WFEO
Committee on Engineering and the Environment

Task Force on Sustainability and Mining
Nikhil Trivedi, Ph.D. - Chair

Milos, Greece
July 2013
Outline

- Who are we? Where do we fit in?
- A few words about our landscape
- Our members and our structure
- Our Goals and Objectives
- What have we done so far
- Our future plan
- What do we see as our key opportunities?
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• AIME : American Institute of Mining, Metallurgical and Petroleum Engineers is an active member of AAES.
  – Founded in 1871, founder engineering society
  – Four member societies, 150,000 members
Who are we?

• AAES : American Association of Engineering Societies is a National member of WFEO
• AIME : American Institute of Mining, Metallurgical and Petroleum Engineers is an active member of AAES
• SME : Society for Mining, Metallurgy and Exploration is a member society of AIME
Our Landscape
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• What cannot be grown must be mined

• Haunted by past industry practices

• Essential for society’s advancement and economic development - necessary evil
• Capital intensive, technology intensive, energy intensive
• Broad spectrum of locations
  – Remote, challenging terrains (metal, coal, indust. min.)
  – Close to urban areas/markets (aggregates)
• Broad spectrum of sizes
  – Giant multinationals
  – Family owned to regional operations
• Mining is everywhere, in every nation, on every populated continent

• Mining is the backbone of a vibrant industrial economy

• It is a perfect challenge for engineers
Our Landscape (cont.)

• Conflict Minerals

• Illegal Mining

• Value Derived from Mining

• Nationalism
Our Task Group
Timeline

• In November 2011, Darrell Danyluk contacted SME and suggested that we join forces with WFEO and the CEE to address sustainability and mining.

• In February 2012, our strategic plan was accepted by the Chair of CEE.

• In the April 2012 newsletter of CEE, this topic and our task group activities were featured.
Our Structure

• Core group from SME serve central steering functions of TF
  – Nikhil Trivedi, Chair - engineer with industry perspective
  – Dr. Deborah Shields, Colorado State University – an educator who provides SD contacts worldwide
  – Carol Russell, U.S. Environmental Protection Agency – regulator’s perspective
  – John Hayden, SME staff liaison
Our Structure (cont.)

• Task group members are at-large
• Nations with economies tied to mining
  – Balance between developed and developing economies
  – Balance between academia and operational engineers
• Fluid group, flexible
  – Open to new representatives from task force countries
  – Open to new countries joining task force
Africa

3 members from Ghana

1 member from Zambia

1 member from South Africa
Asia

1 member from India

1 member from China

1 member from Turkey
Australia

- 1 member from Queensland
- 1 member from New South Wales
Europe

- 1 member from Spain
- 1 member from Germany
- 1 member from Slovenia
- 2 members from Greece, and
- 2 members from Finland
- 1 member from Canada
- 4 members from the U.S.
• 1 member from Chile
Task Group Membership

- Australia (2)
- Canada
- Chile
- China
- Finland (2)
- Germany
- Ghana (3)
- Greece (2)
- India
- Slovenia
- South Africa
- Spain
- Turkey
- United States (4)
- Zambia
Communication

• We have a community bulletin board on the SME website .... www.smenet.org

• International telephone calls with TG members
  – Time zone challenges
  – Connectivity challenges
Our Goals and Objectives
Our Over-Arching Goal

Capacity building for mineral producers, and stakeholders, including authorities, non-governmental organizations, and the general public.
Mission/Purpose

To raise global understanding and application of engineering approaches and technologies so as to increase the contributions of the mining and minerals industries to economic, social and environmental wellbeing, and sustainable development.
Objectives/Goals

• To advocate for an engineering perspective regarding minerals issues internationally and in the UN.

• To share information on culturally appropriate technologies in developing nations and among small to medium enterprises and artisanal miners.

• To identify geographic and sectoral areas of greatest need for capacity building on engineering practices and technologies within the minerals sector, and among affected stakeholders, including authorities, civil society, and non-governmental organizations.
Objectives/Goals

• To increase understanding of existing and new engineering practices and technologies and their appropriate application in the minerals industry.

• To advocate for the use of best engineering practices to increase worker and affected community health and safety, to minimize environmental impacts, and to increase eco-efficiency.
Objectives/Goals

• To share engineering perspectives and approaches regarding reuse, repurposing, and recycling of mineral materials.

• To promote the application of risk assessment, mitigation and management within the minerals sector.
STATUS
Five Thematic Concentration Areas
Environmentally sound engineering practices and technologies

- Co-chairs: Dirk Van Zyl (CA)/Mutale Chanda (ZM)
Best practices in social sustainability and responsibility including worker health, safety, reliability and training

- Co-chairs: Zach Agioutantis (GR)/Jose Botin (ES/CL)
Best practices in eco-efficient use of land, water, energy, and mineral resources

- Chair: Chris Moran (AU)
Status (cont.)

- Engineering solutions to reuse, recycle and repurpose mineral materials
  - Co-chairs: Ilkka Kojo(FI)/Mutale Chanda(ZM)
Risk analysis, mitigation and management techniques

- Co-chairs: Zhongxue Li(CN)/Burhan Sahin(TR)
Status (cont.)

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5. **Engineers understand that good design results in good outcomes.**

6. **Effective engineers respect other disciplines** (both within and external to engineering).
Our Scope

• Small to Medium Mining Enterprises

• Africa / Asia

• Collaboration with existing initiatives
Our Work Product
Work Product

- Dissemination of information on the role of minerals and metals in sustainable development, including the role of minerals in improving the quality of life, and

- Promotion of the achievements and capabilities of the minerals community to the general public and specifically to the communities in which mineral companies operate.
Work Product (cont.)

- Resource library on WFEO website?
- Guideline booklets?
  - For operators
  - For stakeholders/public
  - For regulators
  - In multiple languages
- Checklists for target groups?
- All of the above?
Opportunities

- Target our work product based on the audience
- Involve young engineers
- Communicate clearly and in multiple languages
- Remain faithful to ENGINEERING
Collaboration with WFEO Committees

- Capacity Building
- Disaster Risk Management
- Education
- Innovative Technologies
- Energy
- Anti-Corruption
- Future Leaders
Collaboration Opportunities

• UNESCO
  – Asia
  – Africa
Past/Future Meetings

• Rio + 20 – June 20-22, 2012
  – CETEM: Rare Earths and Social Impacts
  – Vale: Mining and Sustainable Development

• Mining on Top: Africa Summit – London - June 25-26, 2013

• Sustainable Development in the Minerals Industry (SDIMI) – Milos, Greece - June 30-July 3, 2013

• WFEO Annual Meeting – Singapore - Sept 11-13, 2013
Sustainability and Mining

My objective for today’s sessions:

Interaction – hear us and share your thoughts with us

Join the TF
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Thank you!
If it can’t be grown...
…it has to be mined!