

Note: Indicator 2.9 is a national scale indicator intended as a measure of capital investment. It comprises two measures, annual additions to capital and net value of existing capital. Only the first is presented here. DJS

Background Information for Socioeconomic Benefits Criterion Indicator 2.9

A. Rationale for use of the indicator

Economic development and growth in income cannot occur without capital inputs to the production process. Tools such as machinery, buildings, and infrastructure are critical components of any industry. As the Interagency Working Group on Sustainable Development Indicators states:

“Capital assets are one measure of the economic endowment that we pass on to the future. If a nation continues to invest sufficiently and successfully, its net tangible wealth increases. Investment is important because it offsets the loss of capital caused by the use and aging of structures and equipment and because new investment often embodies new technologies that increase labor productivity and resource efficiency.”

The minerals and energy sector is one of the most capital-intensive industries, with complicated machinery used in every facet of the business from exploration to production to beneficiation and refining. Other important capital items include buildings and infrastructure such as roads and pipelines. All capital eventually wears out, and a comparison of current investment versus depreciation of these fixed assets is an important indicator of whether the stock of available capital will be able to provide services into the indefinite future.

In addition to the use of capital as a direct engine of economic sustainability, there are two other important reasons for measures of the stock and flow of capital expenditures to be included as an indicator. First, when compared with the level of production, the quantity of available fixed assets provides a measure of potential capacity for minerals production both now and in the future. Growth in demand for final products cannot be accommodated without available production capacity. Second, investment in resource development and energy capital projects is a clear indicator of the sustainability of the industry. Firms with a long-range outlook are more willing to invest funds in projects that may not generate returns until many years down the road.

B. Available data to quantify the indicators

Data for the capital assets in the minerals and energy industries is reported by the Census of Mineral Industries. This document has been published by the U.S. Department of Commerce Census Bureau in five years intervals since 1967. The economic census was also taken in 1963 and 1958. The latest available data is for 1997 and the next Census of

Mineral Industries is due out in 2004-2005. The statistics are detailed for both the national and state levels. The Census Bureau attempts to be as comprehensive as possible by sending out questionnaires to the majority of mining establishments except for very small firms. Even with these small establishments, the Census does obtain aggregated information from other Federal agencies. Although this source of data is not available on an annual basis, no other source is as detailed for most of the minerals sectors.

The measure of capital expenditures is directly reported in the General Summary of the Census of Mineral Industries for all four major minerals sectors (metal mining, coal mining, oil & gas extraction, and nonmetallic minerals). The 1992 Census gives historical statistics (in nominal dollars) since 1958. This item includes permanent additions and major alterations as well as replacements and additions to capacity for which depreciation, depletion, or Office of Minerals Exploration accounts are ordinarily maintained. It specifically measures the cost of buildings, structures, machinery, and equipment. Capital expenditures for mineral land and rights are also available but reported separately.

The stock of capital assets is measured as the gross value of depreciable assets by Census of Mineral Industries. The values reported (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). For 1997, these values include all buildings, structures, machinery, equipment (production, office, and transportation equipment), capitalized mineral exploration and development, and mineral land and rights for which depreciation, amortization, or depletion reserves are maintained. Capitalized mineral exploration/development and mineral land & rights were reported separately prior to 1997. Prior years will need to include the book value of these two items in capital stock or the discrepancy in the data will need to be noted.

Another difference to note between the 1997 Census of Minerals Industry and prior reports is the industrial classification system that is used. Most statistical agencies have been or are in the process of changing industry classifications from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS). The Census of Mineral Industries adopted the NAICS system in its 1997 report. For the four major minerals sectors the two systems correspond directly except in terms of the support activities. Data from pre-1997 SIC-based reports lumped support services under the major classification whereas the NAICS system report support services separately from the major industry classification. Each industry includes only upstream production activities; smelting and refining are classified as manufacturing industries. Table I below shows the coding for the minerals sectors.

TABLE I

Industry	NAICS code	SIC code
Metal mining	2122	10
Nonmetallic minerals	2123	14

Oil and gas extraction	2111	13
Coal mining	2121	12
Support activities for metal mining	213114	1081
Support activities for nonmetals	213115	1481
Support activities for coal mining	213113	1241
Support activities for oil and gas	213112	1382
Oil and gas drilling	213111	1381

Source: Bureau of Labor Statistics internet website < <http://www.bls.gov/bls/naics.htm>>

C. Analysis of past data

The figures at the end of this report graphically summarize the trend of the data for two different measures of capital assets:

- Capital expenditures on buildings, structures, machinery, and equipment
- Gross value of depreciable assets

From Figure 1, it is obvious that the oil and gas industry sector dominated investment in terms of dollar value with over five times as much capital expenditures as the other three industries. No trend, either upwards or downwards, has been evident in the time series data for any of the industries. All four sectors saw a rise in investment during 1977 and this investment skyrocketed in 1982 for the oil and gas sector (mainly in response to energy price increases). Since then, each of the four industries has generally returned to their normal levels of investment. Table II shows the 1997 real value of capital expenditure.

TABLE II

Industry	Real Capital Expenditures
Metal Mining	\$ 1,964 million
Coal Mining	\$ 1,989 million
Oil & Gas Extraction	\$ 21,376 million
Nonmetallic Minerals	\$ 1,771 million

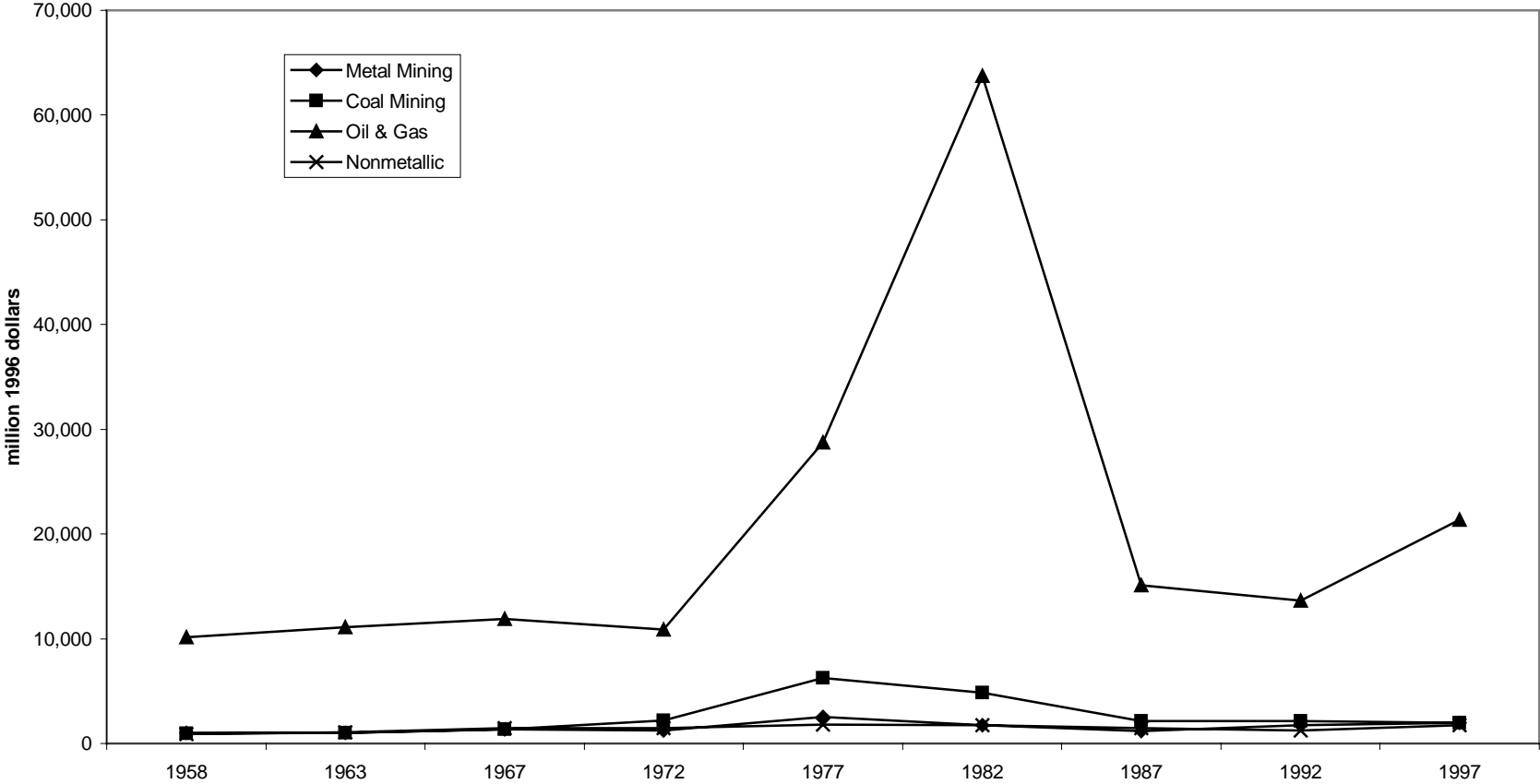
D. References

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Real Capital Expenditures



Source: U.S. Department of Commerce, Census Bureau, Census of Mineral Industries internet website < <http://www.census.gov/mcd/> >