

Program



Milos Conferences

3rd INTERNATIONAL CONFERENCE

Sustainable Development Indicators

in the
**Minerals
Industry**

(SDIMI 2007)

17 - 20 June 2007

Milos Conferences Center - George Eliopoulos

International Steering Committee

- **Agioutantis Zach**, Technical University of Crete, Greece
- **Anciaux Paul**, Enterprise Directorate-General, Belgium
- **Anderson Dayan J.**, Specialty Minerals Inc, USA
- **Arvanitidis Nikolaos**, Institute of Geology and Mineral Exploration, Greece
- **Baker David A.**, Newmont Mining Corporation, USA
- **Bingham Evelyn**, BHP Billiton, USA
- **Bingham Nancy**, Caterpillar Inc, USA
- **Boas Villas**, Centro de Tecnologia Mineral, Brasil
- **Botts Steven D.**, Compania Minera Antamina S.A., Peru
- **Braithwaite Julie-Anne**, Rio Tinto, United Kingdom
- **Brereton David**, University of Queensland, Australia
- **Bucknam Charles**, Newmont Mining Corp, USA
- **Chander Subash**, Pennsylvania State University, USA
- **Christmann Patrice**, Association of the Geological Surveys of the European Union, Belgium
- **Cosack Christopher**, Gesamtverband des deutschen Steinkohlenbergbaus, Germany
- **Coulter Gary**, Teck Cominco Alaska Inc, USA
- **Craynon John R.**, Office of Surface Mining, Reclamation and Enforcement, USA
- **Cross Chris**, Rio Tinto Technology, United Kingdom
- **Durucan Sevet**, Imperial College of Science and Technology, United Kingdom
- **Galvin Jim**, University of New South Wales, Australia
- **Gardner Steven**, Mining Consultg Services Inc, USA
- **Haxhiu Lorik**, Government of Kosova Ministry of Energy and Mining, Kosovo
- **Hebblewhite Bruce**, University of New South Wales, Australia
- **Hebestreit Corina**, European Association of Mining Industries, Belgium
- **Heivilin Fred**, Oil Dri Corporation of America, USA
- **Hengstmann Rainer**, Independent Commission for Mines and Minerals, Kosovo
- **Hodge R. Anthony**, Anthony Hodge Consultants Inc, Canada
- **James Patrick**, Constellation Copper, USA
- **Jennings Norman**, International Labour Office, Switzerland
- **Karmis Michael**, Virginia Tech, USA
- **Koegler Klaus**, European Commission, Belgium
- **Komnitsas Kostas**, Technical University of Crete, Greece
- **Laurence David**, University of New South Wales, Australia
- **Lilly Peter**, CSIRO, Australia
- **Littleton Kathy**, Washington TRU Solutions LLC, USA
- **Mager Diethard**, Federal Ministry of Economics and Labour, Germany
- **Martens Per Nicolai**, RWTH Aachen University, Germany
- **Martin David**, Australian National University, Australia
- **Mastoris Ioannis**, Titan Cement Company S.A., Greece
- **McKee Don**, The University of Queensland, Australia
- **McPhail Kathryn**, ICMM (International Council on Mining and Metals), United Kingdom
- **Mollerherm Stefan**, CBM GMBH, Germany
- **Nasuf Erkin**, Istanbul Technical University, Turkey

- **Nelson Tami**, Caterpillar Inc, USA
- **Nielsen Kai**, Norwegian University of Science & Technology, Norway
- **Pflieger Julia**, University of Stuttgart, Germany
- **Russell Carol**, U.S. EPA, USA
- **Shields Deborah J.**, USDA Forest Service Rocky Mountain, USA
- **Solar Slavko**, Geological Survey of Slovenia, Slovenia
- **Stanley Michael**, The World Bank Group, USA
- **Steadman Ellie**, British Geological Survey Natural Environment Research Council, United Kingdom
- **Stefanakis Michael**, S&B Industrial Minerals S.A., Greece
- **Stutsel Melanie**, Minerals Council of Australia, Australia
- **Sykes Christophe**, IMA-Europe, Belgium
- **Testard Jack**, BRGM, France
- **Tost Michael**, Rio Tinto Plc, United Kingdom
- **Tuckwell Kevin**, Minerals Tertiary Education Council, Australia
- **Turner Eric**, Luzenac Group, France
- **van der Veen Peter**, World Bank Group, USA
- **van Zyl Dirk J A**, Univ of Nevada-Reno, USA
- **Weber Claus Peter**, RAG Aktiengesellschaft, Germany
- **Xenos Spyros**, Titan Cement Company S.A., Greece

Organizing Committee

- **Agioutantis Zach**, Technical University of Crete, Greece
- **Karmis Michael**, Virginia Tech, USA
- **Kefalas Athanasios**, S&B Industrial Minerals S.A., Greece
- **Konstantinidis Kostas**, Heliotopos Conferences, Greece
- **Koumantou Rena**, S&B Industrial Minerals S.A., Greece
- **Martens Per Nicolai**, RWTH Aachen University, Germany
- **Voulgaris Emmanuel J.**, Milos Conference Center - George Eliopoulos, Greece

Organizers

The Conference is jointly organised by:

- Virginia Tech, USA
- The Aachen University of Technology (RWTH), Germany
- The Technical University of Crete, Greece
- The University of Queensland, Australia

The conference is a Milos Conferences event.

Conference Secretariat

Heliotopos Conferences

Address: 28, Ypsilantou str., GR-17236, Dafni-Athens, Greece

Phone: +30 210 9730697 Fax: +30 210 9767208

E-mail: conf@heliotopos.net - <http://heliotopos.net>

E-mail: sdimi2007@heliotopos.net - <http://milos.conferences.gr/sdimi2007>

program

Monday 18th June 2007

09:00 - 09:15 Conference Opening

D. Sioufas, Minister of Development, Greece

09:15 - 09:30 Welcome Remarks

Representatives of Local Authorities

09:30 - 11:00 Keynote Session

Chairs: **Michael Karmis**, Virginia Tech, USA

Emmanuel J. Voulgaris, "Milos Conference Center - George Eliopoulos", Greece

Sustainable Development at Rio Tinto

P. Chiaro, UK

Strategic Drivers of the Mining Industry: From Enclave Production to Industrial Clusters

P. van der Veen, G. McMahon, USA

The Sustainable Development Charter, Greece

E. Vidalis, Greece

11:00 - 11:30 Coffee Break

11:30 - 13:00, ROOM A

Definitions and Policies in Resource Use and Supply

Chair: **Per Nicolai Martens**, RWTH Aachen, Germany

Raw Materials Supply Issues in the European Union

P. Ancliaux and H. Pietersen, Belgium

Mineral Policy in the Era of Sustainable Development: Historical Context and Future Content

D. Shields, S. Šolar, M. Miller, USA/Slovenia

Thematic Strategy on the Sustainable Use of Natural Resources

W. Bosmans, Belgium

Determinants of Mineral Supply and Depletion Issues - Case of Fossil Fuels

K. Al-Rawahy, Oman

11:30 – 13:00, ROOM B

Country Perspectives on Mineral Sustainability

Chair: **Dirk Van Zyl**, University of Nevada, USA

African Mining Observatory (AMO): An Initiative to Support a Sustainable Management of Mineral Resources in Africa

G. Récoché and A. Chamaret, France

Connections in the Goldmining Sector of Burkina Faso

S. Luning, The Netherlands

Tools for Sustainable Management of Gold Resources in Greece

N.D. Arvanitidis, Greece

Sustainable Development Indicators for the Greek Industrial Minerals Sector

K. Valta, K. Komnitsas, and M. Grossou-Valta, Greece

11:30 – 13:00, ROOM C

Community Engagement and Information Sharing

Chair: **Kay O'Regan**, Earthwatch Institute, UK

Value Creation from SD Indicators - For Mining Companies, Communities and Policy-Makers

E. Turner and M. Tost, France (presented by K. Gollogly)

Measuring What Matters: Monitoring the Contribution of a New Mining Project to Community Sustainability

D. Brereton and C. Pattenden, Australia

The Office of Surface Mining's "Reclaim the Future!" Initiative

S. Rideout, Jr. and J. Craynon, USA

The Minerals Industry and Sustainable Development. Are We Talking to the Right People - Are We Sending the Right Message?

K. Nielsen, Norway

13:00 – 14:00 Lunch

14:00 – 15:30, ROOM A

Theories and Models towards Understanding Sustainability

Chair: **Deborah Shields**, USDA Forest Service, USA

Material Stewardship – Best Practices in the Mining & Metals Industry

K. Brady and C. Bocher, Germany

National Minerals Policy Practices: Key to Minerals Supply in Europe

H. Wagner, G. Tiess, S. Šolar and K. Nielsen, Austria/Slovenia/Norway

Mining Sustainability Model for Ghana: Developing and Implementing

M.B. Thorpe and D. Owiredu, USA/Ghana

An Addition to the Definition of the Sustainable Development Index in the Field of Metal Raw Materials

N. Magdalinovic, M. Magdalinovic-Kalinovic and D. Mihajlovic, Serbia

14:00 – 15:30, ROOM B

New Sustainability Indicators

Chair: **Nikos Arvanitidis**, IGME, Greece

Measures of Innovativeness as Indicators of Sustainability

P.M. Godinho, Austria

Development of Sustainability Indicators for the Assessment of Alternative Management Systems of Spent, Portable Batteries

K. Adam, N. Voudouris, F. Chalkiopolou, C. Zografidis, and I. Vassilopoulos, Greece

Some Possibilities for Construction of Linguistic Variables for Sustainable Development Decision Making

A. Rumenjak, D. Rajković and B. Salopek, Croatia

Equipment Reliability: An Indicator for Sustainable Development in Mining

N. Vayenas, Canada

14:00 – 15:30, ROOM C

Social License to Mine and CSR

Chair: **David Breerton**, The University of Queensland, Australia

Research Studies on Building Social License within Mineral Exploration

J. Nelsen and M. Scoble, Canada

Cumulative Impacts of Coal Mining on a Regional Community
C. Moran, D. Brereton, G. McIlwain and J. McIntosh, Australia

The Corporate Responsibility Rating of the Metals & Mining Sector
K. Rüter, Germany

Drivers of Reputation in the Australian Mining Industry
J. Tuck, Australia

15:30 - 16:00 Coffee Break

16:00 - 17:30, ROOM A

Panel Discussion I: Ensuring Sustainable Supply: A Shared Responsibility

Chairs: **Deborah Shields**, Principal Mineral Economist, USDA Forest Service, USA and **Hans-Sierd Pietersen**, DG Enterprise & Industry, EU Commission, Belgium

Panelists: **Athanasios Kefalas**, Operations Manager, Bentonite Division and Milos Site Manager, S&B Industrial Minerals S.A., Greece

John Craynon, Chief, Division of Regulatory Support, Office of Surface Mining, Reclamation and Enforcement, U.S. Department of Interior, USA

Kevin Brady, Director, Five Winds International, Canada

20:00 - 22:00 Banquet

Tuesday 19th June 2007

09:00 - 10:30, ROOM A

Promoting Sustainability via Research, Education and Leadership

Chair: **Hans-Sierd Pietersen**, European Commission, Belgium

Steeluniversity.org: A New Internet E-Learning Resource on Sustainability

J. Pflieger and R. Hambleton, Germany/Belgium

Integrating Sustainable Development Principles into Educational Process

K. Al-Rawahy, Oman

A Process for Stakeholder Education and Engagement in Sustainable Energy: The Carbon Sequestration Case

M. Karmis, N. Ripepi, M. Radcliffe, B. Altizer, USA

Strategic Leadership Towards Sustainability

J. Paunkovic and N. Paunkovic, Serbia

09:00 – 10:30, ROOM B

Innovation in Sustainable Development

Chair: **John Craynon**, Office of Surface Mining, USA

Mineral Dust Emissions Generated in Norwegian Surface Mineral Production - Sources, Requirements and Monitoring Programmes
H.T. Mikkelsen and T. Myran, Norway

Sustainable Drilling for Oil and Gas: Challenging Drilling Environments Demand New Formulations of Bentonite Based Drilling Fluids
V. Kelessidis, Greece

Recovery Silver and Gold by Direct Oxidative Pressure Cyanidation
J.R. Parga , J.L. Valenzuela, H. Moreno and D.L. Cocke, Mexico/USA

Determination of Radon Concentration in Water Samples from Argolida by the Liquid Scintillation Technique
N. Zouridakis and A. Savidou, Greece

09:00 – 10:30, ROOM C

Linking Community Capacity to Sustainable Development

Chair: **Gavin Hilson**, The University of Manchester, UK

Sustainable Regional Development – A New Way to Build Prosperity for Indigenous People in Australia
J. Gawler, Australia

Giving Back to the African People: Fostering Rural Community Development Through Mineral Development Funds
S.A. Shahnawaz, UK

An Integrated Multi-Criteria Approach to Enhancing the Business Value of Community Investment at Mine Sites
A.M. Esteves, Australia

Rethinking Capacity Building
K. Konialis, K. Komnitsas and Z. Agioutantis, Greece

10:30 – 11:00 Coffee Break

11:00 – 12:30, ROOM A

Panel Discussion II: Integrating Sustainability in Capacity Building

Chairs: **Dirk Van Zyl**, Chair, Department of Mining Engineering, University of Nevada-Reno, USA and **Chris Moran**, Director, Centre for Water in the Minerals Industry, The University of Queensland, Australia

Panelists: **Dan Hellige**, Safety and Sustainable Development, Caterpillar Global Mining, USA

Julia Pflieger, Chair of Building Physics, Department of Life Cycle Engineering, Stuttgart University, Germany

Mark Thorpe, VP Sustainability, GSR, USA

12:30 – 14:00 Lunch

14:00 – 15:30, ROOM A

Ensuring Environmental Sustainability

Chair: **Dan Hellige**, Caterpillar Global Mining, USA

Pan-European Underground Drainage Water Management Research Centre – A Contribution to Sustainable Water Management in Europe
H. Hejny and M.L. Faull, Germany/UK

The ECOMINING Platform Accomplishment for the Promotion of Romanian Research and Innovation Potential
Gy. Deák, Șt. Deák, D. Georgescu and M. Zlăgnea, M.S. Găman and Z. Seprödi, Romania

Assurance Methods: A Welfare Analysis
J. Roufagalas and G. Santopietro, USA

Sustainable Development Approach of the Perama Hill Gold Project
G. Markopoulos, Greece

14:00 – 15:30, ROOM B

Sustainable Management of Practices, Processes and Wastes
Chair: **Carol Russell**, U.S. Environmental Protection Agency, USA

Proactive Safety Practices at S&B Industrial Minerals S.A.
M. Stefanakis, Greece

Erosion - Advantages and Disadvantages of Sustainable Development and the Process of Exploitation of Mineral Resources

N. Magdalinovic, R. Jovanovic and N. Simeonovic, Serbia

A Study on Best Available Techniques for the Management of Stone Wastes

*G. Papantonopoulos, M. Taxiarchou, N. Bonito, K. Adam and I. Christodoulou
Greece/Portugal*

Linking IBA's and Project Management - A Case Study

S. Moutsatsos, V. Kazakidis and J. Fowler, Canada

The Residual Radioactivity Influence Monitoring From Technological Wastes For Chemical Fertilizers Factories With Soil And Plants From Bordering Areas

Gh. Crutu, C. Manea, G. Groposila and N. Groza, Romania

Tuesday 14:00 – 15:30, ROOM C

Sustainability Evaluation

Chair: **Julia Pflieger**, Stuttgart University, Germany

Sustainability Indicators for Mining Projects: Assuring a Representative Diversity of Stakeholders and Issues. Application to the Uranium Mines in Arlit (Niger)

A. Chamaret, M. O'Connor, and G. Récoché, France

Evaluation of Resource Management Plans in Nevada Using Seven Questions to Sustainability

D. van Zyl, J. Lohry, and R. Reid, USA

Sustainable Development in Mining Projects: Empirical Evaluation of a Project

M.B. Diaz Aguado and C. González Nicieza, Spain

European Environment Agency - Ex-post evaluation of aggregate taxes

D. Legg, G. Dige, M. Mazzanti, S. Paleari, R. Zoboli, M. Herczeg, R. Bleishwitz, M. Skovgaard, H. Leveson-Gower, UK

15:30 - 16:00 Coffee Break

16:00 – 17:30, ROOM A

Panel Discussion III: Stakeholders Expectations

Chairs: **Kay O'Regan**, Corporate Partnerships Manager, Earthwatch Institute (Europe), United Kingdom and **David Brereton**, Director, Centre for Social Responsibility in Mining (CSRM), The University of Queensland, Australia

Panelists: **Rena Koumantou**, Director of Corporate Social Responsibility & Communication, S&B Industrial Minerals S.A., Greece

Kirsten Gollogly, Adviser – Sustainable Development, Communications and External Relations, Rio Tinto Minerals, United Kingdom

Gavin Hilson, Lecturer, International Development, Institute for Development Policy and Management, University of Manchester, United Kingdom

17:30 – 19:30 Reception

Wednesday 20th June 2007

08:30 – 10:30, ROOM A

Applying Sustainability in Coal Mining

Chair: **Hans Naumann**, Marshall Miller & Associates, Inc., USA

Integrating Sustainability in Coal Mining Operations

J.R. Craynon and M. Karmis, USA

Coal in the EU Energy Power. Current Challenges and Barriers to Cleaner Coal Power

K. Kavouridis and N. Koukouzas, Greece

Evaluation of Nonrenewable Lignite Resources by Means of Sustainability Indicators

N. Špeh and I. Veber, Slovenia

Sustainability Indicators for Lignite Open Cast Mines of Greek Public Power Corporation S.A. in Ptolemais Area of Western Macedonia, Greece

I. Tsolas, G. Pagonis, L. Patmanidou and A. Sokratidou, Greece

A Geostatistical Study of Lignite Spatial Variations in the Multilayer Deposit of the Amyndeo Mine in Northern Greece

A. Pavlides, D.T. Hristopoulos, Z. Agioutantis, K. Kavouridis and Ch. Roumpos Greece

08:30 – 10:30, ROOM B

Aspects in Reclamation and Rehabilitation

Chair: **Ioannis Paspaliaris**, NTUA, Greece

Rehabilitation of Disturbed Areas by Mining Activities in High Floristic Diversity Areas: The Case of Mt Giona

G. Brofas, P. Trigas, G. Mantakas, G. Karetsos, C. Thanos, K. Georghiou and Chr. Mermiris, Greece

Development of Indicator Based Revegetation SDSS in Areas Affected by Mining Activities

X. Zhu, D. Li and K. Komnitsas, China/Greece

Study of Fauna in a Bauxite Mining Area in Central Greece

A. Sfougaris, Greece

The Effect of Phytotechnic Treatment on Establishment and Survival of Different Grass Species and Cultivars at a Limestone Quarry

E.M. Abraham, Z. Koukoura and P. Kostopoulou, Greece

Factors Affecting Tree Growth in Bauxite Mining Wastes

K. Tsiouvaras, A. Kyriazopoulos, A. Karagiannidis, P. Rakimbei, N. Barbayiannis and V. Keramidas, Greece

08:30 – 10:30, ROOM C

Sustainability Reporting

Chair: **Kevin Brady**, Fivewinds, Germany

Making Company Sustainability Reporting More Efficient: Web-Based Collection, Analysis and Reporting of Sustainability Data Using the Software System SoFi

T. Motzer, A. Saraev, J. Gediga and J. Pflieger, Germany

Implementation of Reporting Code Guidelines for Mineral Resources and Mineral Reserves Using a General Mine Planning Package

I. Kapageridis, Greece

Balancing the Costs and Benefits of Government and Corporate Sustainability

S. Šolar and D. Shields, Slovenia/USA

Third Party Certification as an Emerging Form of Regulation in the Minerals Industry

P. Schiavi and G. Lawrence, Australia

10:30 – 11:00 Coffee Break

11:00 – 13:00, ROOM C

Post-Mining Land Use Issues

Chair: **Kostas Kavouridis**, TUC, Greece

Premature Mine Closures - Causes and Effects

D. Laurence, Australia

Alternative Uses of Rehabilitated Mine Land

M. Papatotiriou and G. Petrakis, Greece

Towards a Framework for the Sustainable Use of Legacy Mine Land in Queensland, Australia

R. Worrall, D. Neil, D. Brereton and D. Mulligan, Australia

Recultivation and Resettlement in the Rhenish Lignite Mining Area
- Stakeholder Dialogue as an Important Element of Sustainable Development

M. Eyll-Vetter and P. Eysel, Germany (presented by J. den Drijver)

Sustainability in Mineral Industry through the Application of Biotechnology

V. Angelatou, Greece

10:30 – 11:00 Coffee Break

13:00 – 14:00, Conference Conclusion, ROOM A

Chairs: **Michael Karmis**, Virginia Tech, USA (SDIMI Series) and **Per Nicolai Martens**, Rheinisch Westfaelische Technische Hochschule Aachen, Germany (SDIMI 07)

Panelists: **Deborah Shields**, USDA Forest Service, USA (Track A and Panel I)

Dirk Van Zyl, Univ of Nevada-Reno, USA (Track B and Panel II)

Kay O'Regan, Earthwatch Institute (Europe), UK (Track C and Panel III)

David Brereton, University of Queensland, Australia (SDIMI 09)

14:00 – 15:00 Lunch

15:00 – 17:30 Mine Site Visits

11:00 – 13:00, ROOM C

Post-Mining Land Use Issues

Chair: **Kostas Kavouridis**, TUC, Greece

Premature Mine Closures - Causes and Effects

D. Laurence, Australia

Alternative Uses of Rehabilitated Mine Land

M. Papatotiriou and G. Petrakis, Greece

Towards a Framework for the Sustainable Use of Legacy Mine Land in Queensland, Australia

R. Worrall, D. Neil, D. Brereton and D. Mulligan, Australia

Recultivation and Resettlement in the Rhenish Lignite Mining Area
- Stakeholder Dialogue as an Important Element of Sustainable Development

M. Eyll-Vetter and P. Eysel, Germany (presented by J. den Drijver)

Sustainability in Mineral Industry through the Application of Biotechnology

V. Angelatou, Greece

10:30 – 11:00 Coffee Break

13:00 – 14:00, Conference Conclusion, ROOM A

Chairs: **Michael Karmis**, Virginia Tech, USA (SDIMI Series) and **Per Nicolai Martens**, Rheinisch Westfaelische Technische Hochschule Aachen, Germany (SDIMI 07)

Panelists: **Deborah Shields**, USDA Forest Service, USA (Track A and Panel I)

Dirk Van Zyl, Univ of Nevada-Reno, USA (Track B and Panel II)

Kay O'Regan, Earthwatch Institute (Europe), UK (Track C and Panel III)

David Brereton, University of Queensland, Australia (SDIMI 09)

14:00 – 15:00 Lunch

15:00 – 17:30 Mine Site Visits



The largest
bentonite
producer
in Europe

The largest
supplier of
graded perlite
worldwide



One of the leading
bauxite producers
and suppliers
in Europe



The largest
producer of
casting fluxes
worldwide

Natural resources Industrial solutions

Utilizing the multiple properties of Industrial Minerals S&B converts natural resources into customized industrial solutions.

Through its comprehensive portfolio of products, including bentonite, perlite, bauxite, wollastonite and casting fluxes, its "market to mine" strategy, its extended just-in-time delivery network and its high level technical support, S&B offers high quality customized solutions that bring added value to a variety of industrial applications including metallurgy, foundry and metal processing, construction and civil-engineering, agriculture, glass and ceramics.

Today S&B constitutes a **multinational Group of companies** with mines, processing facilities and distribution centers in more than **20 countries** across **5 continents**, selling its products in more than 65 countries worldwide.



S&B Industrial Minerals

Under the auspices of:



SME



SOCIETY OF MINING PROFESSORS



SOZETÄT DER BERGBÄUKÜNDE



European Association of Mining Industries, Metal
Ores and Industrial Minerals



Industrial Minerals Association (IMA)



ΕΛΛΗΝΙΚΟΣ ΣΥΝΔΕΣΜΟΣ ΜΕΤΑΛΛΕΥΤΙΚΩΝ ΕΠΙΧΕΙΡΗΣΕΩΝ
GREEK MINING ENTERPRISES ASSOCIATION

Major sponsor:



S&B Βιομηχανικά Ορυκτά Α.Ε.
S&B Industrial Minerals S.A.

Welcome Reception Sponsor:

RIO
TINTO

Supporters:



HERACLES
GENERAL CEMENT CO.
A member of LAFARGE

LAVA
MINING AND QUARRYING CO.

Supporting Organizations:

Greek Ministry of National Education and Religious Affairs



Technical University of Crete



The RWTH Aachen university, Institute of
Mining Engineering 1



MANEY
PUBLISHING