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**Workshop WSS-17:
Sustainable mineral resource management -
industrial minerals and aggregates**

Workshop presentations

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CONTENT

1. SUSTAINABILITY
2. INDICATORS
3. POLICY
4. MANAGEMENT
5. REPORTING
6. CASE STUDY – Slovenia

INDICATORS

content

- Introduction – where do indicators fit?
- What are indicators, and their function?
- Good indicator
- How do define indicators?

- National, regional, commodity, corporate indicators

- Conclusion ?

Societies need to be able to track progress toward their sustainability goals.

They do so with special variables called indicators.

Assessing Progress towards Sustainable Development - Indicators

DEFINITION



PRINCIPLES



CRITERIA



INDICATORS

An agreed upon **Goal** is a broad, over-arching, vision statement that provides the rationale for policies, practice, and initiatives related to SD.

A **Principle** is a fundamental truth or law as the basis of reasoning or action.

Criteria describe what it means to be sustainable. They serve as basis for evaluation, comparison or assessment, and achievement is judged against relevant indicator(s).

An **Indicator** is a piece of information that helps people understand where they are, which way they are going and how far they are from where they want to be, i.e., how far they are from their sustainability goals.

A **Verifier** is a piece of data or information that enhances the ease of assessment of an indicator, for example a performance threshold or a target.

INDICATORS

An **Indicator** is a parameter (a property that is measured or observed), or value derived from a parameter, which provides information about the state of a phenomenon, environment, or area with a significance extending beyond that directly associated with a parameter value.

Indicators describe, display, or predict the status or trend of some aspect of SD.

Index is a set of aggregated or weighted parameters or indicators.

GOOD INDICATORS

Ideally, an indicator should meet the following criteria:

- be representative, scientifically valid;
- be simple and easy to interpret;
- show trends over time;
- give early warning about irreversible trends where possible;
- be sensitive to the changes in the environment or the economy it is meant to describe;

Good Indicators, Continued

- be based on readily available data or be available at reasonable cost;
- be based on data adequately documented and of known quality;
- be capable of being updated at regular intervals;
- have a target level or guideline against which to compare it.

Three basic functions of indicators:

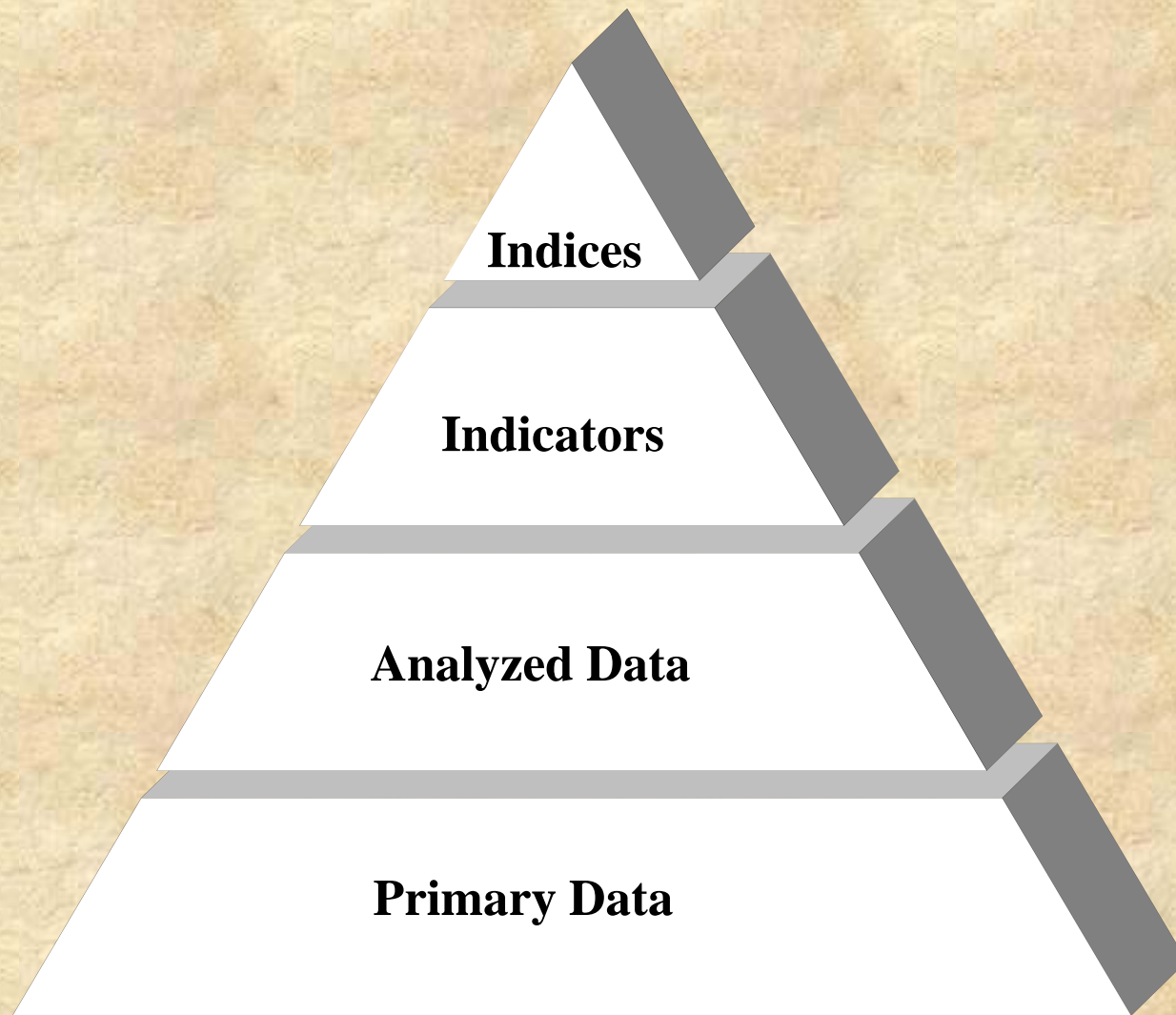
- Quantification
- Simplification, and
- Communication.

Quantification

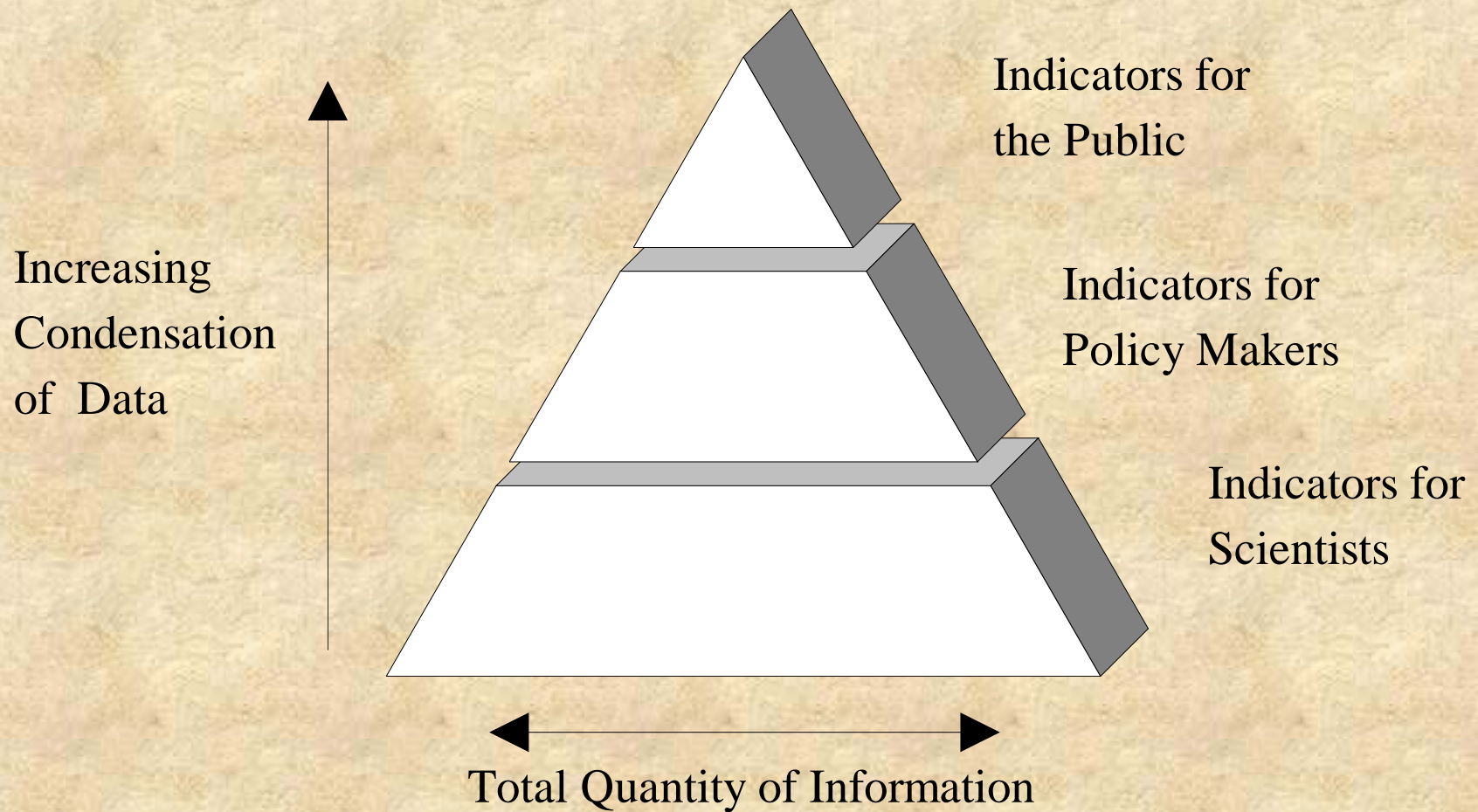
the act of discovering or expressing the quantity of something;

the act or process of assigning numbers to phenomena according to a rule.

Simplification - Information Pyramid



Communication



Indicator's Issues

- Adequacy and availability
 - Indicator set limited to those for which data exist
 - Indicator set is chosen without regard to current data availability
- Information organization and storage
 - Cost
 - Interoperability

Indicator Selection Process

- Impose a single definition of sustainability a priori
- Allow for multiple, perhaps conflicting, definitions of sustainability
- Consensus-building process
 - Communication

Applying indicators of
sustainability to mineral
resource management and
mineral policy

Why We Need Mineral Indicators

- To support public awareness of and social learning about issues related to sustainable mineral resource management.
- To facilitate explicit consideration of the full range of costs and benefits of mineral development.
- To reflect the unique goals and objectives of the society or industry sector or company developing the indicators.



Mineral Indicators

- Package complex mineral information;
- Help people understand the state of the world in general and mineral resource management specifically; and
- Clarify the potential consequences of fulfilling various objectives, i.e., they facilitate social learning.

Issues for Mineral Indicator Development

- Conceptual Framework
- Selection Process
- Data Availability

Alternative Conceptual Frameworks

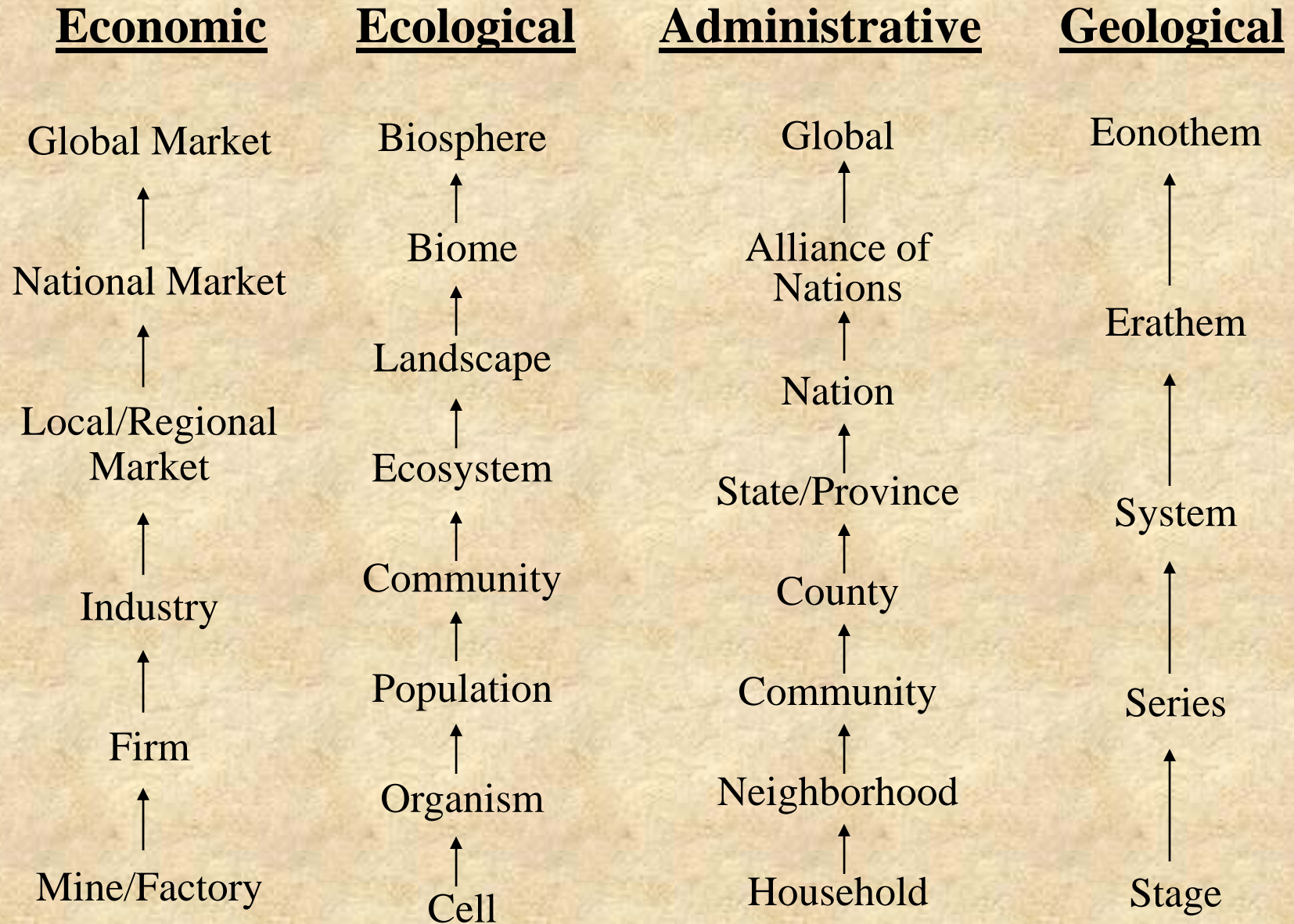
- Dimensions of sustainability and related capital
 - natural
 - built physical
 - social and individual
 - economic
- Scale
 - geographical / physical
 - temporal
 - sectoral
 - Life Cycle
 - rock
 - mine
 - product

Triple Bottom Line

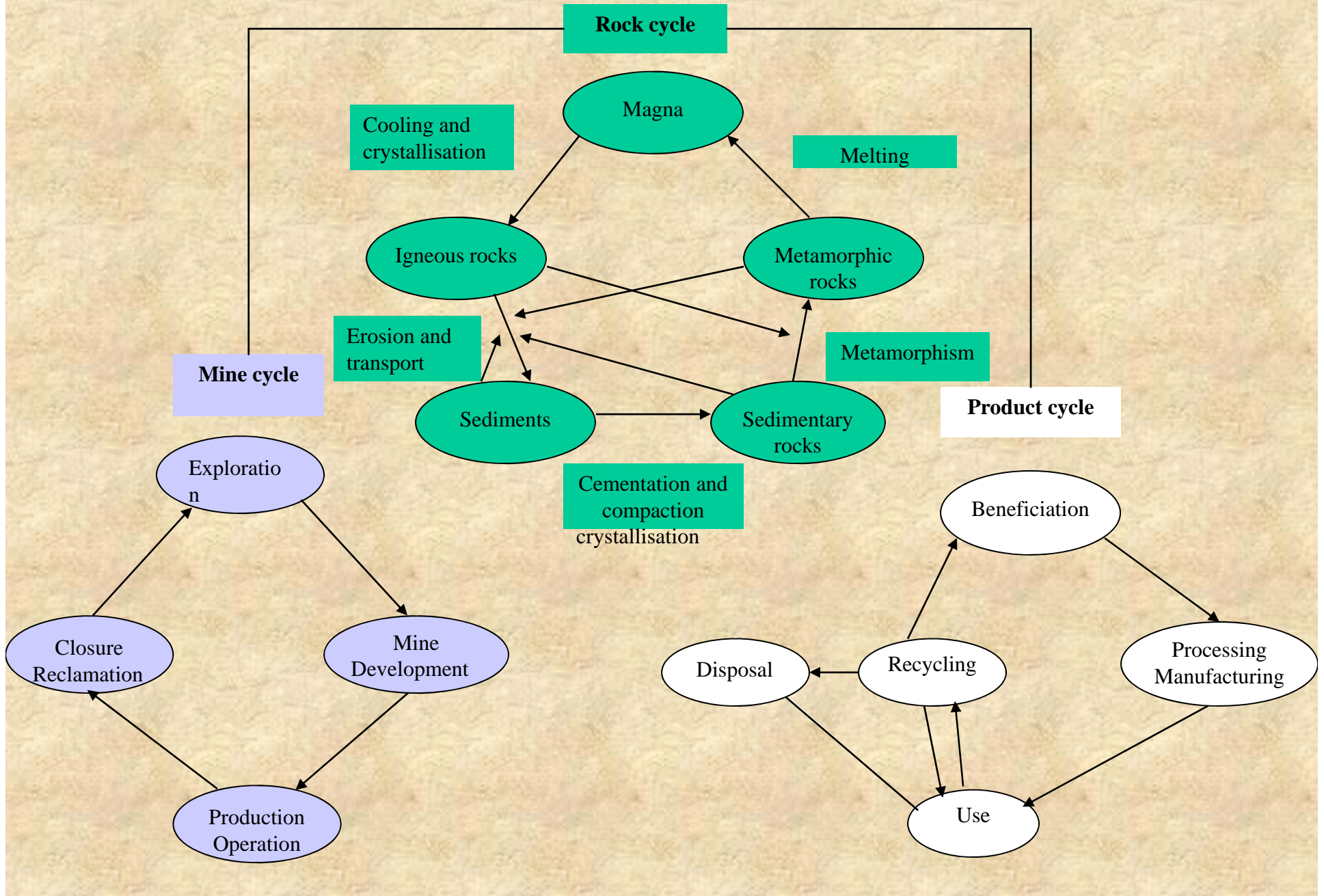


Sustainable Development

Multiple Scale Hierarchies



Life Cycles - rock, mine and product



The Use of Information / Indicators

- National and local policies, land use planning and legislation
- National / Regional / local mineral supply
- Corporate management
- Community oversight
- Other purposes



Mineral Indicators Efforts for Different Scales

- Multi-national (UN, EU, OECD)
- National (UK, CA, US, BR)
- Regional/ Provincial (Modena)
- Geoindicators (ESPRMUD)
- Mine site (GRI/ICMM, 7 Questions, corporate)

Comparison

Commonalities:

- Commitment to improved dialogue and communication;
- Extensive, inclusive processes;
- Balance among participants, in a manner that is appropriate for the culture and values of the region or countries involved;
- Multiple dimensions of sustainability; and
- Weighting of indicators left to interested parties.

Conclusions

- There is delicate balance between process democracy and process viability/feasibility.
- Process democracy is achieved through balance among chosen stakeholders, their number, the time spent in discussions and decision-making, and the never-ending cycling of the process.
- Process feasibility is framed by an agreed-upon time schedule, expectations with regard to outcomes, and consensus based agreements within the whole stakeholder's group.