ICMM
International Council on Mining & Metals

Mining and sustainability

Tracking progress in a rapidly changing global environment

Presentation to the 6th International Conference on Sustainable Development in the Mining industry
Monday, 1 July 2013, Milos, Greece

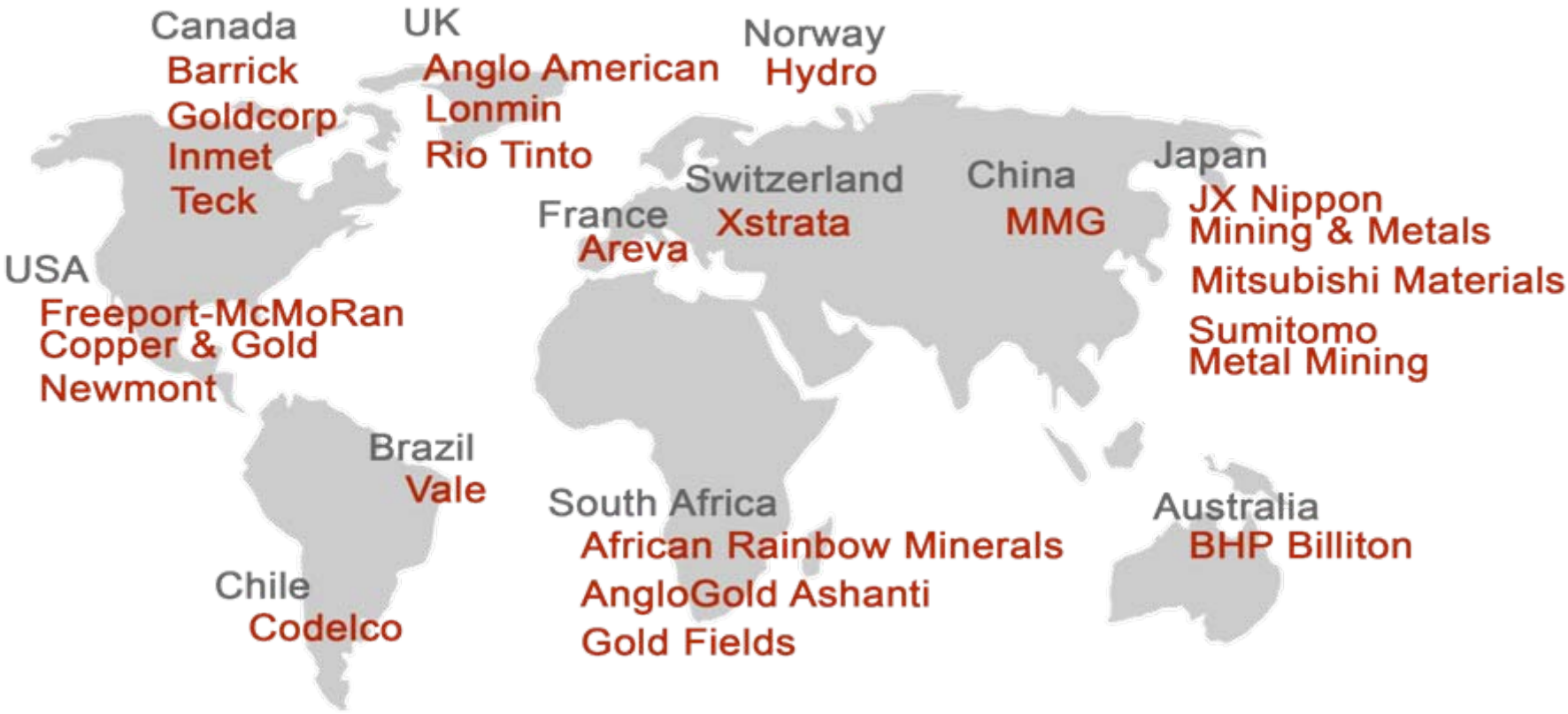
R. Anthony Hodge, PHD, P. Eng., President
International Council on Mining and Metals




Overview

1. **ICMM**
2. **Mining's operating environment**
3. **The underpinnings of applied sustainability**
4. **Examples: (1) EC Environmental footprint**
   (2) mining and conflict
5. **The 2003 Milos Statement**

ICMM at a glance



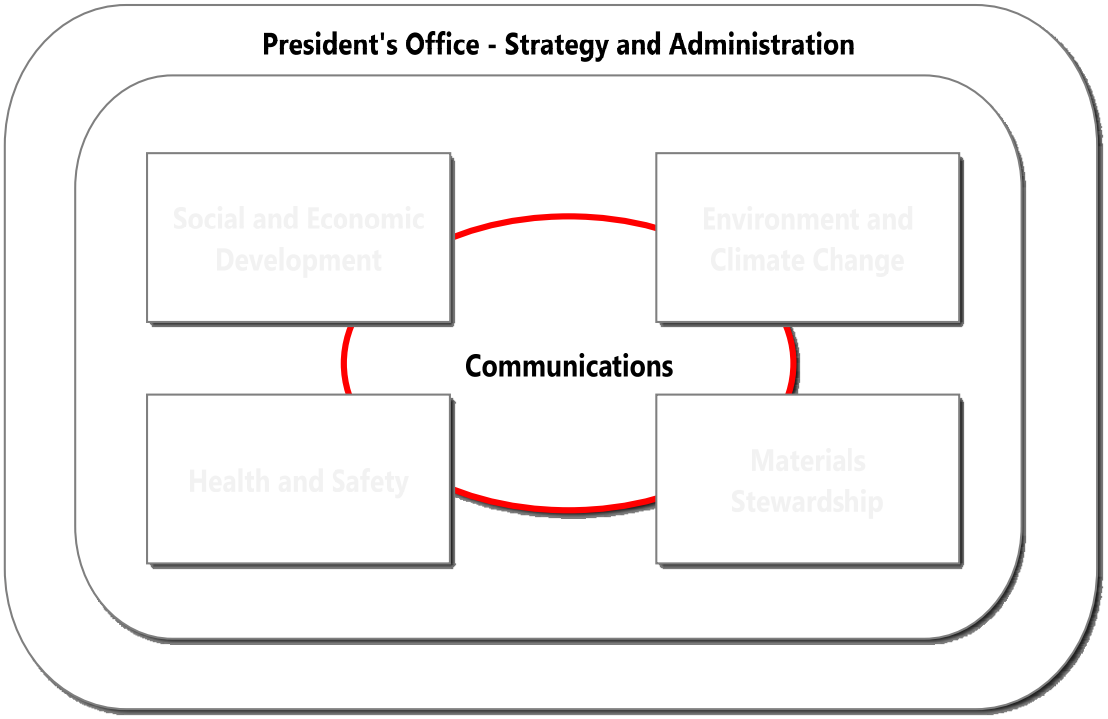
- Direct CEO leadership, 22 member companies, 35 association members
- Over 800 sites in more than 60 countries, 1 million of 2.5 million workers, 1/3 to 1/2 of major metals
- Catalyst for improving environmental and social performance, shared value creation

ICMM vision, values, goals and structure

ICMM Goal: working collaboratively with others, to enhance the value creation role and long term net contribution of mining, minerals and metals industry and its products to people, the environment, and economies

Objectives: (1) improve performance; (2) listen; (3) communicate; (4) strengthen engagement capacity; (5) seek fair and consistent regulation; (6) represent

Values: care, respect, integrity, accountability, collaboration



ICMM member commitments

10 Principles (2003)

1. Implement ethical business practices and apply good corporate governance
2. Integrate SD in corporate decision-making
3. Uphold fundamental human rights
4. Manage risks based on sound science

5/6. Improve environment, health and safety performance continuously

7. Conserve biodiversity & contribute to integrated land use planning
8. Encourage a life cycle approach to materials management
9. Contribute to community development
10. Publicly report, independently assure and engage openly and transparently

6 Position Statements

Mining and Indigenous Peoples (2013, 2008)

Climate Change (2011, 2009, 2006)

Mining: Partnerships for Development (2010, 2004)

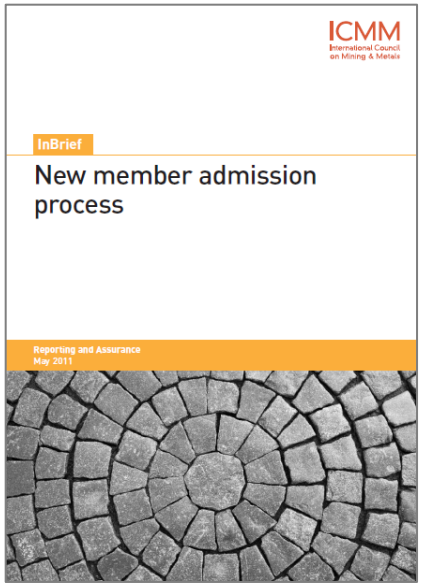
Mercury Risk Management (2009)

Transparency of Mineral Revenues (2009, 2006, 2005, 2003)

Mining and Protected Areas (2003)

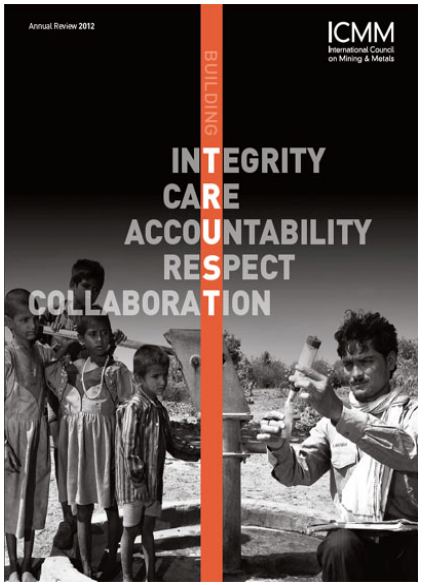
Accountability and transparency at ICMM

Robust entry criteria and process



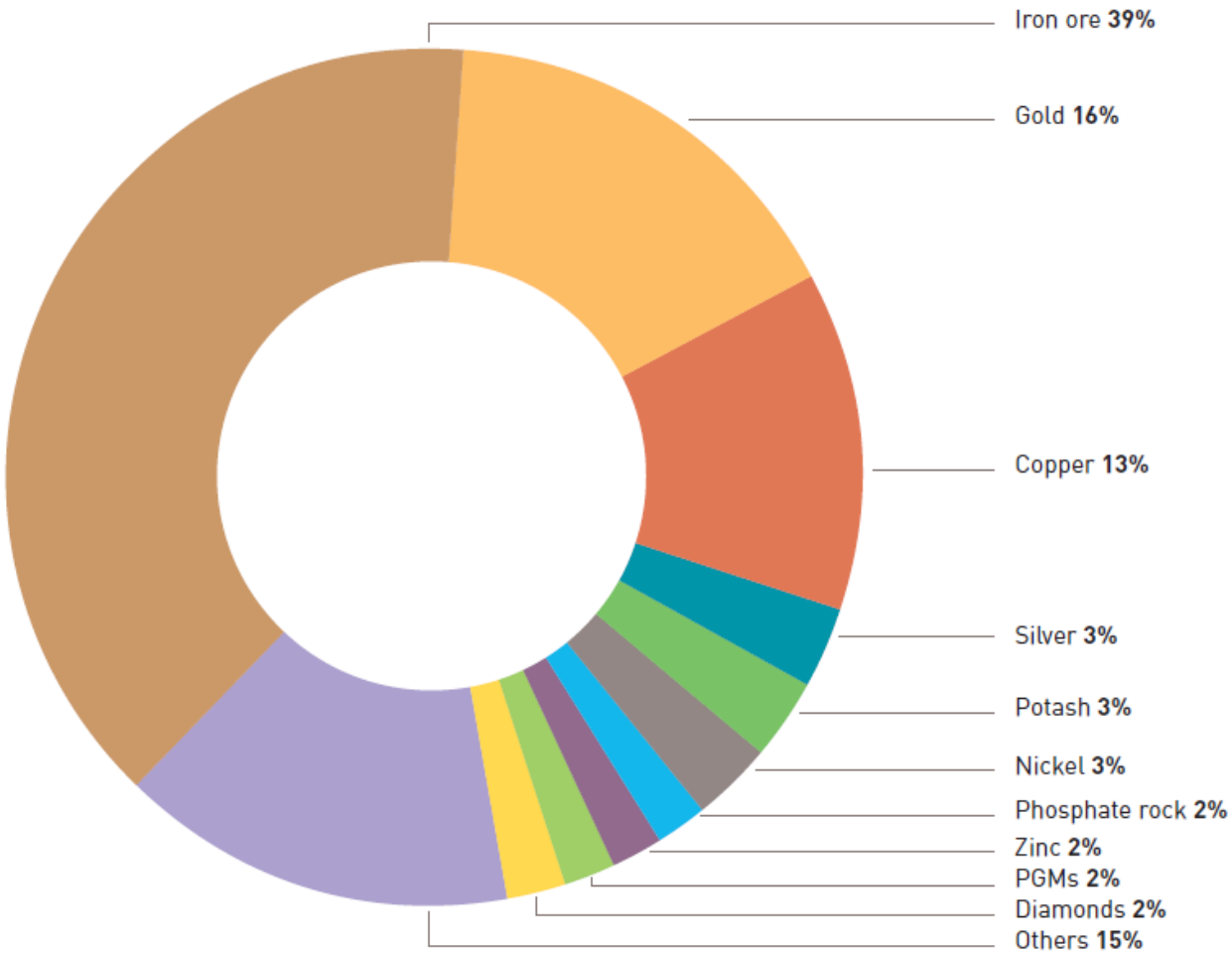
Clear performance expectations

Reporting



Mining’s operating environment

Value of global production by metal in 2011



Source: Raw Materials Group, Stockholm, Sweden.

Value of global coal production more than twice that of iron ore

Global level

Financial uncertainty

Climate change, operational and geographic implications

More socially conscious consumers

Rule-setting shift: national to sub-national

Trust in industry falling, conflict increasing

Increasing demands for transparency

Country and local level

Resource nationalism

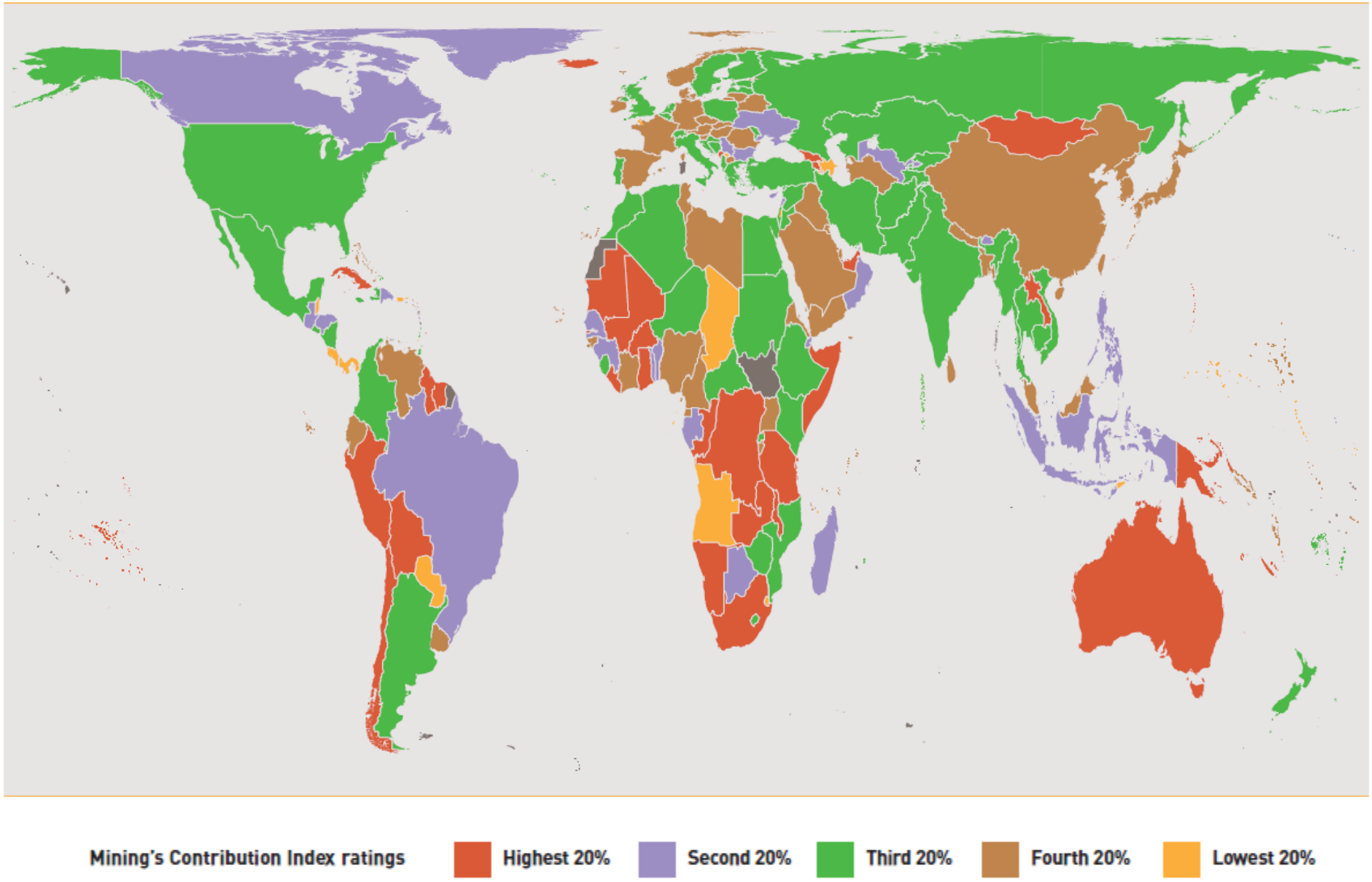
Growing role of mining in low and middle income countries

Limited understanding of benefits, costs and risks

Not all responsibilities and accountabilities addressed

Ongoing concern about health and safety

Mining's contribution: benefits, costs and risks, responsibilities and accountabilities



The nature of the industry

category	approximate asset base, $USD	approximate numbers of companies	comment
Global giants	Exceeds $10 billion	50	global giants and seniors control the majority of available capital, their focus in on the industry; they have multiple operations
Seniors	$3 - $10 billion	100	
Intermediates	$1 - $3 billion	350	often on their way up; their focus is on growing their reserves
Juniors: small (often one mine) producers	$500 million - $1 billion	1,000	some growing, some shrinking; their focus is on their mine
Juniors: exploration	$5 - $500 million	2,000	volatile and market dependent; they are finders, not producers and their focus is on their exploration project
Junior juniors	Below $5 million	2,500	Their focus is on accessing venture capital and optimizing their stock price

Spectrum of corporate behaviour

Hostile Avoiders
Opposers

Rearguard
Resistors

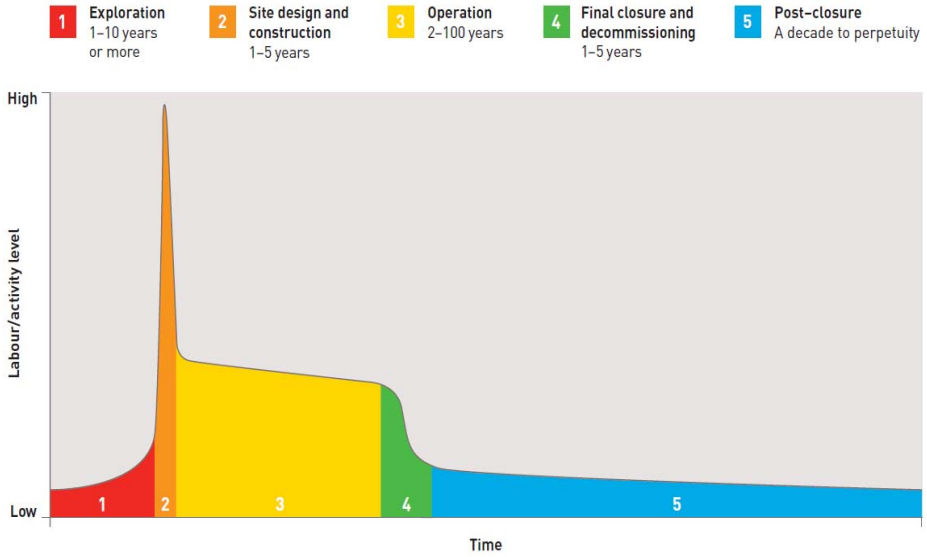
Corporate Couch Potatoes
Slow adapters

Vanguard of the Rearguard
Cautious innovators

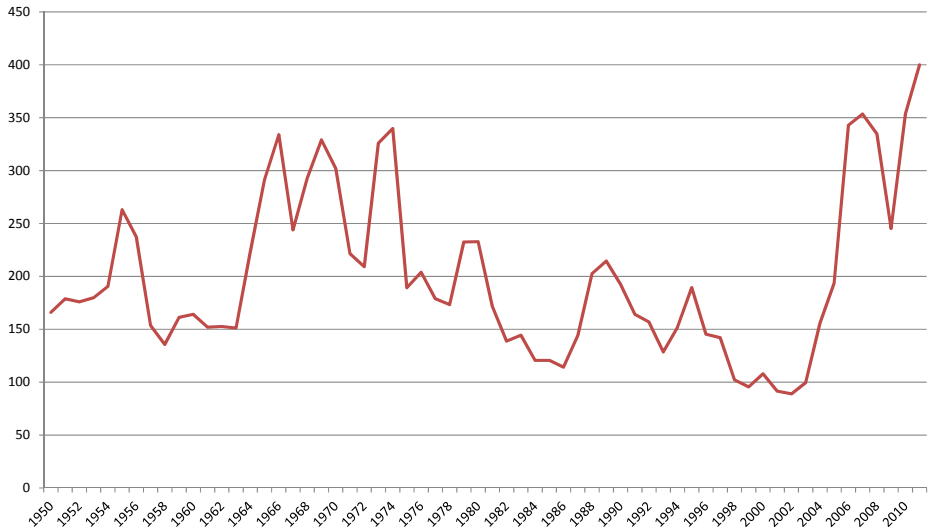
Leading Edge
Doers

The time horizon disconnect

Mine project life cycle



Copper price, 1950 – 2012, US cents (2012)/lb



Time horizon disconnect

- Mining investments, 30-100 year horizon
- Indigenous peoples, multi-generation
- Government, 3-5 year horizon
- Investors, quarterly results
- Communities, often immediate
- Price, constant change

2013-2014 ICMM priorities

Social and Economic Development

•Mining: Partnerships for Development; human rights; Indigenous Peoples; measuring social investment and outcomes

Environment and Climate Change

•water; biodiversity; climate change – national policies and competitiveness; closure

Health and Safety

•performance – eliminating fatalities; shift to risk management approach from incident management approach; sharing experiences – organizational learning

Materials Stewardship

•sustainability profile; responsible sourcing; mercury; chemicals management

Communications

•reputation drivers; issues profiling; relationship strategy

President's Office

•Mining's contribution; emerging issues, reporting and assurance – GRI; outreach (investors, mining and non-mining); Extractives Industry Transparency Initiative; Committee for Mineral Reserves International Reporting Standards (CRIRSCO)

The underpinnings of applied sustainability

Definitions

Sustainability

the persistence of certain necessary and desired characteristics of both people and the enveloping ecosystem (of which people are a part) over a very long time – indefinitely

Robinson et al., 1990

Development

to expand or realize the potentials of; bring gradually to a fuller, greater, or better state.

Daly, 1989

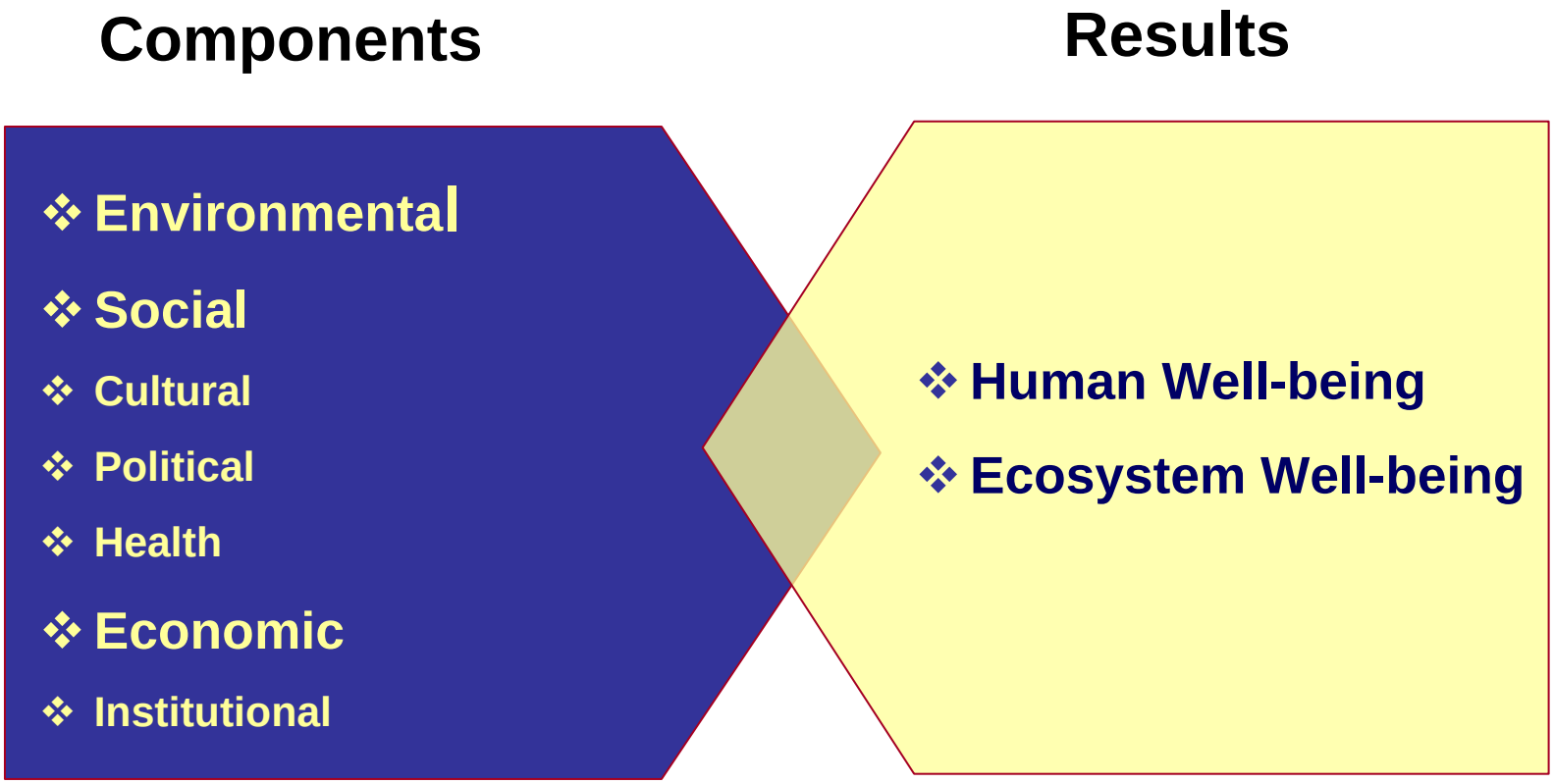
Sustainable Development

the human and, most importantly, the ACTION part of the above idea set – it covers what and how people do.

The result is not a “fixed state of harmony.” Rather, it is an ongoing process in which people take actions leading to development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland 1987, Milos Decl. 2003).

Conversely, actions that reduce the ability of future generations to meet their own needs should be minimized and if deemed essential to continue with today, at least done so with the explicit recognition of and sensitivity to future implications.

Perspectives on sustainable development



Capitals: **Natural, Built, Human, Knowledge, Institutional**

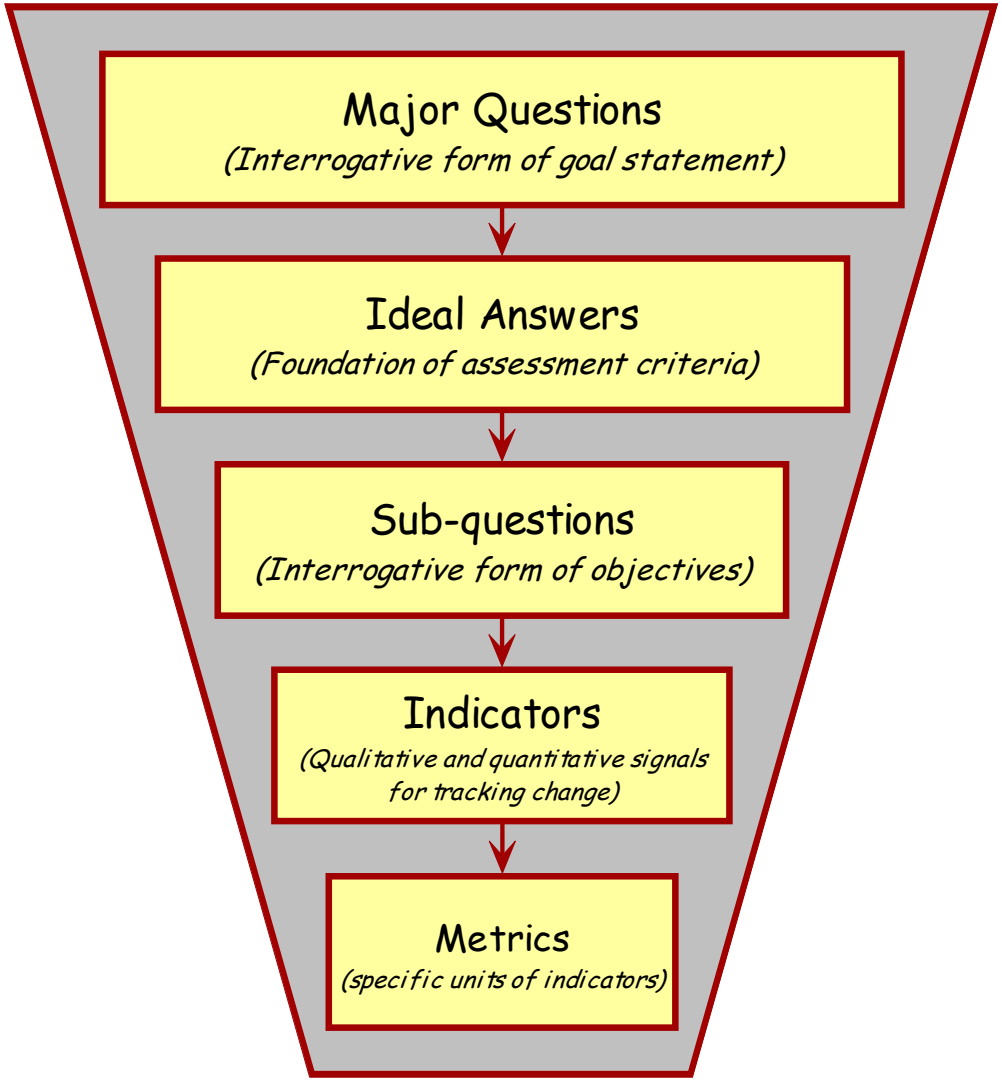
Observations – applied sustainability

- is not environmental protection in another guise
- applications build from but go beyond traditional environmental, social, and economic impact approaches – but the key is “contribution” not “impact”
- is a positive concept that has as much to do with achieving wellbeing for people and ecosystems as it has to do with reducing stress or impacts (criteria and indicators need to reflect this)
- we need to design for and test against the achievement of a net positive contribution to people and ecosystems over the long term

Achieving practical results using systems ideas

(The Seven Questions to Sustainability (7QS), http://www.iisd.org/natres/mining/7qs.asp)

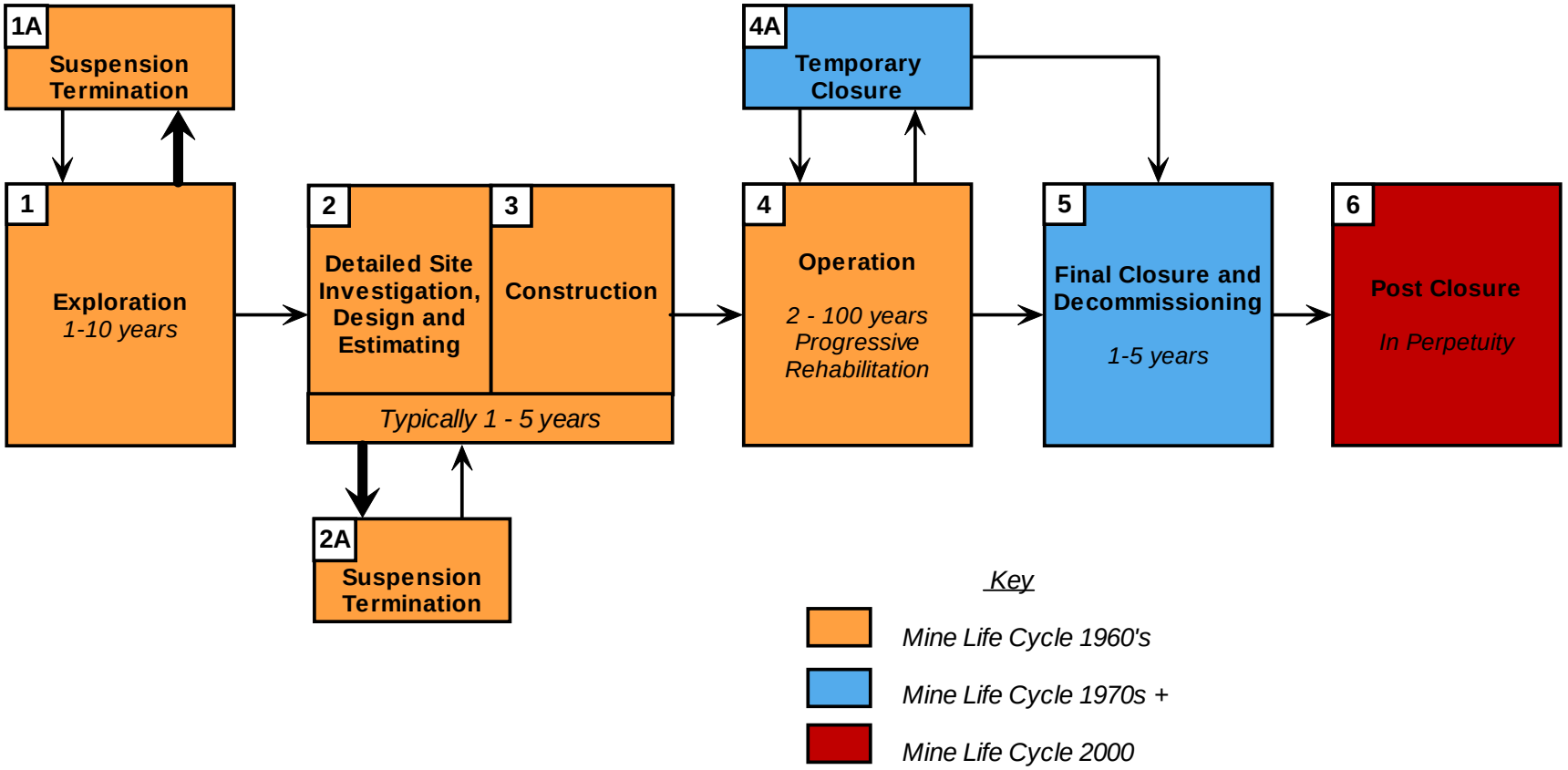
Development template



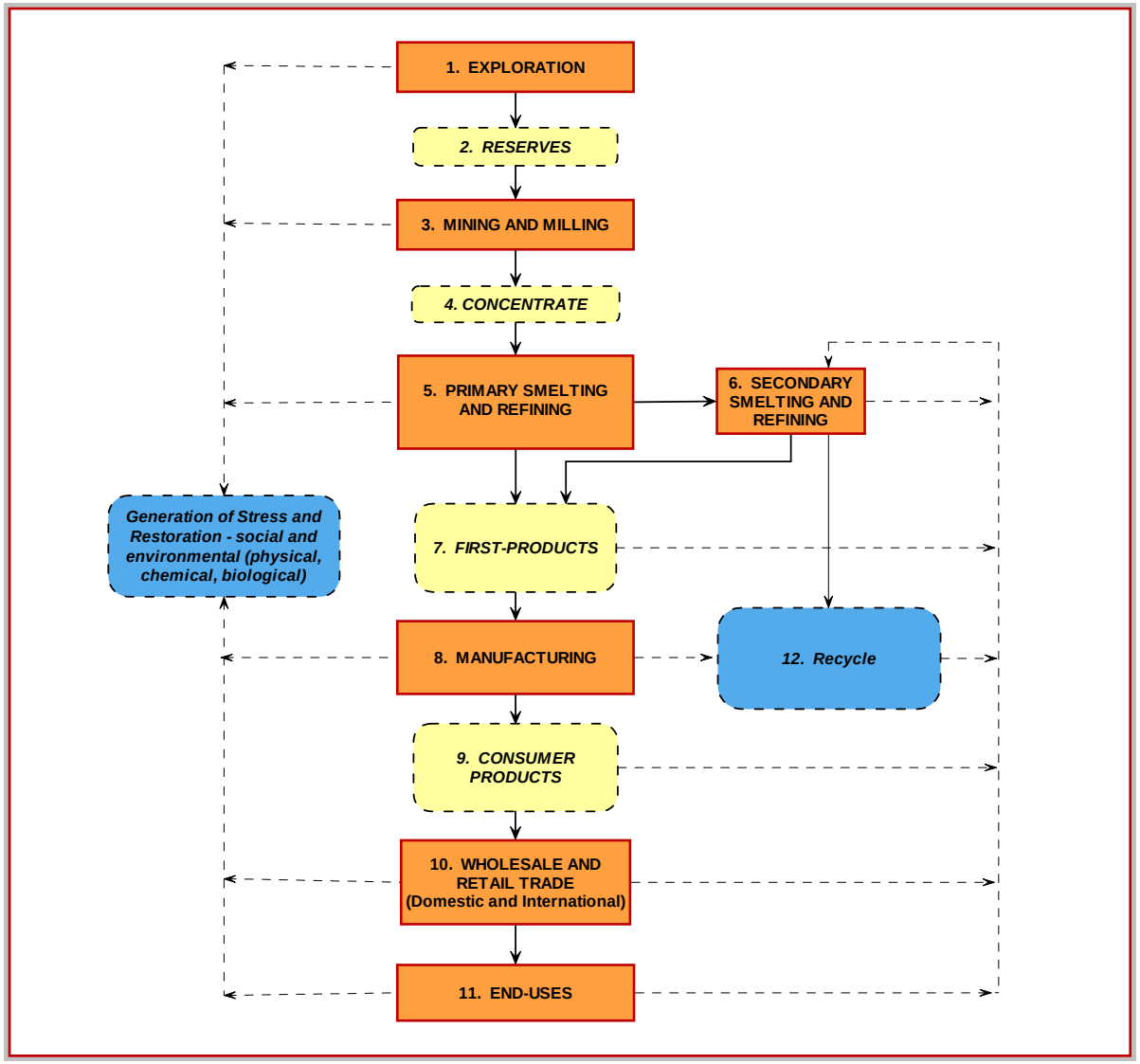
Engage with Who?

- **Industry** (industry associations, other companies)
- **Support services** (financial, consultants, contractors, suppliers)
- **Government** (local, county/regional/district, state/provincial, federal, international
- **Indigenous people and their organizations**
- **Organized labour**
- **Mining Affected Communities** (by economic, social, and/or environmental (e.g. watershed) dependency – several million people in several hundred communities)
- **Non-government organizations**
- **Academic, Learning, and R & D Support (**universities, technical schools, research centres (private/public)

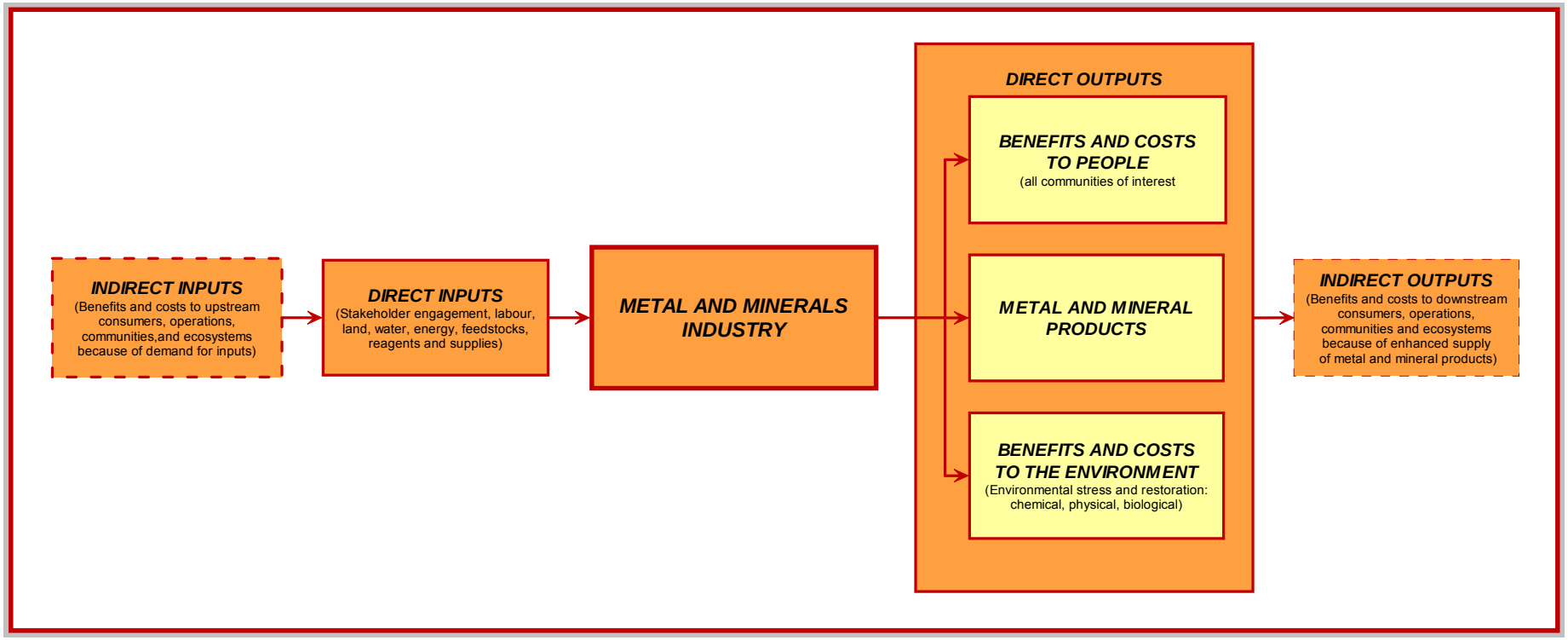
Boundary Conditions 1: Project Life Cycle



Boundary Conditions 2: Mine/Minerals Life Cycle



Boundary conditions 3: ripple effect



Two examples

1. The EC environmental footprint
2. Mining and conflict

The EC environmental footprint

(life cycle approach to quantifying environmental performance)

Draft COMMISSION RECOMMENDATION on the use of common methods to measure and communicate the life cycle environmental performance of products and organizations

ANNEX II : PRODUCT ENVIRONMENTAL FOOTPRINT (PEF) GUIDE

ANNEX III: ORGANISATION ENVIRONMENTAL FOOTPRINT (OEF) GUIDE

References:

Policy and methodological and development:

http://ec.europa.eu/environment/eussd/smgp/index.htm

Annexes II and III:

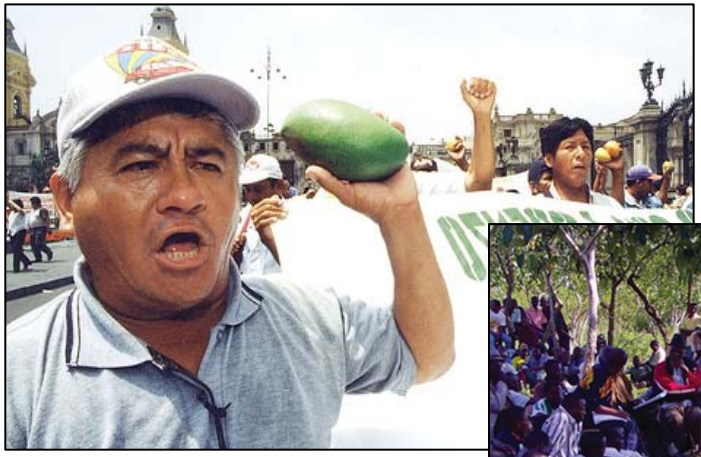
http://ec.europa.eu/environment/eussd/smgp/pdf/annex2_recommendation.pdf

http://ec.europa.eu/environment/eussd/smgp/pdf/annex3_recommendation.pdf

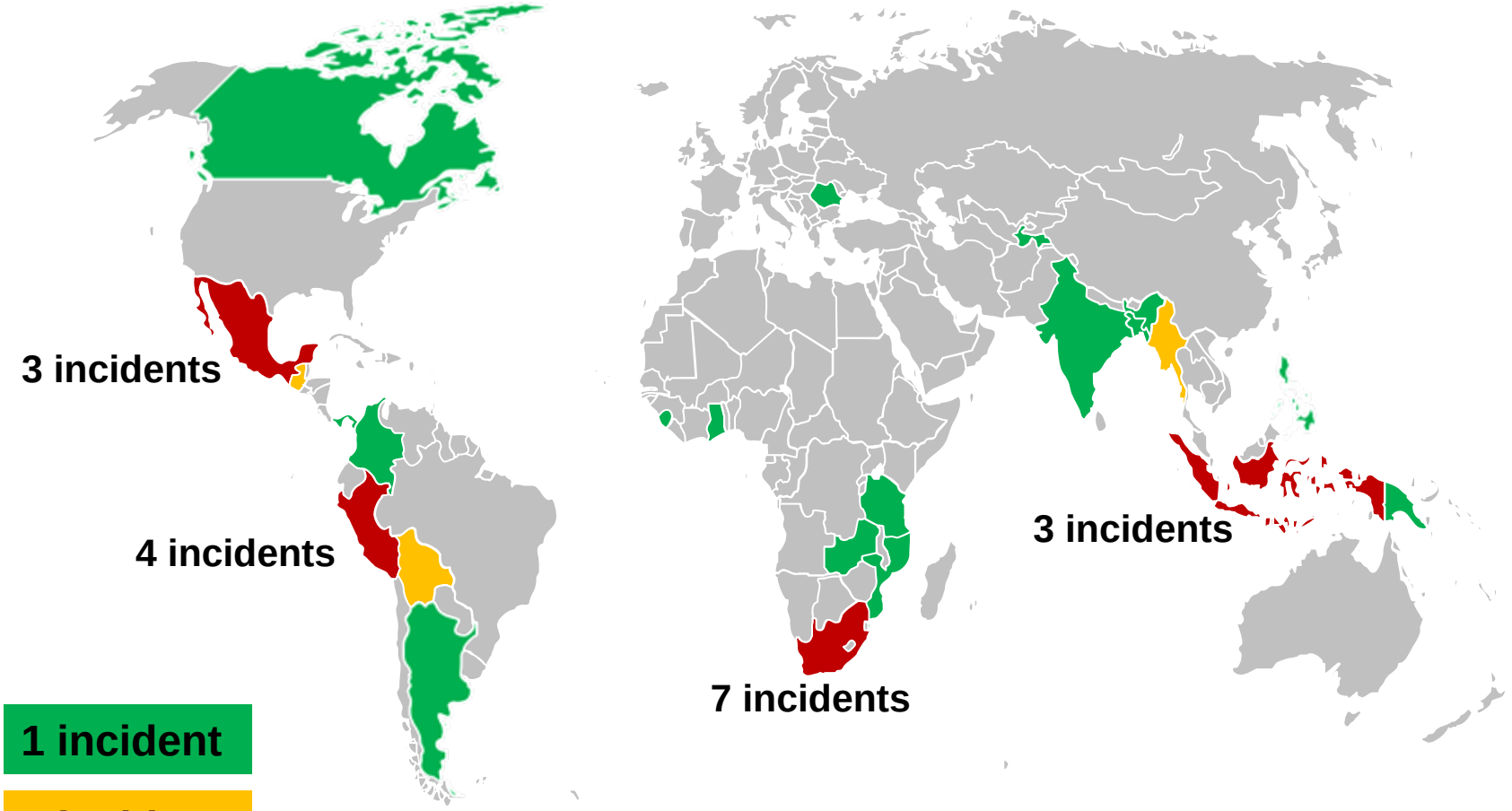
EC “default” environmental footprint impact categories

1. Climate change, kg CO2 equivalent
2. Ozone depletion, kg CFC-11 equivalent
3. Ecotoxicology for aquatic fresh water, Comparative Toxic Unit for ecosystems
4. Human toxicity – cancer effects, Comparative Toxic Unit for humans
5. Human toxicity – non-cancer effects, Comparative Toxic Unit for humans
6. Particulate matter/respiratory inorganics, kg PM2.5 equivalent
7. Ionising radiation – human health effects, kg U235 equivalent (to air)
8. Photochemical ozone formation, kg NMVOC equivalent
9. Acidification, mol H+ eq
10. Eutrophication – terrestrial, mol N eq
11. Eutrophication – aquatic, fresh water: kg P equivalent marine: kg N equivalent
12. Resource depletion – water, m3 water use related to local scarcity of water
13. Resource depletion – mineral, fossil, kg antimony (Sb) equivalent
14. Land transformation, Kg (deficit)

Distinguishing conflict from violence



2012 mining-related conflicts involving protests and/or the use of force



1 incident

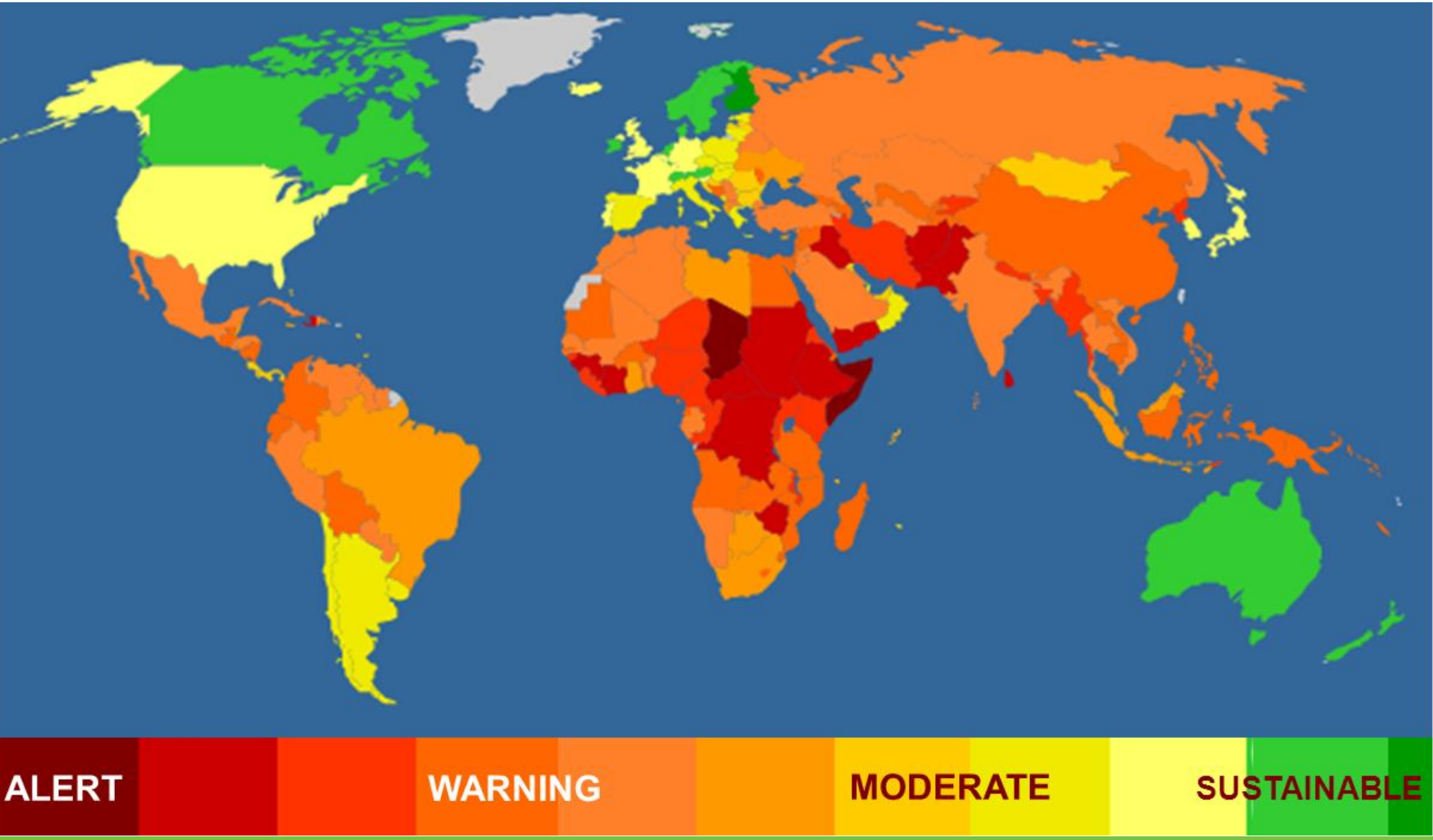
2 incident

3 or more incidents

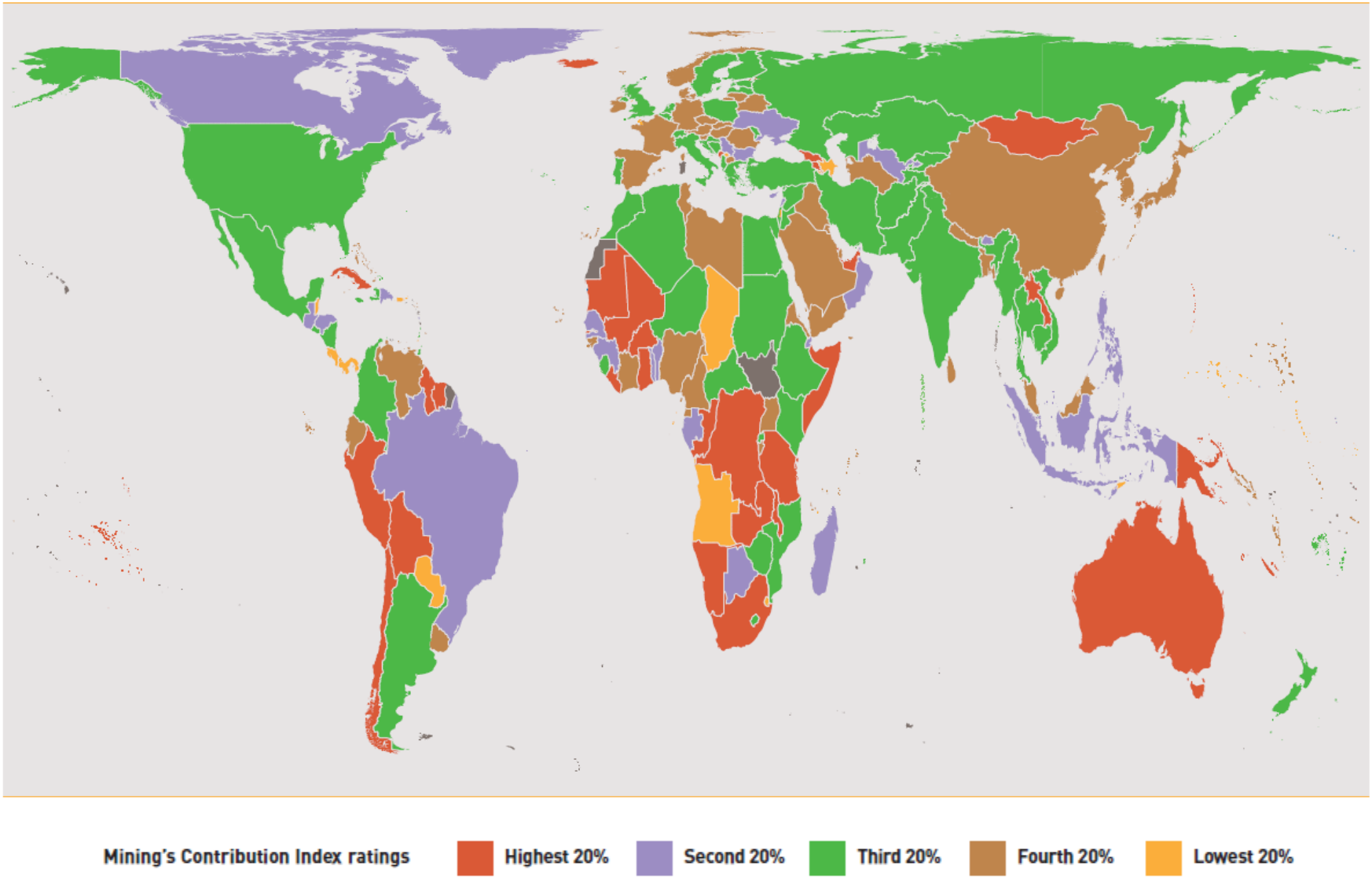
Total of 42 incidents in 26 countries

Failed states index 2012 (Fund for Peace, www.fundforpeace.org)

Alert status in 33 countries, warning status in 92



Mining's contribution: benefits, costs and risks, responsibilities and accountabilities



Fragility and conflict situations

- Fragile states – face particularly severe developmental challenges
- On-going violence linked to past conflict
- 75% are conflict affected
- No low income fragile state has achieved a single MDG
- Why important to mining . . .

The 2003 Milos Statement

The minerals professional community . . .

•believe minerals are essential to meeting the needs of the present while contributing to a sustainable future

•will contribute to a sustainable future through the use of our scientific, technical, educational, and research skills in minerals, metals, and fuels

Δ professional responsibility

Δ education training and development

Δ communication

Seeing the forest and the trees, looking over the horizon

ICMM
International Council on Mining & Metals

For further information:

 @icmm_com

info@icmm.com

www.icmm.com