates the current status and trends of how the United States is meeting its energy and mineral wants and needs. This set of indicators provides information that summarizes U.S. mineral production and net import reliance statistics over time as a measure of the extent to which domestic demand for selected energy and mineral commodities is met by foreign sources.

PC 3.2 *Co-Product and By-Product Inter-dependence*

Measures the dependency some commodities have for their production on the production of other commodities (i.e., co-products, and by-products). The information provided by this indicator measures the percent of non-fuel mineral production that is produced as a co-product or by-product. From a sustainability perspective, it is important to be aware of possible consequences of decreased or increased production from a commodity.

PC 3.3 *Idle Production Capacity as it Relates to Total*

This indicator provides information that measures total (rated) capacity and idle capacity at a facility, then computes the percentage of idle production capacity as it relates to total capacity. This information can be used to determine the amount of idle capacity that could be utilized in the short-term to meet supply needs.

PC 3.4 *Percent of Natural Gas (Flared) and Coal Bed Methane (Emitted) Compared to Total Production of Gas Fuels*

Measures the amount of natural gas (flared), coal bed methane (emitted), and production of gas fuels. Then the percentage of natural gas (flared) to the total production of gas fuels, and the percentage of coal bed methane (emitted) to the total production of gas fuels is calculated.

PC 3.5 *Produced Water*

Measures the amount of water produced from coal bed methane production.

PC 4. Processing Capacity (Smelting, Refining, Pipelines, Transportation, etc.)

PC 4.1 *Ratio of Virgin to Recycled Minerals*

Measures the percentage of a commodity that is derived from recycled sources. The information provided by this indicator may be used to show the current status and trends of how the Nation is meeting its minerals wants and needs.

PC 4.2 *Pipeline and Transmission Line Capacity*

Measures the kilometers of usable oil and gas pipelines and the kilometers and kilowatts of usable electricity transmission lines. The information provided by this indicator could be used to examine the capacity to deliver current supply to meet current and future demand.

PC 5. Use of Energy and Mineral/Materials

PC 5.1 *Consumption of Energy and Minerals During a Specified Time Period*

This indicator provides information that shows the amount of energy and mineral commodities consumed during a specified time period. The information provided by this indicator can be used to examine the status, trends, and changing consumption patterns over time.

PC 5.2 *Stocks in Use*

Measures the amount of stocks in use of selected metals versus the cumulative total apparent consumption of the same metal. The information provided by this indicator may be used to understand the magnitude of the potential additional resources that are available above ground, which could be utilized in the future through recycling.

PRODUCTIVE CAPACITY CRITERION INDICATORS APPENDIX

PC 1.4 Reserves

Measures that part of the reserve base that could be economically extracted or produced at the time of determination. The term reserves need not signify that extraction facilities are in place and operative and reserves include only recoverable materials. This information could be presented in a table of reserves by commodity and annual average production. This information can be useful for analyzing the short-term ability to meet demand.

PC 1.5 Resources Left Behind /Bypassed

Measures the percent of the mineral commodity that is left in the ground (unrecovered) at the completion of the mining process. This information could be used to show how much of the resources are actually extractable.

PC 4.3 Barge, Fresh Water Shipping Vessels, Ocean-Going Vessels, Rail, and Truck Transportation Capacity

Measures the length of railroad track, the number of vessels, or the number of trucks available to transport commodities. The information provided by this indicator could be used to examine the capacity to deliver commodities to meet current and future demand.

PC 5.4 Trends in Consumption of Mineral Materials Versus Forest Materials.

Measures the annual consumption, in terms of weight, of forest materials and mineral materials. Then the percentage of annual consumption supplied from forest materials versus mineral materials is calculated. This information could then be used to examine the trend in the consumption of mineral materials versus forest materials.

PC 5.5 Diversity of Resource Development: Products Usage-Percent of Resource Development Products in Use Per Sector

Measures the percent of a specific commodity's apparent consumption that can be attributed to specific end-use sectors. This information may be used to examine the diversity of commodity usage by end-use sectors.

PC 5.6 Diversity of Resource Development Products Usage-Percent of Resource Development-Derived Energy Used Per Sector

Measures the amount of the varying forms of energy required to produce a standardized quantity of a specific commodity. This information may be used to examine the diversity of energy sources available to produce specific commodities.

PC 5.3 Substitution and Life Span Indicators

Measures the varying life spans of products constructed from different materials. From a sustainability perspective, this information could be used to identify sustainable substitutes for various applications.