

**Sustainable Minerals  
Roundtable—An introduction  
and summary of progress**

**Co-Chairs**

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# What is Sustainability?

Sustainability is:

- a concept of needs;
- an idea of limitations;
- a future oriented paradigm; and
- a process of change.

# **Brundtland definition of Sustainable Development:**

*development that meets the needs of the present  
without compromising the ability of future  
generations to meet their own needs.*

**There are many other  
definitions of Sustainable  
Development.**

Most of the definitions address  
three dimensions of  
sustainability:

- **economic prosperity,**
- **environmental health, and**
- **social equity.**

There are many definitions of Sustainable Development because there is disagreement about how to balance the three dimensions.

**Are the principles of  
sustainability applicable to  
mineral resources?**

**YES!**

**The principles can be applied  
to energy and mineral  
resources.**

**Mineral resources are extracted because their sale generates wealth and their use provides a stream of benefits.**

**Mineral resources provide the material basis for a developed society.**

**However, mineral extraction, processing, use, and disposal can entail environmental and social costs.**

**Sustainability offers a framework within which we can describe our complex, and sometimes conflicting, social, economic, and environmental goals.**

**The capital-based approach to sustainability acknowledges the existence of complex relations and the need for trade offs.**

# Types of capital:

- **Natural Capital:** Traditional natural resources, including minerals and natural assets that are not traded in markets.
- **Physical Capital:** Physical, produced assets that are assigned monetary value and traded in markets.
- **Human Capital:** The health, well-being, and productive potential of individuals.
- **Social Capital:** The status, functioning, and resilience of social institutions.

# **A capital-based definition of Sustainability:**

*a condition in which society maintains the net amount of natural, physical, human, and social capital, and transforms capital so as to yield constant or increasing opportunities for satisfying human needs and wants generation after generation.*

**How do we track progress  
toward social, economic, and  
environmental sustainability?**

**How do we measure human  
well-being?**

# Through the use of Criteria and Indicators:

- Criteria describe what it means to be sustainable.
- Indicators are variables that describe some aspect of a phenomenon or system. They report actual present and historic conditions, rather than predicting future conditions.
- Achievement of sustainability goals is assessed through analysis of the set of indicators. No single indicator can tell the whole story.

**The purpose of the Sustainable Minerals Roundtable is to develop a set of national-scale sustainability criteria and indicators for mineral and energy resources.**

# **Sustainable Minerals Roundtable: History**

In June of 1999, the USDA Forest Service invited stakeholders from Federal agencies, Tribes, industry, nongovernmental organizations, and academia to a meeting in Washington, D.C.

# Sustainable Minerals Roundtable: History

The purpose of the first meeting was to:

- provide background information on sustainability;
- discuss the Montreal Process Criteria and Indicators; and
- assess interest in forming a Roundtable that would discuss criteria and indicators and share information on minerals and energy sustainability.

# Why the Forest Service?

The USDA Forest Service has a legal mandate to report on the Nation's natural resources and has committed to using a framework of criteria and indicators of sustainability to do so.

Based on feedback from participants at the first meeting, the Sustainable Minerals Roundtable was formed and the U.S. Geological Survey joined as a co-sponsor. The Roundtable is now convened by Dirk van Zyl, under a research agreement between the USDA Forest Service and the Univ. of Nevada, Reno.

# Sustainable Minerals Roundtable: Process

- The Roundtable process is open, transparent and collaborative;
- Participation is voluntary;
- 17 meetings have occurred to date, in different locations around the country; and
- Meetings have a core of regular participants, supplemented by representatives of local governments, organizations and industry.

# **Sustainable Minerals Roundtable: Process (Cont.)**

- Verifiers or threshold values are not selected;
- Interpretation is left to the users; and
- The Steering Committee participates in the Roundtable Network with representatives of the Forests, Rangelands and Water Resources Roundtables.

# Coordination with the Rangeland, Forest, and Water Roundtables

- Chairs of all Roundtables meet every 3 to 4 months to share information.
- Common issues are being identified.
- Differences and consistencies are being identified.
- Standardized definitions are being developed where appropriate.

# Sustainable Minerals Roundtable: History

Activities to date have included introductions to and reviews of:

- sustainability concepts;
- life cycle and material flow concepts;
- indicator theory;
- scale issues of indicators;
- value basis of sustainability;
- international work on mineral indicators; and
- mineral industry activity on sustainability.

# **Sustainable Minerals Roundtable: Vision**

We envision a future in which the capacities of mineral/material and energy systems meet the demands of current and later generations, while maintaining or enhancing the environmental, social, and economic systems in the United States and the world.

# **Sustainable Minerals Roundtable: Mission**

The Mission of the Roundtable is to support the Nation's commitment to Sustainable Development. The Roundtable will develop indicators of sustainability, based on social, economic, and environmental factors, to provide a means for assessing the status and trends of minerals/materials and energy systems.

# Guiding Principles

- Adopt the Brundtland definition of Sustainable Development.
- Develop indicators that will be applicable nationwide.
- Acknowledge and use as appropriate, other existing indicator initiatives.

# Guiding Principles - cont.

- Encourage open communication among all participants.
- Use neutral wording.
- Avoid selecting or not selecting measures with the intent of predetermining the results.
- Operate within a generalized Montreal Process framework of criteria.

# Montreal Process Criteria

1. Conservation of biological diversity
2. Maintenance of productive capacity of forest ecosystems
3. Maintenance of forest ecosystem health and vitality
4. Conservation and maintenance of soil and water resources
5. Maintenance of forest contribution to global carbon cycles
6. Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies
7. Legal, institutional, and economic framework for forest conservation and sustainable management

There are differences between the  
Montreal Process and the  
Sustainable Minerals Roundtable  
Criteria Sets

# **Sustainable Minerals Roundtable Criteria**

Montreal Criteria addressing biological diversity, ecosystem health, and global carbon cycles are considered the responsibility of the Forests, Rangelands and Water Resources Roundtables.

# **Sustainable Minerals Roundtable Criteria**

Productive capacity is addressed in terms of society's ability to produce mineral and energy resources.

# **Sustainable Minerals Roundtable Criteria**

The Criterion addressing soil and water resources has been expanded to include air, and focuses on relationship between energy and minerals related activities and environmental quality.

**I. Maintenance of productive capacity**

**II. Maintenance of environmental  
quality**

**III.** Maintenance of long-term social, economic, and cultural benefits

**IV.** Monitoring of trends in the legal and institutional framework

The list of indicators, background materials, and notes from prior meetings of the Sustainable Minerals Roundtable are posted on the Roundtable website:

[www.unr.edu/mines/smr](http://www.unr.edu/mines/smr)

# Current and Future Activities:

- Reviewing the indicator set for completeness;
- Prioritizing the indicator set;
- Populating high priority indicators with data;
- Conducting formal external review of the indicators;
- Communicating the indicators to the public; and
- Planning for next steps.