

# **U.S. Sustainable Minerals Roundtable**

**Presentations to Stakeholders  
Week of June 23, 2003**

# What is Sustainable Development?

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- Recognizes the interconnections among systems;
- Incorporates the concept of limitations;
- Is future oriented;
- Is value driven; and
- Is a process of change, not an end-point.

**There are many definitions of sustainability. Most incorporate three principles:**

**Economic Prosperity;  
Environmental Health; and  
Social Equity.**

**These principles apply to energy and mineral resources, which are a source of wealth and provide a stream of benefits.**

**Energy and mineral resource extraction, use, and disposal can also entail environmental and social costs.**

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

**The capital, or endowments,  
approach to sustainability  
acknowledges the existence of  
these complex relationships  
and the need for trade offs  
among goals and over time.**

# Types of Capital

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- **Natural Capital:** Traditional natural resources, including energy and minerals, and natural assets that are not traded in markets.
- **Built 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 Sustainable Development:

development that maintains the net amount of capital over time, but also transforms capital so as to yield constant or increasing benefits to current and future generations.

**Sustainability for energy and mineral resources does **not** mean sustaining every individual deposit, field, mine or company.**

**It means maintaining the stream of benefits energy and minerals provide in such a manner that the net contribution to capital over the entire life cycle is positive.**

**Progress toward the goal of sustainable development can be described in terms of criteria and indicators.**

**Criteria describe what it means to be sustainable. They serve as the basis for assessment and achievement is judged through indicators.**

**Indicators are measures or parameters that describe some aspect of a phenomenon or system.**

**Indicators are useful as  
analytical, explanatory,  
communication, planning, and  
performance assessment tools.**

# Indicators should be:

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- **Representative of the chosen system (economic, environmental, or social);**
- **Have a sound scientific basis;**
- **Be quantifiable; and**
- **Be without social bias.**

**Effective indicators turn vast amounts of analyzed data into meaningful and relevant information and, in so doing, reduce complexity and bring clarity.**

**The Sustainable Minerals Roundtable is a public/private effort to develop a set of sustainability **criteria and indicators** for energy and mineral resources.**

**It is one of many efforts to  
identify measures of  
sustainability.**

**RIO/WSSD  
OECD  
CAMMA  
U.S. Resource Roundtables  
CEQ  
Canadian MMI  
GRI/ICMM**

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Sustainable Minerals Roundtable

**The SMR is sponsored by the U.S. Forest Service and the U.S. Geological Survey and has received monetary and in-kind contributions from other Federal agencies, industry and non-governmental organizations.**

**The SMR is an open collaboration of interested parties. Notes from prior meetings, and all interim and final products are publicly available and posted on the SMR website.**

**SMR participants include the  
BLM, EPA, MMS, OSM, USGS,  
and USFS, as well as  
representatives of industry,  
academia, Tribal governments  
and NGO's.**

**The SMR is convened by  
Dr. Dirk van Zyl, U. Nevada Reno.  
Meetings are Co-Chaired by  
Deborah Shields  
U.S. Forest Service, and  
Lorie Wagner  
U.S. Geological Survey.**

# Sustainable Minerals Roundtable: Vision

**We envision a future in which the capacities of energy and mineral systems meet the demands of current and later generations, while maintaining or enhancing the economic, environmental, and social systems in the U.S. 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 economic, environmental and social factors, to provide a means for assessing the status and trends of minerals/materials and energy systems.**

# Guiding Principles:

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- **Adopt the Brundtland definition of Sustainable Development;**
- **Develop indicators that will be applicable nationwide;**
- **Operate within the Montreal Process framework of criteria;**
- **Acknowledge and use the products of other indicator initiatives as appropriate.**

# Guiding Principles (cont.):

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- Encourage open communication among all participants;
- Use neutral wording; and
- Avoid selecting or rejecting measures with the intent of predetermining the results of future assessments of energy' and minerals' contributions to sustainability.

# Criteria and Indicators of Sustainable Development for Energy and Mineral Systems

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Sustainable Minerals Roundtable

**The indicators chosen by the Sustainable Minerals Roundtable describe a broad range of attributes of energy and mineral systems.**

# Indicators were:

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- **Developed through the course of 18 meetings;**
  - **Considered from previous work;**
  - **Proposed by attendees;**
  - **Discussed and debated for meaning and usefulness to sustainability issues; and**
  - **Reviewed and refined by the full Roundtable.**
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# Indicators were organized under the following four criteria:

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- Maintenance of capacities to produce commodities.
- Maintenance of environmental quality.
- Maintenance of long-term economic, cultural, and social benefits.
- Legal, institutional, and economic framework.

# Indicators were prioritized based on:

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- Relevance to sustainability.
- Scale at which they apply.
- Existence of sound scientific basis.
- Level of interest.
- Existence of relevant data.
- Complexity, time, and resources necessary to populate the indicator.

# Number of priority indicators for each criterion:

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- **Maintenance of capacities to produce commodities (13 indicators).**
- **Maintenance of environmental quality (7 indicators).**
- **Maintenance of long-term economic, cultural, and social benefits (10 indicators).**
- **Legal, institutional, and economic framework (8 indicators).**

# Productive Capacity Criterion

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**The goal of this criterion is to assess the Nation's energy and mineral resources and the capability to meet the needs of current and later generations.**

# Productive Capacity Sub-Criteria

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- **Resources.**
- **Exploration capacity.**
- **Production (extractive) capacity.**
- **Processing capacity (smelting, refining, and transportation).**
- **Use of energy and minerals.**

# Environmental Quality Criterion

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**This criterion covers the influences of the energy and mining sectors on the environment, including air, surface water, groundwater, and land. Includes extraction, processing, and transportation to the smelter/refinery.**

# Environmental Quality Sub-Criteria

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- **Ambient environment.**
- **Management of extraction and processing.**
- **Reclamation/remediation/restoration of extraction sites.**
- **Environmental releases.**

# Socio-Economic Benefits Criterion

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**The objective of this criterion is to provide information that can be used to assess the socio-economic benefits and impacts associated with energy and mineral activities in the United States.**

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# Socio-Economic Benefits Sub-Criteria

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- **Local.**
- **National.**
- **Cultural, social, and spiritual needs.**
- **Equity.**
- **Recreation and tourism.**

# Legal and Institutional Criterion

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**The purpose of this criterion is to describe the overall legal, regulatory and policy framework within which energy and minerals activities take place.**

# Legal and Institutional Sub-Criteria

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- **Legal framework.**
- **Institutional framework.**
- **Economic framework.**

# The primary purpose of the set of energy and mineral indicators is:

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- Identify and report relevant information.
  - Educate citizens, consumers, and stakeholders.
  - Encourage an informed national dialogue.
  - Highlight strategic trends and priorities.
  - Support assessments of the progress toward sustainability goals as they relate to nonrenewable resources.
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# Features of the SMR indicator set:

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- The SMR indicators are national scale, though they are often based on aggregated local data.
  - The indicators are not applicable to individual properties.
  - Verifiers or threshold values have not been selected.
  - The indicators are not intended for new regulatory development and there are no reporting requirements.
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# SMR Phase I Next steps:

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- Freeze the preliminary indicator set.
- Complete draft of First Approximation Report.
- Solicit formal reviews of the indicator set and the First Approximation Report.
- Revise Report as necessary.
- Publish and distribute the First Approximation Report.

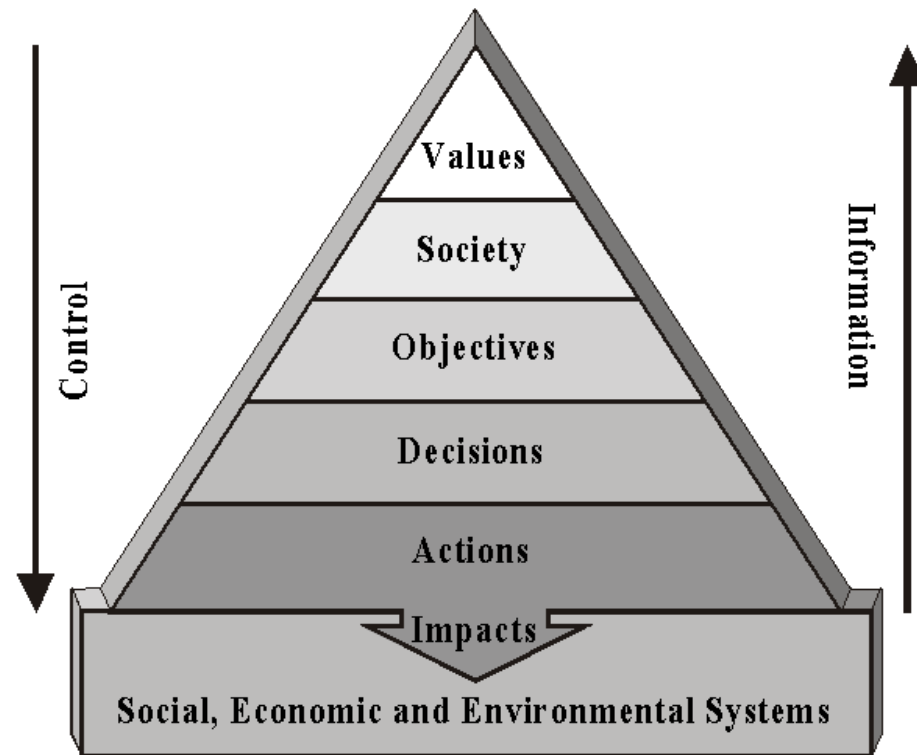
# SMR Phase II – future activities:

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- Review, extend and finalize the indicator set.
- Populate full indicator set with data.
- Outreach and communication.
- Coordination with other indicator efforts.
- Encourage sustainability assessments based on the indicator set.

**No single indicator on its own can address the full scope of nonrenewable resource contributions to a sustainable America. The indicators are meaningful and should be interpreted as a set.**

**The SMR will not produce or sponsor an 'official' interpretation of the indicator set, but will encourage interested stakeholders to make their own assessments, combining and interpreting indicators as they see fit.**



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**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)**