

MINING, ENVIRONMENT AND DEVELOPMENT

A series of papers prepared for
the United Nations Conference on Trade and Development
(UNCTAD)

ADVANCE COPY

2. International law and mineral resources

by

George W. (Rock) Pring
University of Denver College of Law

Published by UNCTAD

Preface

The series of papers on Mining, Environment and Development has been prepared under UNCTAD's programme of activities on sustainable, resource-based development. The series includes:

1. The Geopolitics of mineral resources, by R. M. Auty
2. International law and mineral resources, by G. W. (Rock) Pring
3. Macroeconomic policy for mineral economies, by R. M. Auty
4. Mineral policy, legislation and regulation, by J. M. Otto
5. Fiscal policy and mineral taxation systems, by J. A. Cordes
6. Mining and the natural environment, by L. R. Blinker (UNEP)
7. Anticipating and addressing social impacts, by A. and J. Clark
8. Geographic information systems for mineral resources, by S. Luque
9. Sub-Saharan Africa, by J. W. Hollaway
10. Latin America and the Caribbean, by A. Pasco-Font

Note

The views expressed in this volume are those of the authors and do not necessarily reflect the views of the UNCTAD secretariat.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Reference to dollars (\$) are to United States dollars.

Executive summary

Laws regulating mining are increasing in scope and stringency, based on the new international paradigm of "sustainable development" - development that meets the needs of the present without compromising the ability of future generations to meet their own needs. For mining, this means focusing not only on traditional economic concerns, but also on new social, economic, and environmental concerns, particularly in developing nations with resource-based economies.

International environmental law is becoming a significant part of this changing regulatory framework, eroding state sovereignty over resources with new treaties, judicial decisions, and the codes and practices of governmental and industry organizations. This paper first provides a comprehensive overview of the "hard law" affecting mining access (World Heritage, Biodiversity, Law of the Sea Treaties, etc.), process (water quality, air quality treaties, etc.), and products (World Trade Organization, Basel, Heavy Metals Protocol, etc.) It then surveys legal authorities "midway between hard and soft" (courts and international financial institutions). Finally, it examines the "soft law" of mining (Stockholm and Rio Declarations, Agenda 21, resolutions of intergovernmental organizations (IGOs), industry codes, ISO 14000 standards, etc.) and its "hardening". While international environmental law is still characterized by weak standards and enforcement, it is growing in both scope and enforceability and becoming a force that can no longer be prudently ignored.

CONTENTS

	Page
Executive summary	3
I. Introduction	5
A. International mining law developments	5
B. The environmental impacts of mining	7
C. International law and its relation to mining	9
II. Binding or "hard" international law	10
A. Mining access control	10
1. Nature preservation laws	10
2. The Biodiversity Treaty	12
3. The Law of the Sea Convention	13
4. Environmental impact assessment	15
B. Mining process control	15
1. Access law carry-over	16
2. Water quality treaties	16
3. Air pollution treaties	17
C. Mining product control	18
1. WTO and other trade measures	18
2. Mineral hazardous waste and recovery	20
3. Banning actual products	21

	Page
III. Midway between hard and soft law”	21
A. Litigation and the Courts.....	22
B. International financial institutions and their environmental requirements	23
1. Multilateral development banks.....	24
2. Development assistance agencies	26
IV. The International "soft" law of mining - is it hardening?	27
A. The 1972 Stockholm Principles	28
B. UNCED: The Rio Declaration.....	30
C. UNCED: Agenda 21	32
D. Soft law-making by the United Nations and its agencies	35
E. Regional Intergovernmental organizations and their contribution to law	37
F. Private-sector guidelines and codes	38
1. Mining industry guidelines	39
2. ISO 14000 standards	40
3. Environmental Non-governmental organizations and their contribution	41
4. The special roles of indigenous peoples and local communities.....	41
V. Conclusion	42
Bibliography	44

I. INTRODUCTION¹

A. International mining law developments

Two very significant developments are occurring in the mining industry and related government resource programs worldwide. One is positive, the other problematic. Working together, these two trends have the potential to change dramatically the way in which mineral resource companies, the Governments of resource-based economies, and indeed the world function in the 21st century.

The first trend is the greatly expanding international opportunities for mineral resource development. On the supply side, industrial development in general and mining in particular have been accelerated by a number of factors, including the end of the Cold War, the emergence of new market economies in Asia, Latin America, Africa and Eastern Europe, the move toward privatization of state mining assets, and increasing fiscal liberalization in developing and emerging economies (*Cohen 143, Warhurst/Limitations 134*).² On the demand side, consumption of the majority of minerals continues to increase, particularly in developing countries and emerging economies (*ECOSOC/Integration 8*).

The second trend, however, consists of the growing challenges to mining development, production, and products. Mining, by its very nature, causes significant environmental, social, cultural and economic disruption. As it has expanded globally - particularly in the resource-based economies of many developing countries - international awareness and concern about its negative effects has heightened (*Martin 33, Cohen 150*), and this heightened concern is fueling a significant increase in both national and international laws regulating mining (*id.*, *Prince 260, UNCTAD/Environmental Legislation 1, ECOSOC/Effects 16, ECOSOC/Environmental 14, Armstrong 3-16, Dotterrer 1-35*).

The common thread in these new mining laws is the new international paradigm of "sustainable development". The concept reflects a "North-South" compromise, arising in the 1970s with concerns that developed-country standards of "environmental protection" not be imposed on developing countries as a barrier to their economic development (Pring, *Sustainable Development 13*). Sustainable development gained wide credibility as the centrepiece of the 1987 report of the United Nations World Commission on Environment and Development (the Brundtland Commission), *Our Common Future (WCED 1)*. It has been adopted by consensus as the new guiding principle for international environmental law by the

¹ A revised and expanded version of this paper has been published, to which the reader may wish to refer for updating of some of the references discussed herein. George (Rock) Pring, James Otto and Koh Naito, **Trends in environmental law affecting the mining industry**, 17 JOURNAL OF ENERGY AND NATURAL RESOURCES LAW 39-55 (Part I) and 151-177 (Part II) (International Bar Association Section on Energy and Natural Resources Law 1999). The authors would like to thank Marco A. Madriz, Esq., J.D. Law and M.A. International Studies, University of Denver 1997, for his invaluable research assistance.

² Citations are to publications in the Bibliography which appears at the end of this paper. Author and first referenced page are listed, as well as the first word(s) of the title where there are multiple works by the same author in the Bibliography. All websites are current as of December 1999.

nations of the world at the Rio Earth Summit in 1992, through the Rio Declaration and Agenda 21 (section IV. below).

Sustainable development is defined in the Brundtland Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 43). Alternatively, it has been defined as "improving the quality of human life while living within the carrying capacity of supporting ecosystems" (IUCN 10).

"However defined, the core concept of sustainable development is to direct global economic efforts toward increasing the present generation's quality of life while recognizing two essential principles: the Earth's finite capacity to accommodate people and industrial development, and a moral imperative not to deprive future generations of natural resources essential to well-being and quality of environment" (S. Smith 262).

While at first this may seem a difficult concept to apply to non-renewable resources like minerals (indeed, critics would say, an "oxymoron"), sustainability nevertheless has application to mining, as it encourages the preservation of all aspects of a country's environmental, cultural and socio-economic heritage, including the rational use of non-renewable resources (Pring, *Sustainable Development 20*, UNESCAP & UNEP 3, ECOSOC/Integration 3, *Novoa 7-2*).

For development in general, sustainability mandates three things: preservation of options for future generations, nurturing of social and community stability, and maintenance and restoration of environmental quality (UNESCAP & UNEP 55). For mining in particular, this requires poverty alleviation, meeting of basic human needs, environmental impact assessment, pollution abatement, minimization of environmental impact, resource conservation, adequate worker health and safety standards, community betterment, and protection and restoration of the *environment* (*id.* 4).

In short, the concept of sustainable development requires a complete paradigmatic shift in national and international thinking, because making economic and ecological concerns work *together* is its controlling objective. To have sustainability, nations, industries, companies and individuals can no longer seek merely to maximize material gains but must maximize the non-material quality of life, can no longer rely on technology to make possible infinite development and population growth, and can no longer maximize present-generation benefits at the expense of future generations' well-being (S. Smith 263).

Sustainable development principles are going to play an increasingly significant role in the negotiations surrounding both new and existing mining developments in resource-based economies. Those principles have already led to a restructuring of United Nations programmes (ECOSOC/Activities, *Silveira 239*) and are already beginning to be required by industrialized countries, international financial institutions, and some developing countries (*Cohen 150*, *Prince & Nelson 260*). Also, sustainability is fast becoming an operating assumption of the responsible international business community (IV.F. below) and is already being practiced by some of the more advanced international mining companies - even in resource-based countries whose laws do not yet impose sustainable development requirements (*Wälde 58*, *Warhurst 146*, *Emery 77*).

A significant part of this rapidly changing environmental regulatory framework for sustainability in mining is (and increasingly will be) *international law* - the growing body of laws and policies, not at the national or single-nation level (numerous as those are), but at the supra-national or multi-nation level.

"Beyond establishing management regimes for the oceans, atmosphere, land areas, and human activities directly impacting these natural systems, [International] Environmental Law also makes adjustments in related sectors of society that induce activity harmful to the environment. These indirect threats to nature are pervasive, often unintended, and usually avoidable. In economic analysis, these impacts are called 'externalities,' that is, since a pollutant is discharged for free into a river where it is diluted and its injury difficult to trace, it is deemed 'external' to the market economy. Similarly...assertions of an environmental right to be free from poisoning pollutants are not often given serious...focus.

"To redress these blind spots, where society finds it convenient to ignore the environmental harm it induces, [International] Environmental Law increasingly constructs rules to overcome or compensate for such human omissions" (*Agenda 21/Robinson xxix*).

This paper explores this dimension - the international rules designed to control mining in order to promote the new paradigm of sustainability - and explores ways in which countries with resource-based economies can use these international legal authorities to promote and protect their own sustainable development.

B. The environmental impacts of mining

"Mining inherently implies environmental degradation...[it] is not an environmentally-friendly activity" (*Cohen 135, 137*). Mineral resource activities affect all environmental media - land, air, water, and associated flora and fauna - as well as the human environment - individual health and safety, local community lifestyles, cultural survival, social order and economic well-being (*for details see generally Eggert 1, Cohen 134, Warhurst/Environmental 39, ECOSOC/Integration 11, Wälde 41, ESCAP & UNEP 1, White 310, World Bank/Environmental Assessment 1*). While the majority of the impacts of mining are said to be "localized", mining can cause national, transboundary and global environmental problems (*Wälde 42, Warhurst/Limitations 135, ECOSOC/Integration 10*).

The exploration stage (surveys, mapping, drilling, etc.) generally produces the least-pronounced effects. Still, these can include the clearing of trees and vegetation, displacement and death of wildlife, and landform change through construction of access roads, camps, excavations, pads, pits, holes, shafts, etc. While frequently dismissed as "localized" (*Wälde 43*), even the impacts of the exploratory phase can displace people, foreclose alternative land uses, create social conflict, and, by building roads, open up sensitive ecosystems to unplanned population influxes.

The development and operational stages (extraction) magnify all of the above land-use, ecosystem, and population impacts. Mining can destroy large areas of vegetation, topsoil and terrain, create hazards from excavations, landslides, slope failures, cave-ins, erosion and subsidence, deprive ecosystems and other users of water through water-intensive practices, and produce noise, dust, human-development disturbance, and quantities of solid waste in the form of tailings and waste rock disposal sites (as much as 1,000 units of waste for a single unit of mineral yield). Toxic chemicals (xanthates, cyanides, sulphates, etc.) are used in primary processing, some base metals are themselves toxic (lead, mercury, cadmium), and toxic and other gases can be released (for example, methane in coal mining, a major greenhouse gas). Water quality - in surface waters, wetlands, groundwater and oceans - can be adversely affected by this extraction phase; acid drainage from mines and tailings/waste dumps, toxic leaks and overflows from tailings dams or reagent ponds, leaching of metals from waste piles, and sedimentation/erosion from revegetated sites and excavations can cause localized problems of magnitude as well as extend for hundreds of kilometers, causing transborder impacts on people and nature.

The metallurgical stage (smelting, refining, etc.) generates even more risks to human health and the environment. Air pollution includes direct emissions of compounds of sulphur, carbon, nitrogen, and toxic metal particulates, indirect emissions from the fossil fuels used for energy, releases of potentially hazardous dusts and gases in the workplace, and the generation of acidic deposition (acid rain, etc.). Water pollution includes all of the above acidic, toxic and sedimentary process discharges, leaks, spills, leaching, and surface runoff. Solid and hazardous waste treatment, storage, and disposal issues multiply with the metallurgical residues.

The reclamation stage is also fraught with problems. Abandoned mines may continue to cause water supply contamination, ecosystem destruction, landform, and lifestyle impacts. The final stage of the mining cycle cannot be overlooked - consumer use, recovery (recycling, reclamation, reuse), and disposal of the products. Some metal products are potentially dangerous, as are some uses and misuses of mining products. Disposal of used mineral products, particularly heavy metals, creates major problems for domestic landfills and has given rise to controversial "dumping" in developing countries with inadequate facilities. Even the seemingly positive area of mineral recovery or recycling has been tarnished in the view of many because of "sham" operations (in actual fact, dumps) and other risky practices.

All of these environmental hazards and impacts also threaten indigenous cultures and native community land use, and socio-economic and cultural practices in developing countries with resource-based economies. These disruptions include permanent loss of natural resources, preemption of alternative land uses (for agriculture, forestry, hunting or leisure), ecosystem degradation and loss, destruction of key flora and fauna, displacement of populations, settlement influxes, crime and diversion of individuals and communities from traditional practices to boom-bust employment and small-scale or artisanal mining dependence.

Few, if any, industries present the potential for environmental problems of mining. It is no surprise that, as this realization spreads, individual Governments are uniting and turning to international law as a collective means of prevention and cure.

C. International law and its relation to mining

Traditionally, international law has taken a "hands-off" approach to mining. It is a general principle of international law that nation-States have sovereignty - that is, supreme, independent political and legal control - over their own natural resources (*UNESCAP & UNEP 4, Wälde 49*), just as they do over persons, companies and other entities within their borders. Perhaps the most famous expression of this sovereignty doctrine is in Principle 21 of the **Stockholm Declaration**.³

"States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."

However, States may give up portions of their sovereign powers - through long-term practice of legal customs, through the development of general principles of a legal nature, through treaties and other binding legal agreements, and through judicial decisions (*Buergenthal & Maier 19, Guruswamy & Hendricks 15*). These new rules - by which a State surrenders some of its right to do what it pleases and becomes bound to new conduct standards along with other States - make up what we call "international law".

Individual state sovereignty over resources is no longer an absolute. International constraints have developed and are continuing to develop in three ways: (1) the bedrock international environmental law principle that States are responsible for preventing transboundary environmental harm to other States (the second half of Stockholm Principle 21, above), (2) the undertakings and agreements of specific treaties and (3) the emerging principles of sustainable development (*Wälde 50*).

These factors have made "international environmental law" grow at amazing speed. There are now over 1,000 international treaties and other legal authorities focused on the environment, most developed since 1970 (*Pring & Joeris 422*). We do not, as yet, have a comprehensive international law of mining. In part, this is because States are naturally reluctant to give up their sovereign control over such an important part of their economies. In part, it is because of the very primitive state of international law, which lacks conventional law-making bodies (having no true legislature, executive or judicial branches). In part, it is because most international law lacks conventional command-control enforcement, leaving compliance largely to the political will of the individual sovereign States. Finally, in part, it is because all international law is not created equal; some international rules are classed as legally binding or "hard law" (chiefly treaties and litigation), while others are viewed as non-binding, aspirational, or "soft law" (such as United Nations and other international bodies' declarations, resolutions, statements of principles, guidelines, etc.) (*Guruswamy et al. 132, Wälde 66, Armstrong 3-54*).

³ Full citations to international legal authorities are given in the Bibliography.

International laws of both the "hard" and "soft" nature (and in-between) are increasingly focusing on mining. While the industry does not yet have to deal with anything like uniform, specific international standards applicable worldwide, it does face specific instances of hard law "international standards" and is increasingly being targeted by soft law. Soft law, while not binding per se, cannot be ignored, because it has the tendency to become a hard or binding part of the legal framework given sufficient time and State recognition. The following is an overview of the existing state of international law respecting mining - hard, soft, and in-between.

II. BINDING OR "HARD" INTERNATIONAL LAW

While there is no comprehensive international law of mining (*Eggert 4-11*), still a number of treaties or conventions ⁴ have provisions regulating the industry. Typically, these mining-related treaties use very general language, lack adequate enforcement regimes, and focus on only a small portion of one of the three phases of mineral development and marketing: (1) access, (2) process, or (3) product controls.

A. Mining access control

1. Nature preservation laws

In addition to national laws protecting parks, wilderness, wetlands, and nature generally (*Pring & Miller*), various international treaties have been developed since the 1940s to protect outstanding natural areas and resources. Because a "listing" under one of these international treaties can place areas "off limits" to development, they have been and will continue to be battlegrounds between mining interests and environmentalists (*Wise 14B-25*).

The 1972 **UNESCO Convention for the Protection of the World Cultural and Natural Heritage (the World Heritage Convention)** is the foremost example. It provides for the preservation of outstanding natural and cultural sites by listing them as part of "the world heritage". States nominate their own sites for inclusion, a 21-State elected committee of the treaty parties (the World Heritage Committee) decides which to list, and then States are obligated to protect their sites in perpetuity. Over 100 States are parties to the treaty, and 119 "natural" and "mixed" natural-cultural sites have been established as of 1996, including Yellowstone National Park and the Grand Canyon in the United States, the Mount Everest region of Nepal, and Australia's Great Barrier Reef.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) administers the Convention through its UNESCO World Heritage Centre in Paris (website:

⁴ The different designations - "treaty", "convention", "agreement", "protocol", etc. - all mean essentially the same thing and have no special significance for our purposes here (*Vienna Convention on the Law of Treaties, Article 2(1)(a)*).

<http://www.unesco.org/whc>).⁵ The Committee meets once yearly, usually in December; its Bureau (executive committee) and the Centre professional staff provide assistance (including emergency assistance), training and technical cooperation, monitoring, and modest grants (US\$30,000-75,000) to countries seeking to protect sites. Two important international non-governmental organizations (NGOs) assist the Committee by providing expert evaluation of each proposal - the World Conservation Union (IUCN) and the International Council on Monuments and Sites. Important meetings of all these and other subsidiary groups can be monitored through the website or by direct contact with the Centre.

Sites are judged on the basis of detailed criteria (enumerated at the website). In general, natural areas must be outstanding examples of major stages of the earth's history; significant ongoing ecological and biological processes; superlative natural phenomena; exceptional natural beauty and aesthetic importance; or important natural habitats for in-situ conservation of biological diversity. Once a site is listed, enforcement is left up to each State, the only express sanction being "delisting" a site that a State has failed to preserve adequately (a surprisingly strong motivator for some).

Similarly, the 1971 **Ramsar Convention on Wetlands of International Importance** protects wetlands, including marshes, peatlands, and marine water less than 6 meters deep at low tide, with particular emphasis on wildfowl habitat. As of 1996, 700 wetlands were listed, covering millions of hectares. Unlike the World Heritage Convention, individual States have unilateral power to list their wetlands of "international importance", which, once listed, must be preserved and protected. Here too, enforcement is left to the discretion of the individual States, with delisting again the only overt sanction.

Ramsar is nominally governed by its Conference of the Parties (COP), but, since the COP only meets at multi-year intervals, a Standing Committee made up of seven members generally administers the treaty. The COP and Standing Committee are supported by the Ramsar Convention Bureau and its staff located in Gland, Switzerland (website = <http://www.iucn.org/themes/ramsar>). The next COP meeting, scheduled for 1999 in Costa Rica (COP-7), will focus on the interrelations between human societies and wetlands; preparatory work should be followed closely by interested parties, as resolutions on policy, programme, and budget for the 21st century are being developed in advance by the Standing Committee and other Governments and NGOs (such as the IUCN).

In addition, there are a number of similar regional nature treaties for the Americas, Africa, Europe and Asia. These include the 1940 **Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere**, the 1968 **African Convention on the Conservation of Nature and Natural Resources**, the 1979 **Berne Convention** (Europe) and subsequent **EU Council Directives**, and the 1985 **ASEAN Agreement on the Conservation of Nature and Natural Resources** (not yet in force). As an example of how these regional treaties can affect access, in 1997 the European Union (EU) announced it would sue 10 of its member-country Governments for failing to implement their 1995 **Natura 2000** agreement by setting aside a network of habitats for endangered species (*EU to Sue*). National laws inspired

⁵ A number of the international treaties and legal authorities have very informative websites as well as e-mail addresses suitable for contacts and enquiries. Wherever possible, these have been included in the discussion of the treaty in the text, with the disclaimer that Internet sources and addresses change with some frequency.

by such international treaties can also create problems for mining: for example, in 1997 Brazil postponed a major auction of mining rights on a tract of over 2 million hectares in part to allow the Government more time to determine whether it can legally allow mining in the portion of the tract that lies in the environmentally protected Pico da Neblina National Park (*Mining Auction Postponed*).

These treaties are potentially very significant for the negotiation of sustainable development in mining, as they can be used to block or redirect mining access and development. One example is the defeat of the Windy Craggy mine proposal by the listing of the Tatshenshini-Alsek Region, British Columbia, Canada, as a World Heritage Site (*Wise 14B-13*). The Coronation Hill mine in the Northern Territory of Australia was turned down primarily because of Aborigines' claims; significantly, however, concerns were also raised that, while the mine itself would not have negative environmental effects on downstream Kakadu National Park, the cumulative environmental impact if other mines were allowed in the area "would threaten...the World Heritage listing" of the Park (*Cox 27*). Protection of sites under these nature treaties (even plans to study sites for possible protection) can provide significant leverage to resource-based economies, NGOs and others in dealing with future mining proposals.

2. The Biodiversity Treaty

One of the major accomplishments of the 1992 "Earth Summit" in Rio de Janeiro, Brazil - the **Convention on Biological Diversity (Biodiversity Treaty)** - could have major implications for the mining industry in the future. Its core concept is that nations are "responsible for conserving their biological diversity and for using their biological resources in a sustainable manner". International law now has two dominant environmental treaties dealing with the preservation of biological diversity in ecosystems, species and gene pools - this one for terrestrial biodiversity and the Law of the Sea Convention (next section) for marine biodiversity.

While the Biodiversity Treaty has many important provisions affecting development in general - including funding, technical assistance, and technology transfers - it is its preservation provisions that have the most immediate relevance to mining. It requires State parties to develop and implement national biodiversity plans, which are to include inventories, monitoring, planning, management, new laws, and the establishment of protected areas of *in situ* biodiversity, and prevention of significant impacts on biological diversity. While the treaty language is generally aspirational and highly qualified ("as far as possible", "as appropriate", etc.), it creates a firm framework in which its COP can be expected to develop more detailed, concrete standards for ecosystem preservation as time goes on (*Guruswamy & Hendricks 91*).

Another important and very controversial provision of the Biodiversity Treaty is its recognition that countries from which genetic resources are taken should:

"shar[e] in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources" (Article 15.7).

This means that pharmaceutical, biotechnology and other companies that profit from products, technology and services derived from genetic resources should share the technology, profits

and other benefits of their discoveries with the country in which the genetic resources originated. Yellowstone National Park in the United States is providing an interesting example of what this could mean: A United States biotechnology company has signed a precedent-setting contract with the United States Government which allows the company to collect and study microorganisms found in Yellowstone's thermal pools and provides royalty payments to the Government if microbe uses prove profitable (and one has already been found to benefit DNA fingerprinting); the contract could serve as a model for patenting genetic life forms under the Biodiversity Treaty (*NPCA 20*).

The treaty is governed by its COP, which will meet next in 2000 (COP-5), and numerous regional preparatory meetings are being held prior to it. The permanent secretariat is located in Montreal, Canada (website: <http://www.biodiv.org>). One of the treaty's advisory groups, the Subsidiary Body for Scientific, Technical and Technological Advice, is a multidisciplinary body of government representatives, currently focusing on inland water, coastal/marine, and forest ecosystems and monitoring. Another, the Open-Ended Ad Hoc Working Group, is working on a draft protocol (treaty amendment) to control living modified organisms adverse to biodiversity (alien species, etc.). Other current work areas include capacity-building in developing countries and preservation of indigenous and local community biodiversity knowledge and practices.

As with many treaties, the COP and its subsidiary bodies should be followed closely, as these organizations can be expected to encourage States to place new areas off-limits to mining and development and to urge more support from developed countries and international companies. This will be of particular interest to developing countries, because of the Biodiversity Treaty's recognition of the "common but differentiated responsibilities" of developed countries (that is, greater financial responsibilities), including "debt-for-nature swaps" technology transfers, "sharing" of benefits from biotechnology (such as profits from new pharmaceuticals), and other financial mechanisms which could work to the economic advantage of developing nations with substantial biodiversity resources.

3. The Law of the Sea Convention

Nearly 75 per cent of our planet's surface is ocean. Years in negotiation, the 1982 **United Nations Convention on the Law of the Sea**, which entered into force 12 November 1994, is a comprehensive framework for regulating our use, development and preservation of these vast marine areas, including mining and other mineral development in the ocean. While ratified by 100 countries as of 1996, an almost equal number (including the United States and other developed nations) have so far not become parties, chiefly because of the Convention's deep seabed mining provisions (website: <http://www.un.org/Depts/los/IYO/UNCLOS>).

The treaty establishes two different mining regimes depending on the location of the minerals. Mineral resources generally within 200 miles of shore (within territorial seas, "exclusive economic zones" and continental shelf areas) are under the exclusive sovereignty of the coastal State. In these areas (about 35 per cent of the ocean), national laws control mining access, environmental protection and other requirements. The other two thirds of the ocean (termed the "International Seabed Area" or "Area") is beyond this national jurisdiction and is governed by this treaty under a unique "global commons" regime. Influenced by strong lobbying from developing countries, the treaty declares the Area's resources to be "the

common heritage of mankind" and stipulates that the benefits of mining and other development are to be shared among all nations.

To accomplish this, the Convention established the "International SeaBed Authority" (ISA), headquartered in Kingston, Jamaica (website: <http://www.isa.org.jm>). The treaty gives the ISA the power to permit and control all mining exploration and activity in the Area. This is the provision which has been most opposed by the United States and other developed nations, which favour an unregulated "freedom of the high seas" approach (*SOHN & GUSTFSON 173*). The governing bodies of the ISA are the Assembly (all parties), the Council (36 members) and the Tribunal (21 judges). The subsidiary bodies are the Legal and Technical Commission (22 members elected by the Council), the Finance Committee (15 members elected by the Assembly), an Economic Planning Commission (in development), and the Enterprise (the ISA's own production entity). The dominant Legal and Technical Commission makes recommendations to the Council on applications for mineral exploration rights, rules and compliance. It began work in 1997 on draft regulations for prospecting/exploration for polymetallic nodules in the Area (the Mining Code), and the secretariat is working on a model contract for applicants.

Despite developed-country opposition to the Convention's mining regime, international standards protecting the marine environment should develop over time (*Kindt/UCLA 138*). The rest of the treaty is generally viewed as representing accepted customary international law, even by the non-parties (*id*). Within areas of national jurisdiction, the treaty obligates States to "protect and preserve the marine environment" and expressly qualifies States' "sovereign right to exploit their natural resources pursuant to their own environmental policies" with the limitation that all development be "in accordance with their duty to protect and preserve the marine environment". Environmental protection provisions require States to adopt laws and regulations to control all forms of pollution, as well as monitoring and environmental assessment. Significantly, for the deep seabed, "international rules, regulations and procedures shall be established", and these will be precedent-setting since States are required to adopt pollution laws and regulations "no less effective than the international rules, regulations and procedures".

Some authorities suggest the Convention imposes sustainable development on the oceans even though the concept is not expressly mentioned (*NANDA 264*), while others believe the opposite, that the treaty "de-emphasize[s] the essential balance between developmental activities and environmental protection" (*Kindt/UCLA 137*). In either case, if and when mining expands into "global commons" areas like the oceans, Antarctica⁶ and outer space,⁷ it can be expected that international standards of environmental protection will develop, if not proliferate, making the ISA and its subsidiary bodies very important law-developing organs to follow and participate in for developing countries in general, and particularly those directly involved with marine mining, drilling and mineral development.

⁶ A mining treaty for Antarctica failed, and the continent is currently under a 50-year moratorium prohibiting mining (*Weiss 387*).

⁷ See Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 27 Jan. 1967, 610 U.N.T.S. 205, 6 I.L.M. 386 (1967).

4. Environmental impact assessment

Environmental impact assessments or studies (EIAs) are now becoming an international standard for major developments such as mines. So far, treaties are only a small part of this, as most EIA requirements are coming from multilateral development banks and development assistance agencies and United Nations soft law (III.B. and IV. below).

In hard law, the United Nations Economic Commission for Europe (UN/ECE), a grouping of over 50 northern hemisphere Governments, has negotiated the **Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)** (covering nations in the northern hemisphere). The treaty went into force in 1997, with 17 ratifying countries (chiefly in Europe) as well as the EU. It only applies to developments in one country that will have "significant adverse impacts" across national borders in another country and sets up a regime of notification, EIA preparation, consultation, dispute settlement and research. The first COP was held in May 1998 and the Convention secretariat is located at UN/ECE headquarters in Geneva, Switzerland (website: <http://www.unece.org/env/eia>).

Certain other treaties contain EIA provisions, such as the **Biodiversity Treaty** and the **Convention on The Law of the Sea** (II.A.2., II.A.3. above), which obligate States to require environmental assessments of projects, policies or programmes likely to have significant adverse environmental effects. Such EIA requirements can be expected to strengthen for mining as the treaties' general environmental standards develop. Some regional agreements require EIAs or exchange of comparable information; the 1985 **European Union EIA Directive**, for example, requires all EU member States to adopt EIA laws. The 1985 **ASEAN Agreement on the Conservation of Nature and Natural Resources in Southeast Asia** and the 1974 **Convention on the Protection of the Environment Between Denmark, Finland, Norway and Sweden (Nordic Convention)** are additional examples of international EIA laws for particular geographic regions.

Since EIAs provide one effective and flexible tool in dealing with new mining and industrial development, and since less than half the world's countries have national laws requiring them (such as the United States National Environmental Policy Act), international EIA laws can be of great support and importance to resource-based economies. Countries without such EIA laws may find involvement with one of the regional treaty regimes a good substitute. Further, progressive international mining companies may agree to prepare or finance EIAs even in situations where national law does not require them, in order to avoid future liability for not meeting "international standards" of performance.

B. Mining process control

As mentioned, there is no comprehensive treaty governing land-based mining activities. Exploration, development, mining, beneficiation, closure, rehabilitation and liability are still primarily under the jurisdiction and laws of the individual States, which of course vary enormously in requirements and enforcement (*Cohen 150, Dotterrer et al. 1-36*). However, it is precisely this variability in national laws that is increasing the pressure for more uniform (therefore international law) standards (*see Wälde 55*).

1. Access law carry over

The access laws just discussed can create international law requirements that carry over into the mining process. With respect to deep seabed mining, the **Convention on the Law of the Sea** sets up the framework for developing a complete regime of operational law (II.A.3. above). With respect to terrestrial mining, the nature/biodiversity treaties can also increase the controls on mining. A recent example is the Crown Butte Mines Company New World Mine site adjacent to Yellowstone National Park, a listed site under the **World Heritage Convention** (II.A.1. above); had mining been allowed to proceed, the permits would likely have been conditioned with extraordinary environmental requirements because of United States concern over protecting Yellowstone and not jeopardizing its listing under the treaty. Similarly, when EIA laws apply (II.A.4. above), the findings of the study can reveal the need to condition the permits with special environmental requirements controlling the operation.

2. Water quality treaties

Other examples of international hard-law standards intruding on the mining process are the various international and regional treaties governing water quality. These include a number of treaties respecting marine pollution from land-based sources, vessels, and dumping and pollution of fresh water resources (GURUSWAMY & HENDRICKS 227). Oil and gas production and mining operations whose wastes can reach any of the covered waterbodies need to pay especially close attention to the requirements of and future developments in these treaties, as many set relatively concrete international standards.

The **Regional Seas Treaties Programme** of the United Nations Environment Programme (UNEP), initiated in 1974, is making concrete the requirements of the Law of the Sea Convention through sponsorship of some 13 regional conventions to date which protect regional seas from pollution, including the Baltic, Mediterranean, Persian Gulf, Red Sea, Caribbean, East Africa and South Pacific, involving more than 125 States (*Armstrong* 3-8). The 13 treaties are not homogeneous, but tailored to the priorities of the Governments in each region.

The programme is implemented by UNEP headquarters in Nairobi, Kenya, through its Oceans and Coastal Areas Unit (website: <http://www.unep.org/water/regseas/regseas>). Each treaty develops a one- or two-year Action Plan, approved at regional Intergovernmental Meetings and monitored by regional Bureaus or Monitoring Committees of the parties. Regional secretariats have been established in Athens, Greece; Kingston, Jamaica; and Bangkok, Thailand; and the Unit serves as the secretariat for the Regional Seas Action Plans for regions where financial constraints prevent the establishment of local staff. UNEP's treaties, guidelines and other programmes focusing on prevention of marine pollution merit a watchful eye by resource-based economies, as they could serve as the springboard for even more rigorous regulation of mineral industry practices in the future (*Muth* 12B-17).

In addition to UNEP's work, there are other treaties with provisions for development in or affecting oceans (*Armstrong* 3-9), including the 1974 **Paris Convention for the Prevention of Marine Pollution from Land-Based Sources** (applicable to parts of the North Atlantic, Arctic Ocean and North Sea), the 1972 **Oslo Convention for the Prevention**

of Marine Pollution by Dumping from Ships and Aircraft and the 1973 London International Convention for the Prevention of Pollution from Ships (MARPOL) and its 1978 Protocol.⁸

A number of freshwater systems are also the subject of pollution treaties with implications for mining, particularly transboundary pollution (*GURUSWAMY & HENDRICKS* 314). In 1986, UNEP launched a programme for inland waters similar to its Regional Seas Treaty programme, which has resulted in a number of river basin and lake plans (*Haas* 43). Other treaties cover international watercourses and water bodies, groundwater and multistate and regional waters in Africa, the Americas, Europe and the Middle East (treaties collected in *WEISS, ET AL.* 395-455). For example, the 1978 **United States-Canada Great Lakes Water Quality Agreement** could be applied to mining in one country which causes pollution effects in the other.

3. Air pollution treaties

Air pollution from mining, smelting and related operations is still regulated chiefly by national laws. However, there are several international air laws that have potential implications for the future of the mining industry.

Foremost is the growing body of regional treaties governing transboundary air pollution, emissions originating in one country that cross national borders into another country (*GURUSWAMY & HENDRICKS* 297). The UN/ECE (see II.A.4. above) has also been a leader in this area. Its 1979 **Convention on Long-Range Transboundary Air Pollution (LRTAP)** - with its four protocols setting specific emissions limitations on sulphur dioxide (1985, 1994), nitrogen oxides (1988, 1998) and volatile organic compounds (1991) - provides very substantive restrictions on some of the basic mineral beneficiation pollutants in northern hemisphere countries (EU, United States, Canada, Russia, etc.). The LRTAP secretariat is at UN/ECE headquarters in Geneva, Switzerland (website: <http://www.unece.org/env/1rtap>). While to date UN/ECE has mainly focused LRTAP on acidification, it is currently undergoing a major shift in focus to new substances, processes and products. In 1998, two new protocols were signed for heavy metals and persistent organic pollutants (POPs).

The **LRTAP Heavy Metals Protocol** is of serious concern to the metal mining/smelting industry, both because of its air quality restrictions and because it could ban certain metal production processes and products when their use or disposal could lead to transboundary air pollution. At present, it concentrates primarily on emissions of lead, cadmium and mercury; not content with the conventional reliance on reducing lead in petrol, the focus is on industrial sources of heavy metal emissions (iron and steel industry, non-ferrous metal industry) and on combustion processes (power generation, road transport and waste incineration). Also being considered are measures to reduce the heavy metal content in products, such as mercury and cadmium in batteries; mercury in electrical components, measuring instruments and fluorescent light tubes; cadmium and lead stabilizers and pigments in paints and plastics, etc. Some EU countries are urging that it also ban the mercury cell

⁸ As to the London Dumping Convention's complex procedural history and citations, see Edith Brown Weiss, *et. al.*, INTERNATIONAL ENVIRONMENTAL LAW: BASIC INSTRUMENTS AND REFERENCES, AT 327 *et. seq.* (1992).

process for production of chlorine and caustic soda (in favor of newer membrane technology) and entry of metal-containing products into municipal waste streams which could result in metals emissions from municipal incinerators (*Muth 12B-14*).

Additional regional treaties are being developed to control transboundary air pollution, with similar potential impact on mining and the environment. Examples include those of the United States with both Canada and Mexico (*GURUSWAMY & HENDRICKS 310*) and others (*collected in WEISS, ET AL. 247-316*).

Two famous global treaty regimes - governing ozone and climate change - have long-term implications for the mining industry. The 1985 **Vienna Convention for the Protection of the Ozone Layer**, as amended by its 1987 **Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal Ozone Protocol)** and other subsequent **Adjustments and Amendments**, requires a rapid phase-out of use and emissions of stratospheric ozone-depleting chemicals, chiefly CFCs, halons, and carbon tetrachloride, of relevance to some mining endeavours (website: <http://www.unep.org/ozone/vienna>).

Even more significantly, the 1992 **United Nations Framework Convention on Climate Change** and 1997 **Kyoto Protocol** provide a comprehensive approach for controlling "greenhouse gases" (GHGs), those chemicals which form a heat-trapping layer in the upper atmosphere and contribute to "global warming", chiefly carbon dioxide and methane. The COP has been struggling for some years to agree on enforceable rollbacks in the rate of increase of these emissions, nominally targeted at a return to or below 1990 levels. However weak or strong the emerging rules become, they will have a profound effect on the mining industry. The mineral industry in general will be affected, to the extent its processes release CO₂, methane and other GHGs, but the fossil fuel sectors of the industry - in particular coal and petroleum - will be profoundly affected by this treaty's developments, as it moves the world away from its dependence on utilizing carbon-based sources for energy (websites: <http://www.unfccc.de>).

C. Mining product control

A paradigm shift is occurring in the way the global community (and therefore international law) views mining products - a change from the historical view of them as beneficial "commodities" to seeing them as polluting "chemicals". This see-commodities-as-chemicals view is manifesting itself in a movement toward international treaty restrictions on trade in certain mining end-products, even outright bans. The trend is to control waste or pollution by controlling or banning the use of the commodity in trade, recycling and/or products.

1. WTO and other trade measures

International environmental laws are increasingly using export-import bans, trade embargoes and other economic sanctions as enforcement tools. For example, some treaties ban trade in products and wastes deemed anti-environmental, such as wildlife conventions and the hazardous waste conventions (II.C.2. below). Others authorize trade and economic sanctions against States violating provisions of the treaty or against non-parties (to force them

to join the treaty regime), an example being the **Montreal Ozone Protocol** (II.B.3. above). In effect, these international laws make environmental goals legitimate grounds for trade discrimination.

At complete odds with this approach are the global free trade treaties - such as the worldwide **General Agreement on Tariffs and Trade (GATT)**, now institutionalized as the **World Trade Organization (WTO)** - as well as their regional counterparts, like the **North American Free Trade Agreement (NAFTA)**, which are aimed at eliminating interference with and discrimination against free international trade (*GURUSWAMY & HENDRICKS 401-405*). The WTO is a powerful, centralized agency for promoting international free trade, serving as a forum for developing and refining trade treaties and for resolving trade disputes (website: <http://www.wto.org>).

GATT/WTO provisions prohibit laws or actions restricting trade, except for absolutely necessary health, safety and conservation reasons (GATT Article XX(b) and (g)), and these pro-trade provisions openly clash with international environmental treaties and national environmental laws that use trade embargoes, limits, discrimination and other trade-related sanctions as enforcement tools. A recent, bitterly contested example arose in the "tuna-porpoise case", in which a GATT dispute settlement panel (*30 ILM 1594 (1991)*) ruled that the United States had violated GATT by banning imports of Mexican tuna because tuna fishing resulted in dolphin kills expressly forbidden by the United States Marine Mammal Protection Act.

The trade-environment conflict is unresolved to date. On the one hand, the stronger free-trade provisions may shelter the mineral industry from some of the negative recovery-trade-restricting provisions of the **Basel Convention** (II.C.2. below), but they could also undercut the industry movement toward uniform international standards by preventing sanctions against unscrupulous competitors. Trade limits and bans can be expected to be urged in coming years as part of developing draft treaties, such as the **LRTAP Heavy Metals Protocol** (II.B.3. above), the negotiations at UNEP/Food and Agriculture Organization (FAO) on Prior Informed Consent (PIC) and the negotiations on Persistent Organic Pollutants (POPs) (*Muth 12B-10*).

Conversely, free trade agreements themselves may contain provisions that can be used to oppose mining development. **NAFTA** has created a Commission for Environmental Protection, based in Montreal, Canada, which is empowered to hear complaints that a party is violating or failing to enforce its own national environmental laws. While the Commission does not have the power to sanction Governments, it can invoke a "collaborative approach" leading to studies and reports which can be a source of embarrassment to the parties. A number of petitions have already been filed with the NAFTA Commission, with varying degrees of success. It has already dismissed petitions calling for investigations of United States moves to suspend its Endangered Species Act and other environmental laws to allow more timber cutting in the Pacific Northwest and petitions involving Canadian fishing and wetlands (*Yozwiak A23*). It has accepted for investigation complaints against Mexican expansion of the port of Cozumel and wastewater pollution, Canadian dam and hog farm operations, United States well pumping affecting a desert river, and all three countries' cross-border air pollution problems. While mining has not yet been the subject of such trade-agreement complaints, that could happen if it could be alleged that a host country had violated

or failed to enforce its own environmental laws in approving or monitoring a mining development.

Clearly, the tension between free trade and environment must be resolved. This should come about, not by giving one complete primacy over the other, but "within the conceptual framework of sustainable development" (*GURUSWAMY & HENDRICKS 402*), recognizing that free trade and environmental protection are the two positive and complementary halves of a successful world future.

2. Mineral hazardous waste and recovery

Such trade-focused developments in hazardous waste treaties are threatening the multi-billion-dollar-per-year global trade in metal waste, materials and scrap recovery (including recycling, reuse and reclamation). The confusion is compounded by the differing international (and national) laws affecting transboundary movements of toxic and hazardous waste (*for details see UNEP/Guidance, LOUKA, Murphy*). About 95 per cent of all toxic and hazardous chemicals fall into the four industry groupings of toxic metals, petrochemicals, pesticides and radioactive materials (*id.* 193).

"Bad facts make bad law", lawyers like to say, and in the 1980s the "hazwaste" field generated substantial "bad facts" leading to stricter regulations. Some examples: In 1988, a Norwegian corporation bought hazardous incinerator ash in the United States and sold it to a cement works in Guinea, West Africa; when this was discovered by Greenpeace, Guinea required the ash to be returned to the United States. Also in the 1980s, Italian waste polychlorinated biphenyls (PCBs) were shipped to Nigeria, discovered, and forced back, and a train of waste chemicals labeled as products was shipped from Austria, refused entry by Poland, then refused reentry in Austria (*AGENDA 21/ROBINSON xxxi*). Many other stories of fraudulent hazwaste dumping, "sham recycling" and deadly toxics exposures dominated the media in the 1980s - often developed-country interests taking advantage of developing countries.

The strictest treaties include outright bans on imports-exports of hazardous wastes, not even exempting metals and other substances destined for recovery/recycling. The 1991 **Bamako Convention** and 1995 **Waigani Treaty** (neither yet in force) ban imports into Africa and the South Pacific island States, respectively, but permit States in each region to trade with each other, subject to certain controls. The 1989 **Lomé Convention** bans exports from the EU to the African, Caribbean and Pacific States parties, except if the importing country has adequate facilities.

The alternative approach has been to allow hazardous waste transfers, subject to protective requirements like notification, informed consent, manifesting, and facility adequacy. This has been the approach of the most comprehensive of these treaties, the 1989 **Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal (Basel)** and earlier OECD and EC law (*Murphy 33*), until it too began recently moving toward a ban. First, in 1993, the EU adopted a detailed regulation greatly limiting hazardous waste shipments within, into and out of EU member countries, even for recovery (*Louka 179*). Next, in 1995, a majority of the Basel parties adopted a very controversial "export ban" amendment that prohibits developed countries (generally OECD and EU members) from

exporting any hazardous waste to developing countries - for disposal immediately and for materials recovery or recycling after 1997 (*UNEP/Guidance*).

The ban amendment still must be ratified by 75 per cent of the treaty's 110 parties before taking effect. On the producer side, the United States is strongly opposed, having announced that such a trade ban would be a major obstacle to its ratification of the treaty (*Reiley 3*). On the customer side, developing countries are very concerned, being even more dependent on imported metal recyclables because they lack the ageing infrastructure and obsolete consumer and capital goods that provide sources of scrap in a developed economy (*Muth 12B-13*). The Basel secretariat in Geneva (extensive website: <http://www.unep.org/basel>) established a Technical Working Group in 1995 which recommended that most, if not all, "non-hazardous" metal scrap and recyclable materials be excluded from the amendment and from Basel controls, including precious metals, copper, iron, steel, nickel, aluminum, tin, magnesium, molybdenum, zinc, zinc drosses, and "wastes" from mining operations (*id. 12B-12*); the last Conference of the Parties (COP-4), held in February 1998, accepted the recommendation, thereby recognizing many recyclables as appropriate trade items.

3. Banning actual products

The metals-banning trend, lead by international environmental groups and sympathetic EU countries, has expanded to general consumer products. As examples: In 1996, the EU proposed a ban on use of cadmium, mercury, chrome, PVC and lead (except in batteries) in motor vehicles sold within the Community; in 1997, it proposed a ban on the use of cadmium in products which would outlaw nickel-cadmium batteries; one of its members, Denmark, has proposed a ban on virtually all products containing lead (except batteries); and the World Health Organization (WHO) has raised questions about copper in drinking water which could affect the use of copper in piping, roofing and building materials and other products (*Reiley 3*). The proposed draft **LRTAP Heavy Metals Protocol** (discussed in more detail in II.B.3. above) and other developing air, water, and land pollution control laws are also focusing on minerals in a way that can ultimately affect products which use those resources.

Another initiative of relevance is the development by UNEP and FAO of an internationally binding treaty requiring prior informed consent (PIC) procedures for international trade in certain hazardous chemicals (including metals). As conceived, PIC is an information exchange requiring that importing countries be advised of health or environmental bans or restrictions on chemicals and give formal acceptance to their importation (*Muth 12B-17*). The EU has urged that PIC be expanded into a "global framework agreement" for management of hazardous chemicals, a position the mining industry opposes (*id. 12B-19*), making this UNEP/FAO programme an important one to follow, particularly for importing countries.

III. "MIDWAY BETWEEN HARD AND SOFT LAW"

Two of the fastest-growing areas of international environmental law affecting the mining industry are not precisely "hard" law (binding because States voluntarily agree to it)

nor "soft" law (non-binding), which can be ignored, but somewhere "in-between". These are the legal requirements being developed by two quite different groups of institutions - the courts on the one hand and international financing bodies on the other.

A. Litigation and the courts

In the absence of clearcut international standards of liability and effective international dispute-resolution forums, there is a growing potential for *national courts* stepping in and filling the void. Courts of both developed and developing countries are accepting and adjudicating international rights - in discrete personal injury, property damage and/or resource impairment cases, both civil and criminal - and in the process creating international law. The International Court of Justice and other international tribunals take very few cases, so it is accepted that international law can be pronounced by "judicial decisions...of the various nations" (*Statute of the International Court of Justice, Article 38(1)(d)*), and national courts are taking advantage of this power.

New international judicial standards are being created for the mining industry in three venues: (1) by courts in developing countries where mining is occurring, (2) by courts in developed countries where companies are incorporated or headquartered and (3) by courts of some developed countries applying their own national laws extraterritorially.

In the courts of mining States, more and more citizens, environmental organizations, communities and government bodies are suing mining operations at the locus where the mining or processing is occurring. Such suits, long familiar in some developed countries like the United States, are now appearing in the courts of developing countries as well. A famous example is the **Chañaral case** in Chile, in which citizens successfully sued a division of the State-owned Codelco copper company in the late 1980s for remediation of the environmental damage done by years of dumping of its mineral-processing tailings in the Salado River and Bay of Chañaral (*Lagos 87*). Similarly, in the **Huasco case**, olive tree farmers and fishermen successfully sued Compañía Minera del Pacífico for air and water pollution remediation at its pellet plant in Huasco, Chile (*id.* 94). In another recent example, a local court in Turkey cancelled the gold mining licence of Eurogold, a multinational French-Australian-Canadian mining company, in a 1997 lawsuit brought by local villagers fearful the company's cyanide process would pollute their region (*Eurogold*).

Even more ominous for the industry are the **criminal prosecutions of Marcopper Mining Corporation managers** for that company's 1996 toxic tailings spill on Marinduque Island in the Philippines, which has so far resulted in criminal cases against three of its international managers, civil fines of over US\$2 million, a US\$42 million class action by the local Government, US\$800,000 paid so far in claims from local families, US\$15 million in remediation, and a US\$40 million investment writeoff by 40 per cent owner Placer Dome Inc. of Canada (*Francisco*).

Mining companies are not safe at home, either. Now, citizens of mining States are suing mining operators in the courts in developed countries where they are headquartered (*Armstrong 3-38*). A notorious recent example is the **Ok Tedi case**, in which Papua New Guinea landowners near the open pit copper-gold mine filed a US\$4 billion suit for tailings

dumping against majority owner BHP Minerals at its business residence in Melbourne, Australia (*Prince & Nelson* 275); in 1997, the mining operation agreed to pay a US\$30 million settlement over 13 years to the landowners and is now engaged in a programme of community development projects at over US\$3 million per year which it hopes can be a model for the mining industry worldwide (*Seneviratne*). Similarly, residents of Ecuador and Peru chose United States federal courts to sue **Texaco** for over US\$1 billion for air, water and soil pollution arising out of its historical oil and gas operations in Ecuador (*Prince & Nelson* 273). Likewise, an Indonesian tribal group filed its US\$6 billion lawsuit in the United States against **Freeport McMoRan Inc.** over environmental damage and human rights violations at its mine in Irian Jaya (*Armstrong* 3-38).

Finally, some countries, particularly the United States, have shown both a political and a judicial tendency to attempt to enforce their domestic laws "extraterritorially", on persons and operations in other countries. Most national laws do not apply extraterritorially, except where enacted to support a treaty (*Low/Extraterritorial* 5), as this would be viewed as a violation of the other country's sovereignty (*Prince & Nelson* 266). Most United States environmental laws fall into this category, the one partial exception being the EIA requirement of the United States National Environmental Policy Act, which is imposed on some United States Government actions overseas by Executive Order and in territories without a sovereign, like Antarctica (*Prince & Nelson* 267).

However, if there are sufficient involvements of a States' interests or markets, its courts may be persuaded to apply domestic law extraterritorially. One example is the United States securities laws, which require companies who register securities for sale in the United States to disclose publicly environmental law compliance, liabilities, litigation, etc. (*id.*), which can apply to foreign operations and foreign subsidiaries. Another example is United States criminal antitrust laws, which are being enforced on foreign operations (*Gibeaut* 42).

In such litigation, courts are developing and refining international standards of conduct for resource industries in order to have civil and criminal law baselines against which their conduct can be judged. Experts conclude:

"Such prospects of [court-developed] environmental liability will drive prudent mining companies to insist even more on standards of environmental performance in developing countries which are higher than national law, both to avoid the risk of home country liability litigation and on the insistence of insurers of environmental liability risk" (*Wälde* 56).

B. International financial institutions and their environmental requirements

The "greening" of international financial institutions (IFIs) is one of the major new trends spurring the development of international environmental standards for mining (*Wälde* 55). Increasingly, multilateral development banks (MDBs), multilateral and bilateral development assistance agencies (DAAs), and other public and private finance and insurance institutions are conditioning their loans, aid, underwriting and other involvement on the target project's (and host country's) environmental acceptability, particularly with regard to mining projects (*Onorato & Fox* 7-1, *Prince & Nelson* 280, *Cohen* 155, *Armstrong* 3-17). This

"green conditionality" comes in two forms: (1) the use of EIAs to screen projects in advance of approval and, to a lesser extent so far, (2) actual operating conditions and requirements imposed on projects to promote sustainable development.

This greening is not simply altruism. The international financial institutions have been the targets of "extensive criticism" for supporting environmentally destructive and unsustainable projects (*Cohen 156, Reed 191*) and have been embarrassed by several recent disasters at mines financed by them in developing countries, (*Chatterjee/Gold Mine Disasters, Chatterjee/Indonesian Mining*). In addition, the institutions' new sustainable development requirements are also influencing progressive changes in the national law requirements of resource-based economies (*Wälde 55*).

1. Multilateral development banks

All MDBs now impose some sort of environmental/sustainable development criteria on loan assessments (*Cohen 155*). **The World Bank Group** has been in the forefront of developments, although its four legally and financially independent component entities are at somewhat different stages of progressiveness in promoting sustainability in the projects they support (*see generally WORLD BANK/MAINSTREAMING and other World Bank publications in Bibliography*).

The **International Bank for Reconstruction and Development (IBRD, or World Bank)** is the Group's chief lending arm for loans and guarantees to member Governments. While not the Group's most active arm in resource development, it participates in some mining projects (US\$14 million in 1994). Responding to international criticisms in the 1980s it created an Environment Department and began developing operational directives and rules addressing its supported projects' environmental impacts, involuntary resettlements, concerns of indigenous peoples, and NGO involvement (website: <http://www.worldbank.org>). Its environmental-sustainability rules are fast becoming an international standard. Primarily, they require EIAs for projects with potentially substantial environmental, social or other impacts, and these EIAs are typically prepared by the borrower. The World Bank has also developed environmental standards for mining, although these remain "guidance" and are rarely included as explicit loan conditions.

The **International Finance Corporation (IFC)** is the largest multilateral source of loan and equity financing for private sector projects in the developing world. Its particular focus is to promote economic development by encouraging the growth of productive enterprises and efficient capital markets in its member countries (website: <http://www.ifc.org>). IFC has extensive experience in financing mineral resource projects in the developing world, through its Oil, Gas & Mining Department. IFC has been involved in over 50 mineral projects in 30 countries, to the extent of US\$352 million in 1994 alone. While it generally follows the World Bank rules for EIAs and technical standards, its standards are viewed as "lower" by critics (*Chatterjee/Gold Mine Disasters*).

The IFC's Technical and Environment Department (CTETE) has an "independent advisory role" and provides expertise to IFC's Investment Departments without being under their supervision and control. CTETE's Environment Division develops the IFC's environmental policies, procedures and programmes, conducts project reviews and monitoring, training and advisory work, and coordinates IFC activities with the World Bank

and other agencies, including the Global Environment Facility (GEF, below). CTETE also has a Special Projects Unit which focuses on the financing of environmentally sustainable development (for additional IFC documents see *Denison*).

The **International Development Association** is the high-risk entity within the World Bank Group, lending funds on "soft" or concessional terms to poorer countries that cannot meet World Bank or commercial requirements. It has traditionally focused on mining, particularly in Africa, and utilizes the World Bank environmental rules (website: <http://www.worldbank.org/ida>).

Very active in the minerals sector, the **Multilateral Investment Guarantee Agency (MIGA)** is the chief insurance entity within the World Bank Group. It insures private investors against non-commercial risks, including political instability, government defaults, currency liquidity, etc. (website: <http://www.miga.org>). Its lack of an environmental staff and its failure to do EIAs has embroiled the Bank in disasters at two MIGA-insured gold mines in Guyana (Omai) and Irian Jaya (Freeport McMoRan) (*id.*).

The **United Nations Revolving Fund for Natural Resources Exploration (UNRFRNRE)**, headquartered in New York City, is the branch within the United Nations Development Programme (UNDP) that has promoted mineral exploration in the developing world (website: = none). While its funds have been much more limited than other international governmental lenders, its 25 donor Governments have funded 29 exploration projects leading to the discovery of 16 economically viable mineral deposits since its inception in 1973 (*UNDP/UNRFRNRE* 2). It adopted Environmental Protection Guidelines in 1994 similar to the World Bank's; in 1995 initiated a "Revitalization Plan which gives greater impetus to environmental regeneration and to the promotion of sound mining activities" (*id.* 1); and in 1998 began searching for a "renewed role" in the field (*UNDP and UNRFRNRE/PROCEEDINGS* 5).

The new **Global Environmental Facility (GEF)** was created in 1990 by the World Bank, UNEP, and UNDP to fund environmental protection efforts (*Reed* 192). Although focused on issues other than mining (specifically climate change, stratospheric ozone, biological diversity and international water pollution), the GEF can be expected to pioneer additional review, conditioning and monitoring safeguards for sustainable development that will "raise the bar" for all MDBs and DAAs. Restructured by Agenda 21 (IV.C. below), the GEF now consists of an Assembly (composed of all member countries) which has general policy overview, a Council (18 recipient (developing) countries plus 18 non-recipient (developed) countries, which is the main governing body for operational policies and operations, and the secretariat, located in Washington, D.C., which implements its operations and work programmes. (website: <http://www.UNDP.org/gef>).

A number of regional MDBs are also major players in financing mining and promoting sustainable development. The **Asian Development Bank (ADB)**, headquartered in Manila, Philippines, services both public and private projects in the region with some of the world's most dynamic economies and most threatened environments (website: <http://www.asiandevbank.org>; also see ADB publications in the Bibliography). In addition to lending, the ADB also makes policy formulation and reform process an important element of its operations with its developing-country members. Its Office of Environment and Social Development advises on and promotes sustainable development policies and operations within

the bank and its members, supports programmes and projects in achieving "harmonious and long-term balancing of basic human needs and critical natural resources", assists in capacity-building in developing-country members and promotes cooperation with NGOs. The ADB has had formal EIA requirements since the early 1980s and, unlike other MDBs, has in place formal procedures for incorporating environmental management conditions into loan conditions and covenants (*ADB/Environmental Assessment Requirements*). The ADB is viewed as a model, having:

"some of the most lucid, developed, and highly sophisticated environmental guidelines and policies as well as new programmes of any multilateral institution in the world...[and] a highly trained, sophisticated in-house technical staff".

(*Prince & Nelson 283*).

The **Inter-American Development Bank (IDB)** (website: <http://www.iadb.org>) has increased its private-sector funding and also "may be heading towards a stronger environmental position" with an Environmental Protection Division that has more operational responsibility than its counterpart at the World Bank (*Cohen 157*). The **European Bank for Reconstruction and Development (EBRD)** (website = <http://www.ebrd.org>) is primarily focused on private-sector funding and utilizes environmental procedures similar to the World Bank.

2. Development assistance agencies

Some of the most important lenders for mining projects worldwide are the bilateral DAAs (*Muldoon 2*). The **Overseas Private Investment Corporation (OPIC)** is an independent, for-profit United States Government agency that is heavily involved in loans, loan guarantees and insurance for United States private investment in mining projects in developing countries and emerging economies around the world (website: <http://www.opic.gov>). To be OPIC-funded, projects must have potential for positive effects on the United States economy.

OPIC's environmental policies are viewed as more "cutting edge" than the World Bank's (*Prince & Nelson 287*). Since 1985, OPIC has been required by the United States Foreign Assistance Act (22 U.S.C. § 231(n)) to perform EIAs on any programme or project "significantly affecting the environment of any foreign country". As a result, projects that pose an "unreasonable or major environmental, health or safety hazard" must be and, for some mining projects, have been, declined (*Prince & Nelson 286*). OPIC feels World Bank mining guidelines may not be sufficient; will consider international mining industry standards, United States Environmental Protection Agency standards, etc.; and will incorporate them into contractual documents, thus "raising the bar" on the MDBs. In 1995, OPIC dramatically cancelled its US\$100 million insurance policy for the Freeport McMoRan gold mine in Irian Jaya for causing "an unreasonable or major environmental, health or safety hazard" (*Chatterjee/Indonesian Mining*).

Other United States Government agencies similarly must comply with United States laws on EIAs and environmental standards. This includes both bilateral foreign aid programmes like the **Agency for International Development (US AID)** (website:

<http://www.info.usaid.gov>) and export-promotional entities like the **Export-Import Bank (Ex-Im Bank)** (website: <http://www.exim.gov>). While the Ex-Im Bank, for example, is technically not a foreign aid or development agency, its programmes often help United States companies participate in development projects in other countries. It is an independent United States Government agency whose mission is to create United States jobs through exports, by promoting and financing the sale of United States goods and services, primarily in emerging economies, through loans to United States exporters and to foreign purchasers of United States products. The Ex-Im Bank is required to take into account the environmental and social impacts of proposed transactions and assure they are responsible. It has adopted environmental procedures and guidelines (downloadable at its website) - focused on air quality, water use and quality, waste management, natural hazards, the socio-economic and sociocultural framework, ecology and noise - and can condition its financing on implementation of mitigation measures.

Other countries' foreign aid and export-promotion agencies - like the **Canadian International Development Agency** and its **Export Development Corporation**, Australia's **Export Finance & Insurance Corporation**, the **Swedish International Development Authority**, and so forth - generally benchmark their environmental requirements against the World Bank but have varying sustainable development commitments depending on the strength of their own national laws. MIGA maintains a website on investment promotion agencies (IPAs) (<http://www.ipanet.net>). In addition, the **Organisation for Economic Cooperation and Development (OECD)** has published an "Environmental Checklist for Development Assistance" as a guide for the foreign aid of its 24 members (EU States, United States, Canada, and Japan) (*OECD/Checklist*).

All of this may suggest that sustainable development has been integrated into international mining finance more than is actually the case. The chief problem to date with the integration of sustainability into the work of IFIs is their "nearly unanimous reliance on EIAs" (*Cohen 158*), as EIAs are both inadequate predictors of and inadequate controls for sustainable development standing alone. It remains to be seen if MDBs and DAAs will take the next step and rigorously screen, condition and then monitor the sustainability of mining projects they fund. If they do, given their enormous direct and indirect control over mining project financing worldwide, we can expect significant change in the international environmental law requirements for the minerals industry.

IV. THE INTERNATIONAL "SOFT" LAW OF MINING - IS IT HARDENING?

Mining experts advise: "Companies should seriously monitor 'soft law' developments" (*Prince & Nelson 316*). Such soft (or non-binding) international law first appears in: (1) the declarations, resolutions action plans and agendas of the United Nations and other inter-governmental bodies, (2) recommended principles, articles and rules of governmental and nongovernmental experts groups, like the United Nations International Law Commission, and even (3) industry guidelines, codes of conduct and standards. While not immediately legally binding (as, for example, a treaty is, once ratified), such soft-law authorities lie in a "zone between gestation and labor" (*GURUSWAMY & HENDRICKS 38*); if they continue to express an international consensus which States adhere to over time, these authorities can and will

acquire the force of binding international law. Sustainable development soft law promises to be one of those areas (as human rights was a few decades ago) which could solidify into international hard law in time.

Courts are one of the major factors in this evolution of soft law into hard (see section III.A. above). This can already be seen in the mining arena, where "judges are reaching to embrace international [soft law] concepts of liability for multinationals in order to fashion holdings" (*Prince & Nelson* 302). For example, the non-binding 1992 Rio Declaration (next section) has already been relied on as law by a United States federal court in an international law suit against Texaco (*id.*).

These non-binding pronouncements greatly outnumber the hard laws affecting mining. The following sections trace some of the more prominent sources of emerging legal guidance on sustainable development in the mineral resource sector, particularly for developing countries with resource-based economies.

A. The 1972 Stockholm Principles

In 1972, the nations of the world met for the first United Nations Conference on the Human Environment, or "Earth Summit", in Stockholm, Sweden. That precedent-setting gathering catapulted international environmental law onto the global stage and produced the now-famous **Stockholm Declaration**, a soft-law statement of 26 "principles" of "common conviction" regarding environmental protection. The conference, attended by 114 of the then 131 United Nations member nations, was

"the chrysalis from which international environmental law emerged.... [I]t is helpful to recall what was achieved at that great international gathering. Up to about the time of the Stockholm Conference, international environmental problems had been dealt with in a sporadic and ad hoc manner resulting in a few significant treaties. These treaties were isolated events that did not constitute a recognizable corpus of international environmental law" (*GURUSWAMY & HENDRICKS* 3).

This conference would dramatically change all that, but it very nearly failed before it could, over concerns voiced by the developing nations. By 1972, the contradictions between environmental protection and economic development were already causing polarization. For developing nations, alleviation of poverty through economic development was a far more immediate concern than environmental protection. The developing countries, calling themselves the Group of 77 or G77 (their original number), united behind Prime Minister Indira Gandhi's famous phrase that "Poverty is the worst cause of pollution". Developing nations were understandably skeptical of industrialized nations' calls for environmental controls, since the latter's economies had so obviously been built on massive resource exploitation and pollution and also because some viewed environmental protection as a conspiracy to constrain the legitimate development expectations of the poorer nations (*id.* 4).

A last-minute compromise was worked out that saved the conference and forever linked environment and development, as stated in the Stockholm Declaration (preamble paragraph 4):

"In the developing countries most of the environmental problems are caused by under-development. ... Therefore, the developing countries must direct their efforts to development, bearing in mind their priorities and the need to safeguard and improve the environment."

Thus, early on, the developing countries succeeded in establishing a world consensus that, however important, environmental laws and policies should be balanced so as not to impair nations' efforts to improve their economies and quality of life.

That compromise cleared the way for the precedent-setting Stockholm Declaration. A few of its principles codified or crystallized already accepted binding international hard law. Other principles were viewed frankly as "progressive development" of the law - that is, soft-law statements beyond the requirements of existing law, not yet binding, but intended to shape and mold the future development of hard law - and some of these have hardened into accepted international law in the years since.

Principle 1 (going beyond existing law) recognizes a right to environmental quality, with a concomitant responsibility to "protect and improve the environment". A number of the principles (particularly 1, 2, and 5) recognize a right of future generations to natural resources and environmental quality.

By far the best known (and, for our purposes, most pertinent) Stockholm principle is Principle 21, which states:

"States have...the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction".

This environmental "good neighbourliness" principle is the most fundamental rule in all international environmental law, dating back at least to the 1949 *Trail Smelter Arbitration* decision (United States v. Canada, 3 U.N.R.I.A.A. 1938 (1949)), in which Canada was required to compensate the United States for failing to regulate transboundary air pollution coming from a privately owned metals smelter in Trail, British Columbia.

Of Principle 21's two elements, national sovereignty over resources was already a long-established international law rule, and the prohibition against transboundary environmental harms was arguably already accepted law. Certainly, since 1972, the twin rules have been turned into hard law with their inclusion in any number of treaties, including the Biodiversity Treaty (section II.A.2. above), Law of the Sea Convention (II.A.3.), Vienna Ozone Convention (II.B.3.) and LRTAP (*id.*). Also, the transboundary harms prohibition has received such strong support and practice by nations that it has become recognized as a free-standing principle of customary international law, regardless of treaties (*GURUSWAMY & HENDRICKS* 398). It is worth carefully noting precisely what the nations are agreeing to in Principle 21; in it state sovereignty over resources is limited by two factors: not only that

resource development should cause no transboundary environmental damage, but also that it be accomplished "pursuant to [nations'] environmental policies", not their development policies, a position that was not to last.

Additional Stockholm principles (largely progressive at the time) deal with safeguarding natural resources (Principle 2), renewable resources (3), wildlife (4), "non-renewable resources of the earth" (5) and the seas (7), halting discharges of toxics (6), and elimination of nuclear weapons (26). Others call for environmental planning (13-15) and national and international institutions (17, 25), population control (16), science, education, and research and development (18-20), development of liability and compensation laws (22) and international cooperation (24). All of these are somewhat counterbalanced by principles recognizing the special needs and values of developing nations (8-12, 23). These latter six principles flesh out the preconference compromise that international environmental law should "not adversely affect the present or future development potential of developing countries".

Some of these progressive Stockholm principles have also evolved into hard law by being adopted in subsequent treaties. Generally, such adoption is balanced by recognition in one form or another of the "special needs of developing nations" or the "common but differentiated responsibilities" of developed vs. developing nations.

B. UNCED: The Rio Declaration

Exactly 20 years later, in 1992, the United Nations convened the second "Earth Summit," the United Nations Conference on Environment and Development, in Rio de Janeiro, Brazil (UNCED, or Rio Conference). Prior to UNCED, the United Nations-appointed World Commission on Environment and Development (Brundtland Commission) had developed its seminal work on "sustainable development" (details in I.A. above and *Pring/Sustainable Development*). The United Nations General Assembly strongly endorsed the concept and made it the operative theme or focus for UNCED. The Assembly set out an ambitious agenda for Rio, calling for (1) an "Earth Charter" that would supersede the Stockholm Declaration and have the status of international constitutional law, (2) an action plan for the 21st-century accomplishment of these goals, to be called "Agenda 21," and the ceremonial signing of three treaties on (3) biodiversity, (4) climate change, and (5) forestry. The 172 nations attending made it the greatest international summit on any subject in history.

But Rio fell short of those high expectations. Instead of a constitutional Earth Charter, the delegates could only agree on a non-binding Declaration, some of whose principles are less protective than their Stockholm Declaration counterparts (*GURUSWAMY & HENDRICKS 13*). A very ambitious Agenda 21 was adopted by consensus, but there was no agreement on how nations would fund its estimated US\$500 billion/year cost. Framework treaties on biodiversity and climate change were signed, but left all substantive regulations to be developed later. Instead of a forestry treaty, UNCED parties could agree only on a "Non-legally Binding Authoritative Statement of Principles".

Still, the delegates did adopt by consensus the 1992 **Rio Declaration on Environment and Development**, consisting of 27 revised environmental principles, and **Agenda 21**, a detailed 600-page action plan for implementing those principles. Together, the

two documents have much to say about global mining operations, as nearly half the Declaration's principles have relevance to minerals development (Pring/*Sustainable Development* 17-23).

The Rio Declaration has been criticized for appearing to place a higher priority on development than on environmental protection (*GURUSWANY AND HENDRICKS* 13). This tone is set early by Rio Principle 1, which abandons the nascent Stockholm "right" to environment in favor of recognizing, for the first time, a "right to development" (Rio Principle 3). Rio Principle 2 repeats Stockholm Principle 21 - affirming state sovereignty over resources and the prohibition against transboundary harms - but weakens it by adding that States may "exploit their own natural resources pursuant to their own environmental *and developmental* policies" (emphasis added). Gone are most of the Stockholm provisions calling for improvement of the environment and for conservation of resources in favor of a watered-down call for States to "cooperate...to conserve, protect and restore" the environment (7).

Still, this "right to development" is balanced by at least a dozen sustainable development provisions, including adoption of "sustainable development" as the guiding paradigm for the future (Rio Principles 4, 8), limiting the development right "so as to equitably meet developmental and environmental needs of present and future generations" (3), and requiring environmental protection to be "an integral part" of development (4) (for a further discussion of these, see Pring/*Sustainable Development* 17-20).

Development is further limited by some bold new principles, not found in Stockholm. Rio Principle 15 sets forth the important "preventive" or "precautionary approach", which states that, "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". Thus, for example, mineral developments cannot insist on access or unconditioned permits simply because critics have not proved the validity of their concerns over serious or irreversible impacts. Moreover, Rio Principle 16 adopts the "polluter pays principle," which generally requires the developer to bear the cost of pollution control and remediation. This is the "internalization" principle long advocated by economists as a means of reversing our current tendency to treat pollution as an externality (that is, external to or ignored by the free market calculus of costs and benefits of development).

Also of great significance to resource-based economies dealing with mineral development is Rio Principle 10, which calls for increased public participation in environmental issues: citizen access to environmental information from their Governments, opportunity to participate in environmental decision-making, and effective access to courts and agencies for redress and remedies. Principles 11 and 13 call on States to enact "effective environmental legislation" and laws of "liability and compensation" for victims of environmental damage. "Indigenous people" and "local communities" are positively singled out; States should support their "identity, culture and interests" and enable their effective participation in sustainable development (22). Rio Principle 14 urges an end to the "export" of toxic substances and harmful activities from one State to another. Principle 17 makes EIAs generally accepted procedure for all activities likely to have a significant adverse environmental impact. And Principles 18 and 19 restate the longstanding international environmental laws of "timely notification" and "good faith consultation" for environmental emergencies and transboundary impacts.

Developing nations were accorded special treatment in Rio, as they were in Stockholm, with priority to be given their "special situation and needs" (6), with acknowledgement of the "common and differentiated responsibilities" among States (thus placing greater responsibility on developed nations because of their greater financial and technical resources and greater consumption and pollution) (7), and with recognition that developed-country standards may be economically and socially unwarranted for developing countries (11).

While not outright rejecting trade sanctions as an environmental enforcement tool (as used in the Basel Convention, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the ozone treaty, II.C.1. above), Rio Principle 12 casts a shadow on their use by requiring that enforcement action not constitute "arbitrary or unjustified discrimination" or a "disguised restriction" on trade. Principle 12 similarly disapproves "unilateral actions" to protect the environment outside one's jurisdiction, thus criticizing States' extraterritorial applications of their laws (III.A. above) - for example, actions by the United States to protect dolphins from the Mexican tuna fleet or to hold its mining companies to United States standards in other countries).

In summary, Rio is a more pro-development document than Stockholm, yet retaining and adding some very substantial restraints, including the transboundary harms prohibition, citizen participation, indigenous/local communities protections and the precautionary and polluter-pays principles. What remains to be seen is whether it will be the pro-developmental or pro-environmental tendencies of this sustainable development mix that will coalesce and harden in the treaties, judicial decisions and customary practices of countries in the coming years.

C. UNCED: Agenda 21

To implement the Rio Declaration, UNCED also produced an extremely detailed and ambitious action plan for accomplishing the Rio principles in the 21st century, **Agenda 21**. Agenda 21 now has countries around the world developing "national action plans," with the new United Nations Commission on Sustainable Development (UNCSD) and other international agencies promoting implementation. Overlooked by many, the development and implementation of these Agenda 21 action plans at the country level should stimulate considerable interest and involvement on the part of resource-based economies and others interested in mineral resources, given their potential to be the vehicle for greater planning requirements and restrictions on mineral resource development.

Getting around in Agenda 21 requires a tour map. It consists of 40 chapters grouped in four sections. Each chapter typically is divided into subchapters called Programme Areas, and each of these typically consists of a series of numbered paragraphs describing sequentially Basis for Action, Objectives, Activities, and Means of Implementation.

After a preambular Chapter 1, Section 1 (Chapters 2-8) covers Social and Economic Dimensions, focusing successively on International Cooperation, Consumption, Poverty, Demographics, Human Health, Settlements, and Integrating Environment and Development in Decision-Making. Section 2 (Chapters 9-22) addresses the key area of Conservation and

Management of Resources for Development, focusing on issues areas relevant to mining, such as Atmosphere, Deforestation, Desertification, Mountain Development, Biodiversity, Oceans, Freshwaters, Toxic Chemicals, and Hazardous Wastes. Section 3 (Chapters 23-32) looks at Strengthening the Role of Major Groups, including Indigenous Communities, NGOs, Local Authorities, Workers, Business and Industry, and others. Finally, Section 4 (Chapters 33-40) addresses Means of Implementation, including Financial Resources (cost estimates for implementation), Technology Transfer, Education and Training, Capacity-Building in Developing Countries, International Legal Instruments, and similar topics.

While there is no specific chapter in Agenda 21 dealing with the minerals sector (as there is for agriculture, for example), there are a host of provisions of direct and indirect relevance to mineral development; the mention of some of the key ones here will demonstrate the need for more extensive study (*further see ECOSOC/Activities*). The Economic and Social Council and other United Nations agencies are urging that national plans address minerals issues in the context of Agenda 21, Chapter 10 (entitled "Integrated approach to the planning and management of land resources"). This should include:

"the capacity of the environment to absorb the effects of resource use, the sustainability of the supply of essentially non-renewable resources, and the possibilities for modifying production and consumption patterns through greater efficiency of use, new technologies, recycling and substitution". (*ECOSOC/Integration 4*).

This Chapter 10 presents a programme for integrated planning and management of land resources. Its "broad objective is to facilitate allocation of land to the uses that provide the greatest sustainable benefits" (para. 10.5). Its specific objectives are "to review and develop policies to support the best possible use of the land and the sustainable management of land resources", "to improve and strengthen planning, management and evaluation systems", "to strengthen institutions and coordinating systems" and "to create mechanisms to facilitate the active involvement and participation of all concerned, particularly communities and people at the local level, in decision-making on land use and management" (para. 10.5(a)-(d)). For most countries, implementing even a portion of the suggestions in Chapter 10 would radically change the resource planning and allocation process.

Other examples include Chapter 4 (Changing Consumption Patterns), which urges reduction in unsustainable demand for natural resources (para. 4.5), greater efficiency in the use of energy and resources (para. 4.18), minimizing generation of wastes (para. 4.19) and environmentally sound pricing (para. 4.24); Chapter 6 (Protecting and Promoting Human Health), which calls for extensive health protections in the industry and energy sectors (para. 6.41(j)); Chapter 13 (Mountain Development), suggesting alternatives to minerals development to prevent soil erosion, landslides, and loss of habitat and genetic diversity; Chapter 17 (Protection of Oceans), which address, among other things, degradation of the marine environment from oil and gas activities (paras. 17.18-21); and Chapter 26 (Strengthening the Role of Indigenous Peoples), which calls for protecting indigenous people's lands "from activities which are environmentally unsound or that [they] consider to be socially and culturally inappropriate" (para 26.3(a)(ii)).

Without being exhaustive, general provisions of mining-sector interest can also be found in Chapter 19 on Toxic Chemicals, Chapter 20 on Hazardous Wastes, Chapter 30 on

Strengthening the Role of Business and Industry, the technology transfer provisions of Chapter 33, and Chapter 39, which encourages additional international treaties and the development of international standards for environmental protection. Agenda 21 also proposes two programmes relevant to the mining sector, one on interfirm cooperation with government support to transfer technologies to minimize waste and increase recycling, and a second on responsible entrepreneurship encouraging self-regulation, environmental research and development, worldwide corporate standards and partnerships in clean technology (*Warhurst 168; ECOSOC/Environmental 19*).

In summary, Agenda 21 proposes a stunningly diverse array of global, national and local reforms - some 2,500 projects in all - which if even a fraction were implemented could transform the way resource-based economies and the world deal with mineral development. The Economic and Social Council notes:

"Agenda 21...sets the priorities under which mineral resource management and technical assistance are to be carried out. Further general guidance for these priorities is given by the Capacity 21 programme of Agenda 21. The goals of this programme are to (a) assist countries in incorporating the principles of sustainable development into their development plans and programmes, (b) assist countries in involving all stakeholders in developing planning and environmental management and (c) create a body of experience and expertise in sustainable development and capacity-building that will be of continued material value to, and influence the operation of, developing countries, UNDP, the specialized agencies, non-governmental organizations and other donors". (*ECOSOC/Activities para. 14*).

Still, there has been very little progress implementing Agenda 21 in the 1990s, because, as a former UNEP official has stated, "so far the commitment is not there", and the question remains whether "sustainable development is a value Governments are prepared to invest in" (*Brown*) - particularly when it comes with an estimated US\$500 billion/year price tag. An interesting footnote to this, however, is that "business and industry and local communities have made more progress in implementing Agenda 21 than Governments have" (*id.*) (and see further IV.F. below).

Nevertheless, the United Nations has embraced sustainable development and Agenda 21 and reorganized to make them a mission-focus of many of its component agencies and programmes - including CSD, UNEP, UNDP, Economic and Social Council, United Nations Conference on Trade and Development and UNRFRNRE - as have other international entities (IV.D., IV.E. below). This refocusing of bureaucratic priorities cannot help but increase the pressure on individual nations to adopt Agenda 21 national action plans and to budget and provide financial assistance for their implementation.

D. Soft law-making by the United Nations and its agencies

In addition to UNCED, an array of other United Nations bodies and conferences produce international soft law - calling them "declarations", "resolutions", "draft rules", "guidelines", "principles", and the like - which they hope will shape or become accepted as international law. Many of these initially non-binding authorities can have present or future impact on the mining sector.

The **United Nations**, with its 185 member States and its many organs, agencies and conferences, produces numerous soft-law pronouncements which can evolve into international hard law (website: <http://www.un.org>). The Organization's six "principal organs" are the General Assembly, Security Council, Economic and Social Council, Trusteeship Council, the International Court of Justice (ICJ, or World Court) and the Secretariat. There are some 14 United Nations "specialized agencies" (actually autonomous IGOs having an affiliation with the United Nations), relevant ones in the mining/sustainable development arena including the World Bank Group (III.B.1. above), International Monetary Fund (IMF), UNESCO, UN/ECE (II.A.4., II.B.3. above), International Labour Organization (ILO), United Nations Industrial Development Organization (UNIDO) and WHO. The General Assembly has also created a number of "subsidiary agencies" (non-autonomous) to carry out its functions, relevant ones including UNEP, UNDP, United Nations Conference on Trade and Development (UNCTAD), UNRFFNRE (within UNDP) (III.B.2. above), and GEF (III.B.1. above). Within the United Nations Secretariat in New York, the Department of Economic and Social Affairs has succeeded the Department of Development Support and Management Services as the principal office involved in technical cooperation in the field of minerals; it engages in environmental impact analysis of mining, training of national staff and enhancement of institutional and human resource capacity for environmental management of minerals development, promoting conservation, recycling, and reclamation, and development of mining legislation incorporating environmental and safety regulations (*ECOSOC/Activities para 6*).

The Assembly and other United Nations agencies and conferences do not have general law-making authority (*Buergenthal & Maier 42*). However, they can articulate principles and rules which have potential to harden into treaty or customary law. In addition to UNCED, for example, the 1982 **World Charter for Nature** (adopted overwhelmingly by the Assembly with only the United States voting against it) contains 24 statements on the need to protect nature, genetic viability, necessary habitats, unique areas, habitats of rare or endangered species, use of best available technologies, making conservation of nature an integral part of development activities, etc. Its provisions are beginning to find their way into binding international law like UNCLOS, the Biodiversity Treaty, and others.

Even United Nations conferences on topics seemingly unrelated to mining or the environment bear watching. Something as apparently distant as the Programme of Action adopted at the 1994 **International Conference on Population and Development** (while admittedly very controversial and focused on an unrelated issue) contains statements on reducing and eliminating unsustainable patterns of production and consumption which only add more weight to the development of an international hard-law consensus on issues affecting mining.

UNEP was created by the Assembly in 1972 to be "the environmental conscience of the United Nations system" and coordinate development of sound environmental practices worldwide (*Haas 43*) (website: <http://www.unep.org>). With a secretariat in Nairobi, Kenya (the first United Nations agency to be located in a developing nation), and an industry-environment office in Paris, it is a major force in promoting and assessing sustainable development.

One of UNEP's key contributions is in drafting treaties and soft-law guidelines for international environmental law. A substantial number of the hard-law conventions previously discussed (II. above) were drafted and negotiated by UNEP, including the Biodiversity, Ozone, Basel, and Climate Change, treaties, as well as the very successful Regional Seas Treaty Programme (II.B.2. above). UNEP also helps develop non-binding "guidelines" on environmental protection which command substantial respect as soft law. Examples of these include the **World Charter for Nature** (above), UNEP's 1978 **Draft Principles on Shared Natural Resources** (which call for equitable sharing and avoidance of adverse environmental effects), its 1991 **Principles and Guidelines for Environmental Management and Sustainable Development in Technical Assistance** (*Prince & Nelson 297*), its **Guidance Document on Transboundary Movements of Hazardous Wastes Destined for Recovery Operations**, and its guidelines on **Offshore Mining and Drilling** (1982), **Banned and Severely Restricted Chemicals** (1984), **Marine Pollution from Land-Based Sources** (1985), **Hazardous Wastes** (1987), **Environmental Impact Assessment** (1987), and **Exchange of Information About Chemicals in International Trade** (1987). UNEP's Industry and Environment Centre in Paris has an ongoing programme of issuing industry-specific environmental guidelines, including highly detailed ones for mining operations (*UNEP/ENVIRONMENTAL ASPECTS*).

UNEP has extensive programmes for training national officials in environmental assessment and management. By now, tens of thousands of national officials have received UNEP technical training on environmental monitoring, conservation, forestry, land use, freshwater and marine resources and chemical/industrial risks (*Haas*). In the past, the agency has lacked the clout to influence effectively programmatic efforts by other United Nations and international agencies (*id.*). With the creation of the new CSD and reorganization of other United Nations bodies to focus on sustainability programmes (like UNDP), it remains to be seen what UNEP's exact role will be in the 21st century.

The **Economic and Social Council**, operating from its Secretariat in New York, has broad-ranging responsibilities in the economic, social, human rights and humanitarian areas and multiple subsidiary organs, including the Commission on Human Rights and the CSD. The Council and its subsidiary organs are very active in developing standards for private development in general and mining in particular (*ECOSOC/Activities*). In 1988, it adopted a **Draft Code of Conduct on Transnational Corporations**, which would require transnationals to protect the environment, rehabilitate it and apply appropriate technologies; while it has not been widely accepted and has not been adopted by the mining industry, draft codes from authoritative international organizations like the United Nations can be attractive sources for national judges seeking to frame liability and other rulings in litigation. The Council's **Committee on Natural Resources** also produces reports and recommendations on mining standards (see Bibliography). Another example of the Council's efforts to create hard law is in its progress toward a draft treaty protecting indigenous populations (IV.F.4. below).

The **CSD** was established within the Council in 1993 at the request of the General Assembly, headquartered in New York (website: <http://www.un.org/esa/sustdev/csd>). The Commission is to monitor, facilitate and provide policy guidance on implementation of the commitments to sustainable development reached at UNCED, particularly in the Rio Declaration, Agenda 21, Forest Principles, and the Global Programme of Action for Sustainable Development of Small Island Developing States. It is supported by the staff of the Division for Sustainable Development in the Department of Economic and Social Affairs. It remains to be seen how the divisions of labour will evolve between CSD and the other United Nations bodies charged with sustainable development missions, but it can be expected to add another reasonably authoritative voice to the development of soft law respecting mineral resources development.

UNDP has undergone a transformation from a 1960s development booster to its post-UNCED role of "supporting Governments in integrating environmental [and sustainable development] considerations into their development plans" (*UNDP/HANDBOOK 4*) (website: <http://www.undp.org>). Within UNDP, the **UNRE/NRE** (III.B.1. above) has been a provider of direct support for mineral exploration. With its financing capabilities, UNDP can be expected to be an important agency in promoting sustainable development in the future and developing its standards, in the minerals area among others.

UNCTAD, headquartered in Geneva, encourages international trade and sustainable development and also produces policies, guidance and training to implement those goals (website: <http://www.unctad.org>). In 1992, UNCTAD adopted "A New Partnership for Development", a programme designed, *inter alia*, to foster economic growth and environmental protection through sustainable development of natural resources. Its numerous reports, recommendations and guidelines (see Bibliography) can also be expected to have a formative effect on the development of international mining law.

Numerous other United Nations-related entities are active in analyzing, reporting on and setting guidelines for sustainable development, including mining, if to a lesser extent. These include UNESCO, WHO, ILC, ILO, International Atomic Energy Agency (IAEA) and International Maritime Organization (IMO) (*GURUSWAMY & HENDRICKS 412*).

E. Regional intergovernmental organizations and their contribution to law

In similar fashion, regional IGOs promote the development of international law affecting mining. Unique among these, of course, is the **EU**, which is not limited to soft law, having "law-making, enforcing and judging powers...without parallel in other international organizations" (*GURUSWAMY & HENDRICKS 414*) (website: <http://europa.eu.int>). Actually, the EU is a "supranational" organization (capable of making law binding on its member countries), not just a regional IGO (relying on voluntary participation and compliance from its member countries). The EU and predecessor entities have been prolific, to say the least, in adopting regional international laws on a whole range of environmental issues affecting mining, including water pollution, air pollution, hazardous waste, biodiversity and others, which their present 15 member States must implement. In addition, because of the EU's progressive nature, its legal standards and even its soft-law guidelines are looked to by other nations, IGOs, NGOs and the courts as definitive "international standards" in the fields of

mining and other forms of development. While EU environmental law is beyond the scope of this chapter, there are numerous excellent summaries (*NANDA 185*) and fuller treatments (*ERCHMANN, JOHNSON & CORCELLE*).

A very active regional IGO in environmental issues is the **OECD**, headquartered in Paris (website: <http://www.oecd.org>). Unlike the EU (but like the typical regional IGOs), the OECD does not have binding supranational legal powers and can only promote voluntary compliance among its 24 developed-nation members (EU States, United States, Canada, and Japan). Still, it has long been a force in environmental law development. Article 2 of its constitution mandates it to "promote the efficient use of resources", and its work in the 1970s and 1980s on soft-law principles and guidelines have led the way to development of 1990s hard law on transfrontier pollution, hazardous waste and the "polluter pays principle", among other key issues.

Many other regional IGOs engage in varying levels of activity on mining and sustainability issues. Among these are the **Organization of African Unity**, **Organization of American States**, the **United Nations Economic and Social Commission for Asia and the Pacific**, (*see ESCAP/UNEP*), **Asia-Pacific Economic Cooperation Forum (APEC)**, **Pacific Economic Co-operation Council (PECC)**, **South Pacific Forum Island Countries and Ministries of Mining of the Americas (CAMMA)**.

APEC is a good example. Composed of 21 Pacific Rim countries (including Chile, the United States, Republic of Korea, China, Japan, Indonesia, Australia and others), APEC economies produce and consume the bulk of the world's non-ferrous metals. This typical regional IGO, headquartered in Singapore, seeks to promote cooperation and technical support among its members in the economic and sustainable development spheres (website: <http://www.apecsec.org.sg> and <http://www.apec.org>). Within APEC, resource-based economies are active in its **Energy Working Group** and its subgroups of experts, particularly the **Group of Experts in Minerals and Energy Exploration and Development (GEMEED)** (website: <http://www.gemeed.cl>), which holds frequent meetings and conferences and makes pronouncements on international and national law issues affecting mining. The Group's 1997 "Environmental Cooperation Workshop" in Tokyo concluded:

"International environmental regulatory initiatives have increasing potential to impact on mining activities in APEC...[and] monitoring and cooperation on international environmental regulatory initiatives affecting metals and minerals...are encouraged" (*APEC 3*).

In the consultation and consensus-building diplomacy of the East, regional economic-cooperation IGOs like APEC provide an important forum for national government mining officials, mining industry representatives and other experts to meet and develop additional international law understandings and standards regarding mineral development.

F. Private-sector guidelines and codes

In addition to the growth in these IGO principles and standards, the industry itself and NGOs are producing an expanding body of international guidelines, standards, best-practices,

codes of conduct, technical and management procedures and intra-company rules - both of general application and mining-industry-specific. It should not be surprising that IGOs, mining opponents and courts will increasingly treat the industry's own pronouncements as the "best evidence" of the international standards to which the industry should be held accountable.

1. Mining industry guidelines

In 1991, the United Nations convened an important roundtable of international mining experts in Berlin to address environmentally sustainable mineral development. From that emerged the **Berlin Guidelines**, which set out important mining-environment principles both for the industry and for the cooperating multilateral and bilateral financing institutions (*Berlin Guidelines*, Nanda 4-19, Prince & Nelson 297, 310, Cohen 161). The Berlin Guidelines proclaim that "Sustainable mining activities require good environmental stewardship in all activities, from exploration and processing to decommissioning and reclamation" (unnumbered 2d para.).

To achieve this, Governments, companies and the mining industry "should *as a minimum*" (emphasis added) make environmental management a high priority:

"notably during the licensing process and through the development and implementation of environmental management systems [which] include early and comprehensive environmental impact assessments, pollution control and other preventive and mitigative measures, monitoring and auditing activities, and emergency response procedures" (para. 1).

In addition, the Berlin Guidelines call for environmental accountability (para. 2), participation of affected communities (para. 4), best practices even "in the absence of specific environmental regulations" (para.5), environmentally-sound technology (para. 6), technology transfer (*id.*), additional environmental funding at existing operations (para.7), risk analysis and management (para. 8), reduced trade and investment barriers (para. 10) and transparent environmental regulation (para. 14). Significantly, the document also produces guidelines for multilateral and bilateral DAAs, urging financial institutions to similar high and detailed standards of sustainable development protection.

The International Council on Metals and the Environment (ICME) is an "environmental NGO" of major non-ferrous and precious metals mining and primary metal companies worldwide, organized in 1991 to promote "sound environmental and health policies and practices" in the production, use, recovery and disposal of metals (website: <http://www.icme.com>). ICME has adopted an **ICME Environmental Charter** (*ICME, Muth*), which is somewhat less detailed than the Berlin Guidelines and has co-published a series of studies with UNEP (*ICME & UNEP-IE*). Similarly, the World Mining Environment Congress issued its **New Delhi Guidelines** (*World Mining*) in 1995, and these place even more emphasis on sociological impacts and training needs (*Prince & Nelson 298*). In addition, most international mining companies working in developing countries have adopted detailed internal environmental management guidelines and systems (*Armstrong 3-30*).

Apart from mining industry guidelines, a number of general industry guidelines have emerged, with relevance to the mining sector. Key among these is the International Chamber of Commerce (ICC) **Business Charter for Sustainable Development**, which it is promoting

in cooperation with UNEP (website: <http://iccwbo.org>; then click on "Environment"). Other general industry groups producing guidance for the mineral resource industry include the World Business Council for Sustainable Development (WBCSD), which includes a number of major mining and oil and gas companies and issues guidelines and case studies on environmental/resource management (website: <http://www.wbcsd.ch>), and the World Industry Council on the Environment, since 1995 part of the WBCSD, which focuses on improved environmental reporting and communication (*Armstrong 3-28*).

Some authorities view all such industry guidelines from the "glass half empty" perspective, emphasizing that they are quite general and non-binding and that "the various players must [still] develop concrete approaches" to implement them (*Cohen 162*). On the other hand, other experts view industry guidelines as a "glass half full", emphasizing that, even if the industry fails to implement them, others - including judges, IGOs, IDBs, DAAs, mining industry opponents, and the media - will not, and will use them as "another source of standards against which a company's environmental compliance may be measured" (*Prince & Nelson 309*).

The Economic and Social Council states "on a positive note" that such mining guidelines, if "enforced by an international trade regulatory body [or, one could add, the courts], could push world best practice in environmental management to new levels" (*ECOSOC/Effects 32*). However, the Council sees a corresponding "negative", that developing-country firms constrained by obsolete technology and scarce resources may not be able to compete.

2. ISO 14000 standards

A dramatic new entrant in the development of international environmental law standards for the mining industry is the International Organization for Standardization (ISO), an influential NGO based in Geneva, created to promote standardization in goods and services worldwide (website: <http://www.iso.ch>). Its ISO 9000 Series standards for product quality are already in widespread use. Of immediate relevance to resource-based economies and the mining industry is its development of the ISO 14000 Series standards, covering environmental management practices (*Prince & Nelson 291, Armstrong 3-21, Carr & Thomas C2*). Some 138 nations are involved in the effort, including representatives of Governments, industry, and citizen and environmental groups. Currently in development are detailed international environmental standards for environmental management systems, environmental performance evaluation, environmental auditing, environmental labelling, life-cycle analysis and terms and definitions.

ISO has a number of "technical committees" working on standards for mining, air quality, water quality, as well as environmental management, whose work should be followed by resource-based economies and the industry. In addition, it has a Committee on Developing Country Matters, specifically to identify the needs and requirements of the developing countries in the fields of standardization and related areas (quality control, metrology and certification) and to recommend measures to assist the developing countries in meeting them. Moreover, since specialized ISO 14000 technical standards are already in development for the oil and gas industry (*Armstrong 3-24*), can the mining industry then be far behind?

The enormous impact ISO environmental standards will have on all industry and trade is just beginning to be appreciated. Although ISO standards are supposedly non-regulatory, it can be expected that many countries, international bodies, financing institutions and courts will "adopt" them either as hard law or as interpretative guidance in mining programmes, environmental regulation, contracting policies, financing approvals, and judicial liability rulings (*id.* 3-23). Even where that is not the case, mining companies may feel compelled to conform to ISO 14000 standards as a condition of doing business competitively or to promote their environmental image (*id.*).

3. Environmental non-governmental organizations and their contribution

International (and even some national) environmental NGOs are active participants and influential observers in the formulation and development of international law. The preeminent example is the World Conservation Union (International Union for Conservation of Nature, or IUCN), a very respected expert organization which assists countries throughout the world to conserve the integrity and diversity of nature and ensure that use of natural resources is equitable and ecologically sustainable (website: <http://www.iucn.org>). The IUCN has a reputation that makes it a greater player than many Governments in developing conservation treaties and guidelines. It helped formulate (and assists in the implementation of) the World Heritage Convention, Ramsar, CITES, biodiversity treaty and other international authorities protective of nature and natural resources.

Other NGOs with influence in the international law-developing and -enforcing arenas affecting mining include, to name a few of the more prominent and active in the minerals area, the Sierra Club (website: <http://www.sierraclub.org>), Greenpeace (website: <http://www.greenpeace.org>), Environmental Defense Fund (EDF) (website: <http://www.edf.org>), Natural Resources Defense Council (NRDC) (website: <http://www.nrdc.org>), World Wildlife Federation (website: <http://www.wwf.org>) and, for a particularly anti-mining group, Basel Action Network (BAN) (website: <http://www.ban.org>). (For an insightful, insider's view of one NGO campaign - to reform the GEF - see *Reed*.)

4. The special roles of indigenous peoples and local communities

Mining in the past has often proceeded without concern for its negative effects on indigenous populations or local communities (see impacts discussion, I.B. above). One of the clearest, most evident developments in international environmental law is the trend to reverse this myopia.

This can be seen in the strong provisions calling for participation and protection of these groups in the Biodiversity Treaty (II.A.2. above), World Bank guidelines (III.B.1.), Rio Declaration (IV.B.), Agenda 21 (IV.C.) and Forestry Principles (IV.B.). The Rio Declaration sums up the movement best, in Principle 22:

"Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development."

For excellent detailed discussions of the development of indigenous/tribal rights recognition, see *Kastrup, Sutherland, and Howard*.

In 1989, the ILO adopted a **Convention Concerning Indigenous and Tribal Peoples in Independent Countries (No. 169)**. While adopted by few countries as of this writing, it is the most detailed and protective international authority to date. The ILO Convention so firmly promotes the principle of self-determination that it may well violate principles of sustainable development and environmental protection (*Kastrup 113*). The Economic and Social Council has also been active on indigenous protection issues and mining. It has created a **Working Group on Indigenous Populations**, and in 1993 it produced a **Draft Declaration on the Rights of Indigenous Peoples**, with many provisions affecting natural resources development. The Commission on Human Rights has taken up the draft and is further elaborating it for ultimate presentation to the General Assembly for adoption (*Sutherland 13*).

Indigenous/tribal peoples and local native communities have increasingly broadly recognized rights to protect their concerns and to participate in the decision-making on and implementation of mineral resources development projects. A company or Government that neglects to involve these interests faces the prospect of project opposition, mine site protests and violence, reputational damage and potentially successful court attacks, like Ok Tedi and Texaco (III.A. above). On the other hand, for companies and Governments that include indigenous and local community interests early and fairly in the negotiation of mining agreements, "the benefits will outweigh the costs" (*White 350*).

V. CONCLUSION

A myriad of new legal, financial and institutional rules are emerging at the international level, in addition to proliferating national laws, to promote sustainable development in mining. This growth in hard and soft international law standards reaches all aspects of mineral development, from access, through production, to product controls. And the new rules are especially focused on protecting and reinforcing sustainable development in the resource-based economies of developing countries.

Perhaps the most trenchant summation came recently from two mining industry experts, a lawyer and a consulting engineer:

"Because environmental regulation is here to stay and bound to become more widely adopted, more stringent and better enforced, the winners in the division of share in the metals markets will not be those firms that avoid environmental control (only later to be forced to internalize the high cost of having done so), but will be those firms that were ahead of the game, those that played a role in changing the industry's production parameters, and those that used their innovative capabilities to their competitive advantage" (*Prince & Nelson 315*).

Staying abreast of these emerging international rules and utilizing them to their maximum advantage is one of the greatest challenges and opportunities for developing countries seeking to negotiate and promote sustainable development for the long-term benefit of their resource-based economies, environments and peoples.

BIBLIOGRAPHY

Books, articles

Abbott, Rob, *Practical Application of Evolving Standards*, INTERNATIONAL ENVIRONMENTAL LAW: FOR NATURAL RESOURCES PRACTITIONERS 6-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

AGENDA 21 & THE UNCED PROCEEDINGS, vol. IV (ed. Nicholas A Robinson, *et al.*, 1993).

Armstrong, Kit, *The Green Challenge - Managing Environmental Issues in Natural Resources Projects in Developing Countries*, 42 ROCKY MOUNTAIN MINERAL LAW INSTITUTE 3-1 (1996).

Asia-Pacific Economic Cooperation [APEC], Group of Experts on Mineral and Energy Exploration and Development [GEMEED], *Chairs' Remarks of APEC-GEMEED Environmental Cooperation Workshop for Sustainable Development on Mining Activities*, 1997 (Oct. 29, 1997).

ASIAN DEVELOPMENT BANK, ENVIRONMENTAL ASSESSMENT REQUIREMENTS AND ENVIRONMENTAL REVIEW PROCEDURES OF THE ASIAN DEVELOPMENT BANK (Office of the Environment, Mar. 1993).

ASIAN DEVELOPMENT BANK, ENVIRONMENTAL LEGISLATION AND ADMINISTRATION: BRIEFING PROFILES OF SELECTED DEVELOPING MEMBER COUNTRIES OF THE ASIAN DEVELOPMENT BANK (ADB Environment Paper No. 2, 3d printing 1992).

Barth, RL, *Indigenous Peoples in the 1990s: From Object to Subject of International Law*, 7 HARVARD HUMAN RIGHTS JOURNAL 33, 68 (1994).

Bell, Christopher L & James L Connaughton, *International Environmental Standards*, 27 ENVIRONMENTAL LAW & PRACTICE 39 (1995).

Berlin Guidelines, in MINING JOURNAL at 2 (Sept. 20, 1991), also reprinted in 10 JOURNAL OF ENERGY & NATURAL RESOURCES LAW 355-357 (1992).

Brown, Noel J, *Trend Is Not Destiny and Doomsday Is Not Inevitable: The Environment and the Politics of Hope* (University of Denver 1997-98 Leo Block Professorship Lecture, Nov. 19, 1997; notes with author).

BUERGENTHAL, THOMAS & HAROLD G. MAIER, PUBLIC INTERNATIONAL LAW IN A NUTSHELL (2d ed. 1990).

Carr, Donald A & William L Thomas, *ISO 14001 Sets a Global Environmental Standard*, NATIONAL LAW JOURNAL at C2 (July 8, 1996).

Chatterjee, Pratap, *Gold Mine Disasters Force Change at World Bank*, Inter Press Service, 1995 Westlaw 10134966 (Oct. 17, 1995).

Chatterjee, Pratap, *Indonesian Mining Project "Unreasonable Hazard,"* Inter Press Service, 1995 Westlaw 10135463 (Nov. 3, 1995).

Cohen, Madeline, *A New Menu for the Hard-Rock Cafe: International Mining Ventures and Environmental Cooperation in Developing Countries*, 15 STANFORD ENVIRONMENTAL LAW JOURNAL 130 (1996).

Cope, Thomas F, *Introduction to Environmental Law in the Commonwealth of Independent States*, INTERNATIONAL RESOURCES LAW: TODAY'S OIL, GAS, AND MINING PROJECTS at 10B-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Cox, Anthony, *Land Access for Mineral Development in Australia*, MINING AND THE ENVIRONMENT: INTERNATIONAL PERSPECTIVES ON PUBLIC POLICY 21 (Roderick G Eggert ed. 1994).

Danielson, Luke & Avra Rubalcava, *Public Participation in Environmental Decision-making*, INTERNATIONAL ENVIRONMENTAL LAW: FOR NATURAL RESOURCES PRACTITIONERS 11-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Denison, Thomas R, *Evolving Financing Mechanisms and Security for Environmental Compliance*, INTERNATIONAL RESOURCES LAW: TODAY'S OIL, GAS, AND MINING PROJECTS (Rocky Mountain Mineral Law Foundation ed. 1997).

Dotterrer, Ilona, *et al.*, *Environmental Laws and Natural Resources Activities: Some Facts, History and Reflections on Experiences Under United States Law 1970-1996 and Some Lessons for Development of Worldwide Environmental Law*, INTERNATIONAL ENVIRONMENTAL LAW: FOR NATURAL RESOURCES PRACTITIONERS 1-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Eggert, Roderick G, *Mining and the Environment: An Introduction and Overview*, MINING AND THE ENVIRONMENT: INTERNATIONAL PERSPECTIVES ON PUBLIC POLICY 1 (Roderick G Eggert ed. 1994).

Emery, Alan C, *Observations on International Regulatory and Other Impacts on Mining Activity and Metals*, INTERNATIONAL CONFERENCE ON POLLUTION PREVENTION IN MINING AND MINERAL PROCESSING: PROCEEDINGS 77 (Kathleen Anderson & Susan K Purcell eds. 1994).

Engel, Kirsten H, *State Environmental Standard-Setting: Is There a "Race" and Is It "to the Bottom"?*, 48 HASTINGS LAW JOURNAL 271 (1997).

Ercmann, Sevine, *POLLUTION CONTROL IN THE EUROPEAN COMMUNITY: GUIDE TO THE EC TEXTS AND THEIR IMPLEMENTATION BY THE MEMBER STATES* (1996).

EU to Sue over Habitats, THE NATIONAL LAW JOURNAL (Nov. 3, 1997) at A12.

Eurogold Loses Its License, THE NATIONAL LAW JOURNAL (Nov. 3, 1997) at A12.

Francisco, Rosemarie V, *Marcopper Changes Name, Spins Off Mining Business*, BUSINESSWORLD (MANILA), 1997 Westlaw 11539979 (July 17, 1997).

Gibeaut, John, *Sherman Goes Abroad: Landmark Decision OKS International Antitrust Prosecution*, AMERICAN BAR ASSOCIATION JOURNAL (July 1997), at 42.

Goldfarb, Joan R, *Comment, Extraterritorial Compliance with NEPA amid the Current Wave of Environmental Alarm*, 18 BOSTON COLLEGE ENVIRONMENTAL AFFAIRS LAW REVIEW 543 (1991).

GURUSWAMY, LAKSHMAN & BRENT HENDRICKS, INTERNATIONAL ENVIRONMENTAL LAW IN A NUTSHELL (1997).

GURUSWAMY, LAKSHMAN, SIR GEOFFREY W. R. PALMER & BURNS H. WESTON, INTERNATIONAL ENVIRONMENTAL LAW AND WORLD ORDER: A PROBLEM-ORIENTED COURSEBOOK (1994).

Haas, Peter M, *United Nations Environment Programme: Agency Overview of the UNEP*, ENVIRONMENT, Sept. 1994, at 43.

Howard, Michael C, *Development versus the Environment: The Challenge for Southeast Asia*, 22 JOURNAL OF BUSINESS ADMINISTRATION 93, 1995 Westlaw 14731554 (1995).

Humphreys, David, *Experimenting with Supranational Policies in Europe*, MINING AND THE ENVIRONMENT: INTERNATIONAL PERSPECTIVES ON PUBLIC POLICY 111 (Roderick G Eggert ed. 1994).

International Chamber of Commerce [ICC], *Business Charter for Sustainable Development*, ICC Pub. No. 210/356 A, C (1991).

International Council on Metals and the Environment [ICME] & UN Environment Programme-IE [UNEP-IE], *Case Studies Illustrating Environmental Practices in Mining and Metallurgical Processes* (1996).

International Council on Metals and the Environment [ICME], *Environmental Charter*, <http://205.189.108.215/icme/envchar.htm>>; reprinted in Muth, below.

INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES [IUCN], *ET AL. CARING FOR THE EARTH: A STRATEGY FOR SUSTAINABLE LIVING* (David A Munro & Martin W Holdgate eds. 1991).

JOHNSON, STANLEY P & GUY CORCELLE, THE ENVIRONMENTAL POLICY OF THE EUROPEAN COMMUNITIES (2d ed. 1995).

Kastrup, Jose Paulo, *The Internationalization of Indigenous Rights from the Environmental and Human Rights Perspective*, 32 TEXAS INTERNATIONAL LAW JOURNAL 97 (1997).

Kindt, John Warren, *The Environmental Aspects of Deep Seabed Mining*, 8 U.C.L.A. JOURNAL OF ENVIRONMENTAL LAW & POLICY 125 (1989).

Kindt, John Warren, *Particulate Pollution and the Law of the Sea*, 12 BOSTON COLLEGE ENVIRONMENTAL AFFAIRS LAW REVIEW 273 (1985).

Lagos, Gustavo E, *Developing National Policies in Chile*, MINING AND THE ENVIRONMENT: INTERNATIONAL PERSPECTIVES ON PUBLIC POLICY 85 (Roderick G Eggert ed. 1994).

Lauterpacht, E, *Law and Policy in International Resource Development*, 11 JOURNAL OF ENERGY AND NATURAL RESOURCES LAW 145 (1993).

Louka, Elli, OVERCOMING NATIONAL BARRIERS TO INTERNATIONAL WASTE TRADE: A NEW PERSPECTIVE ON THE TRANSNATIONAL MOVEMENTS OF HAZARDOUS AND RADIOACTIVE WASTES (1994).

Low, Lucinda A, *The Extraterritorial Reach of US Laws to the Interests in Natural Resource Projects in Latin America*, in 1994 INTERNATIONAL OIL, GAS AND MINING DEVELOPMENT IN LATIN AMERICA, Paper 3 (1994).

Low, Lucinda A, et al., *The International Practice of Law*, INTERNATIONAL LAWYER'S DESKBOOK 1 (Lucinda A Low, et al., eds. 1996).

Martin, Jay G, *Developing Global Environmental Management Programs*, NATURAL RESOURCES & ENVIRONMENT 33 (Winter 1997).

Mercier, Jean-Roger, *Mining and Environmental Requirements & Regulations in Sub-Saharan Africa: Highlights from World Bank Experience*, INTERNATIONAL RESOURCES LAW: TODAY'S OIL, GAS, AND MINING PROJECTS 10C-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Mining Association of Canada, *Guide for Environmental Practice* (Nov. 1990).

Muldoon, Paul R, *The International Law of Ecodevelopment: Emerging Norms for Development Assistance Agencies*, 22 TEXAS INTERNATIONAL LAW JOURNAL 1 (1987).

Mining Auction Postponed, THE NATIONAL LAW JOURNAL (Nov. 3, 1997) at A12.

Murphy, Sean D, *Prospective Liability Regimes for the Transboundary Movement of Hazardous Waste*, 88 AMERICAN JOURNAL OF INTERNATIONAL LAW 24 (1994).

Muth, Robert J, *[Untitled paper on the role of national and international trade associations in the nonferrous metals industry]*, INTERNATIONAL ENVIRONMENTAL LAW: FOR NATURAL RESOURCES PRACTITIONERS 12B-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Nanda, Ved P, *International Environmental Law and International Business Ventures*, INTERNATIONAL ENVIRONMENTAL LAW: FOR NATURAL RESOURCES PRACTITIONERS 4-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Nanda, Ved P, INTERNATIONAL ENVIRONMENTAL LAW & POLICY (1995).

NPCA Park News Regional Report, NATIONAL PARKS (Nov./Dec. 1997) at 20.

Novoa V, Laura, *Sustainable Development and Its Relationship with Mining and Law*, SPECIAL INSTITUTE ON MINERAL DEVELOPMENT IN LATIN AMERICA 7-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Onorato, William T & Peter Fox, *The Role of the World Bank and Other Multilateral and Private Sector Finance Institutions in Resources Development in Developing Countries*, 41 ROCKY MOUNTAIN MINERAL LAW INSTITUTE 7-1 (1995).

Organisation for Economic Co-operation and Development [OECD], *Council Recommendation Concerning an Environmental Checklist for Development Assistance*, OECD Doc. C(89)2(final) (Mar. 3, 1989), 28 I.L.M. 1314 (1989).

Organisation for Economic Co-operation and Development [OECD], *THE OECD GUIDELINES FOR MULTINATIONAL ENTERPRISES* 47-49 (1994).

Pérez L, Maria de los Angeles, *Trends in the Development of Chilean Environmental Laws*, INTERNATIONAL RESOURCES LAW: TODAY'S OIL, GAS, AND MINING PROJECTS 10A-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Pope, Carl, *Slugs and Dinosaurs: Why Some Industries Drag Their Feet*, SIERRA, Sept.-Oct. 1997, at 14.

Prince, William & David Nelson, *Developing an Environmental Model: Piecing Together the Growing Diversity of International Environmental Standards and Agendas Affecting Mining Companies*, 7 COLORADO JOURNAL OF INTERNATIONAL ENVIRONMENTAL LAW & POLICY 247 (1996).

Pring, George (Rock), James Otto and Koh Naito, *Trends in International Environmental Law Affecting the Minerals Industry*, 17 JOURNAL OF ENERGY AND NATURAL RESOURCES LAW, 39-55 (Part I) and 151-177 (Part II) (1999).

Pring, George (Rock), *Sustainable Development: Historic Perspectives and Challenges for the 21st Century*, in United Nations Development Programme and United Nations Revolving Fund for Natural Resources Exploration, PROCEEDINGS OF THE WORKSHOP ON THE SUSTAINABLE DEVELOPMENT OF NON-renewable resources towards the 21st CENTURY 13-29 (Oct. 15-16, 1999).

Pring, George W & David Joeris, *Various International Environmental Law Collections*, 4 COLORADO JOURNAL OF INTERNATIONAL ENVIRONMENTAL LAW & POLICY 422 (1993).

Pring, George W & Steve Miller, *Wilderness and Natural Area Preservation in the United States*, in PROCEEDINGS OF THE 1987 CONFERENCE ON ENVIRONMENTAL LAW, UNIVERSITY OF PEKING, BEIJING, CHINA (University of Colorado 1989).

Ranta, Karin, *Comment, Balancing Hardrock Mining and the Environment: The Chilean Model*, 6 COLORADO JOURNAL OF INTERNATIONAL ENVIRONMENTAL LAW & POLICY 423 (1995).

Reed, David, *The Global Environmental Facility and Non-Governmental Organizations*, 9 AMERICAN UNIVERSITY JOURNAL OF INTERNATIONAL LAW & POLICY 191 (1993).

Reid, Donald A, *Civil Liability for Environmental Damage*, INTERNATIONAL ENVIRONMENTAL LAW AND REGULATIONS (Dennis Campbell ed., vol. I, 1996), at 249.

Reiley, Robert C, *Basel and the U.S. View Toward Metal Recycling*, in ASIA-PACIFIC COOPERATION GROUP (APEC)/GROUP OF EXPERTS ON MINERALS AND ENERGY EXPLORATION AND DEVELOPMENT (GEMEED), ENVIRONMENTAL COOPERATION WORKSHOP FOR SUSTAINABLE DEVELOPMENT ON MINING ACTIVITIES (Tokyo, Oct. 27-31, 1997) (copy on file with author).

Sandri, Henry J, *Environmental Costs and Benefits in the International Resource Development Context*, INTERNATIONAL ENVIRONMENTAL LAW: FOR NATURAL RESOURCES PRACTITIONERS 3A-1 (Rocky Mountain Mineral Law Foundation ed. 1997).

Seneviratne, Kalinga, *Papua New Guinea: Mining Giant Tries to Turn Over New Leaf*, Inter Press Service, 1997 Westlaw 7076740 (July 28, 1997).

Silveira, Mary Pat Williams, *International Legal Instruments and Sustainable Development: Principles, Requirements, and Restructuring*, 31 WILLAMETTE LAW REVIEW 239 (1995).

Smith, Susan L, *Ecologically Sustainable Development: Integrating Economics, Ecology, and Law*, 31 WILLAMETTE LAW REVIEW 261 (1995).

Smith, Turner T Jr., *Environmental Law*, INTERNATIONAL LAWYER'S DESKBOOK 173 (Lucinda A Low, et al., eds. 1996).

Sohn, Louis B & Kristen Gustafson, THE LAW OF THE SEA IN A NUTSHELL (1984).

Sutherland, Johanna, et al., *Emerging New Legal Standards for Comprehensive Rights*, 27 ENVIRONMENTAL POLICY AND LAW 1, 13 (1997).

Tilton, John E, *Mining Waste and the Polluter-Pays Principle in the United States*, MINING AND THE ENVIRONMENT: INTERNATIONAL PERSPECTIVES ON PUBLIC POLICY 57 (Roderick G Eggert ed. 1994).

United Nations Conference on Trade and Development [UNCTAD], *Environmental Aspects of Bauxite, Alumina and Aluminium Production in Brazil: Report by the UNCTAD Secretariat*, United Nations Doc. UNCTAD/COM/49 (1995).

United Nations Conference on Trade and Development [UNCTAD], *Environmental Legislation for the Mining and Metals Industries in Asia*, Report prepared by Anselmo C Abungan, United Nations Doc. UNCTAD/COM/40 (1994).

United Nations Conference on Trade and Development [UNCTAD], *Management of Natural Resources and the Environment in Zimbabwe: The Case of Gold*, Report prepared Oliver Maponga & Anderson Mutemererwa, United Nations Doc. UNCTAD/COM/45 (1995).

United Nations Conference on Trade and Development [UNCTAD], *Trade and Industrial Policy for Sustainable Resource-Based Development: Policy Issues, Achievements and Prospects*, Report prepared by Richard Auty & David Evans, United Nations Doc. UNCTAD/COM/33 (1994).

United Nations Development Programme and United Nations Revolving Fund for Natural Resources Exploration, PROCEEDINGS OF THE WORKSHOP ON THE SUSTAINABLE DEVELOPMENT OF NON-renewable resources towards the 21st CENTURY 13-29 (Oct. 15-16, 1999).

United Nations Development Programme [UNDP], *Handbook and Guidelines for Environmental Management and Sustainable Development* (1992).

United Nations Development Programme [UNDP], *The United Nations Revolving Fund for Natural Resources Exploration: Achieving Sustainable Development of Mineral Resources in Harmony with the Environment* (brochure 1995).

United Nations Economic and Social Commission for Asia and Pacific & United Nations Development Programme [ESCAP & UNEP], *Mineral Resources Development and the Environment* (1992).

United Nations Economic and Social Council, Committee on Natural Resources, *Activities of the United Nations System in the Field of Water and Mineral Resources, and Inter-Agency Coordination Focusing on Progress Made towards Achieving Sustainable Development*, United Nations Doc. UNESC/CNR 3d Sess., Agenda Item 3, E/C.7/1996/1 (1996).

United Nations Economic and Social Council, Committee on Natural Resources, *Effects of Environmental Protection and Conservation Policies on the Mineral Sector (Including Consideration of Available Studies by Concerned Entities of the United Nations System on the Impact on the Environment of Exploration and Mining, and Review of State-of-the-Art Technologies Dealing with Processing of Mining Wastes and Tailings: Report of the Secretary-General*, United Nations Doc. UNESC/CNR 2d Sess., Agenda Item 8, E/C.7/1994/10 (1994).

United Nations Economic and Social Council, Committee on Natural Resources, *Environmental Protection and Restoration Issues Arising from Mineral Industry Activities: Key Advances in the Development and Application of State-of-the-Art Technologies for Minimizing Environmental Degradation Caused by the Mining and Processing of Mineral Resources: Report of the Secretary-General*, United Nations Doc. UNESC/CNR 3d Sess., Agenda Item 10, E/C.7/1996/10 (1996).

United Nations Economic and Social Council, Committee on Natural Resources, *Integration of the Issue of Sustainable Supply of Minerals into the United Nations Processes for Addressing Agenda 21: Towards the Sustainable Supply of Minerals in the Context of Agenda 21: Inter-sessional Strategy Paper of the Committee on Natural Resources*, United Nations Doc. UNESC/CNR 3d Sess., Agenda Item 11, E/C.7/1996/11 (1996).

United Nations Economic and Social Council, Committee on Natural Resources, *Issues Concerning the International Round-Table on Mining and the Environment, Held in Berlin in*

1991, and *Implications of Environmental Protection and Conservation Policies and Strategies in the Mineral Area: Conclusions and Recommendations of the International Round-Table on Mining and the Environment and of the United Nations Conference on Environment and Development: Report of the Secretary-General*, United Nations Doc. UNESCO/CNR 1st Sess., Agenda Item 11, E/C.7/1993/10 (1993).

United Nations Economic and Social Council, Committee on Natural Resources, *Small-Scale Mining Activities in Developing Countries and National Legislation Regarding Enterprises in This Area: Report of the Secretary-General*, 1st Sess., Agenda Item 12, United Nations Doc. E/C.7/1993/11 (1993).

United Nations Environment Programme [UNEP], *Environmental Impact Assessment: Where to from Here?*, UNEP Environmental Economics Series Paper No. 6 (Oct. 1993), found at <<http://www.unep.no/unep/products/eeu/ecoserie/ecos6/ecos62.htm>>.

United Nations Environment Programme [UNEP], *Guidance Document on Transboundary Movements of Hazardous Wastes Destined for Recovery Operations* (1997), found at <<http://www.unep.ch/sbc/doc95-2.htm>>.

United Nations Environment Programme [UNEP], *Industry and Environment Programme Activity Centre, Environmental Aspects of Selected Non-Ferrous Metals (CU, NI, PB, ZN, AU) Ore Mining: A Technical Guide* (Technical Report Series No. 5, 1991).

United Nations Environment Programme [UNEP], *Workshop on Environmental Impact Assessment with Particular Focus on International Cooperation*, UNEP Environmental Economics Series Paper No. 13 (Sept. 1994), found at <<http://www.unep.no/unep/products/eeu/ecoserie/ecos13/eco13all.htm>>.

United States Forest Service [USFS], US Department of Agriculture, *Anatomy of a Mine from Prospect to Production* (General Technical Report INT-35, July 1983 revis.).

United States General Accounting Office [USGAO], *International Environment: Improved Procedures Needed for Environmental Assessments of US Action Abroad* (GAO/RCED-94-55, Feb. 1994).

United States General Accounting Office [USGAO], *International Organizations: US Participation in the United Nations Development Programme* (GAO/NSIAD-97-8, April 1997).

Wälde, Thomas, *Environmental Policies towards Mining in Developing Countries*, 10 JOURNAL OF ENERGY & NATURAL RESOURCES LAW 327 (1992); reprinted in 30 PUBLIC LAND & RESOURCES LAW DIGEST 41 (1993).

Warhurst, Alyson, *Environmental Management in Mining and Mineral Processing in Developing Countries*, NATURAL RESOURCES FORUM 39 (Feb. 1992).

Warhurst, Alyson, *The Limitations of Environmental Regulation in Mining*, MINING AND THE ENVIRONMENT: INTERNATIONAL PERSPECTIVES ON PUBLIC POLICY 133 (Roderick G Eggert ed. 1994).

Weiss, Jonathan D, *Comment, The Balance of Nature and Human Needs in Antarctica: The Legality of Mining*, 9 Temple International & Comparative Law Journal 387 (1995).

Westin, Richard A, *Intergenerational Equity and Third World Mining*, 13 UNIVERSITY OF PENNSYLVANIA INTERNATIONAL BUSINESS LAW 181 (1992).

White, Heather G, *Including Local Communities in the Negotiation of Mining Agreements: The Ok Tedi Example*, 8 TRANSNATIONAL LAWYER 305 (1995).

Wise, SJ Colin, *Environmental Considerations in International Mining Operations*, INTERNATIONAL RESOURCES LAW II: A BLUEPRINT FOR MINERAL DEVELOPMENT 14B-1 (Rocky Mountain Mineral Law Foundation ed. 1995).

World Bank, *Environmental Assessment of Mining Projects - Draft: Environmental Assessment Sourcebook Update* (Feb. 1997), found at <<http://www/worldbank.org/html/fpd/technet/decade/assess.htm>>.

World Bank Environment Department, *Environmental Assessment Sourcebook: Volume 1 - Policies, Procedures, and Cross-Sectoral Issues*, World Bank Tech. Paper No. 139 (1991).

World Bank, *International Conference on Development Environment and Mining: Post Conference Summary* (1994), found at <<http://www/worldbank.org/html/fpd/ienim/dem94.htm>>.

World Bank, *Mainstreaming the Environment: The World Bank Group and the Environment Since the Rio Earth Summit* (1995).

World Bank, *Operational Directive on Environmental Assessment*, OD 4.01 (19) (soon to be reissued as OP/BP/GP 4.01).

World Commission on Environment and Development [WCED], *Our Common Future* (1987).

World Mining Environmental Congress, *Environmental Guidelines*, Doc. No. 1 (1995).

Yozwiak, Steve, *NAFTA to Study San Pedro River*, THE ARIZONA REPUBLIC (May 29, 1997) at A1, A23.

Key International Legal Authorities

African Convention on the Conservation of Nature and Natural Resources, Sept. 15, 1968, 1001 UNTS 3 (1968).

AGENDA 21, adopted by the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro, June 13, 1992, United Nations Doc. A/CONF. 151/26 (vols. I-III) (1992); also found in AGENDA 21 & THE UNCED PROCEEDINGS, vol. IV, above.

Agreement on the Conservation of Nature and Natural Resources, adopted by the Association of South East-Asian Nations (ASEAN), July 9, 1985, 1985 EPL 64.

ASEAN Agreement on the Conservation of Nature and Natural Resources in Southeast Asia, July 9, 1985, 15 EPL 64 (1985) (not yet in force).

Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, Jan. 30, 1991, 30 ILM 775 (1991) (not yet in force).

Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal, Mar. 22, 1989, United Nations Doc. UNEP/IG.80/3 (1989), 28 ILM 657 (1989).

Berne Convention (Convention on Conservation of European Wildlife and Natural Habitats), Sept. 19, 1979, ETS 104 (1979); EU members are further bound to protect nature by Council Directives 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora, 1992 OJ (L 206/7) 1, and 79/409 on the Conservation of Wild Birds, 1979 OJ (L 103) 1.

Biodiversity Treaty (Convention on Biological Diversity), June 5, 1992, 31 ILM 818 (1992).

Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention), Feb. 25, 1991, 30 ILM 800 (1991).

Convention on Long-Range Transboundary Air Pollution (LRTAP), Nov. 13, 1979, 18 ILM 1442, UNEP3 #78, p. 519, 28 IPE 341.

Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, Oct. 12, 1940, 161 UNTS 193 (1940).

Convention on the Protection of the Environment Between Denmark, Finland, Norway and Sweden, Feb. 9, 1974, 1092 UNTS 279, 13 ILM 591 (1974).

Economic and Social Council Draft Code of Conduct on Transnational Corporations, 1 Feb. 1988, United Nations Doc. E/1988/39/Add. 1 (1988).

European Union EIA Directive, Council Directive 85/337/EEC of June 27, 1985 on the Assessment of the Effects of Certain Public and Private Projects on the Environment, OJ 1895, L 175/40, 05.07.85.

Framework Convention on Climate Change, May 29, 1992, 31 ILM 849 (1992).

General Agreement on Tariffs and Trade (GATT), Oct. 30, 1947, 61-V Stat. A-3, 55 UNTS 187; GATT Final Act Embodying the Results of the Uruguay Round of Multinational Trade Negotiations, Apr. 15, 1994, 33 ILM 1125 (World Trade Organization (WTO)).

International Labour Organization Convention Concerning Indigenous and Tribal Peoples in Independent Countries (No. 169), June 27, 1989, ILO CC 107/D. 303 (June 1989), 28 ILM 1382 (1989).

Lomé Convention (Fourth African, Caribbean, Pacific States (ACP) / European Community (EC) Convention, Dec. 15, 1989, 29 ILM 809 (1990).

London International Convention for the Prevention of Pollution from Ships (MARPOL), Nov. 2, 1973, IMCO Doc. MP/CONF/WP.35, 12 ILM 1319, 1434 (1973), UNEP3 #59, p.320, 380, 2 IPE 552, IELMT 973: 84, as modified by the 1978 Protocol, Feb. 17, 1978, 17 ILM 546 (1978), 21 IELR 2381, UNEP3 #59, p. 382, 19 IPE 9451, IELMT 978: 13.

Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal Ozone Protocol), Sept. 16, 1987, 26 ILM 1550 (1987).

Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests, June 13, 1992, United Nations Doc. A/CONF. 151/26 (Vol. III) (1992), 31 ILM 881 (1992).

Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, 11 ILM 262 (1972).

Paris Convention for the Prevention of Marine Pollution from Land-Based Sources, June 4, 1974, UKTS No.64 (1978), UNEP3 #64, p. 430, 13 ILM 352 (1974).

Ramsar Convention on Wetlands of International Importance Especially as Wildfowl Habitat, Feb. 2, 1971, 996 UNTS 245, 11 ILM 969 (1972), as amended Dec. 3, 1982.

Rio Declaration on Environment and Development, June 13, 1992, United Nations Doc. A/CONF.151/26 (vol. I) (1992), 31 ILM 874 (1992).

Statute of the International Court of Justice, June 26, 1945, 1976 YBUN 1052, 59 Stat. 1031, TS No. 993.

Stockholm Declaration of the United Nations Conference on the Human Environment, in *Report of the United Nations Conference on the Human Environment* (Stockholm, Sweden, June 5-16, 1972), United Nations Doc. A/CONF. 48/14/Rev. 1 at 3 (1973), 11 ILM 1416 (1972).

United Nations Convention on the Law of the Sea, Dec. 10, 1982, United Nations Doc. A/CONF.62/122 (1982), 21 ILM 1261 (1982).

UNEP Draft Principles of Conduct in the Field of the Environment for Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, May 19, 1971, United Nations Doc. UNEP/IG12/2 (1978), 17 ILM 1097 (1978).

UNESCO Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention), Nov. 16, 1972, United Nations Doc. ST/LEG/SER.C/10, 11 ILM 1358 (1972).

United Nations Framework Convention on Climate Change, May 29, 1992, 31 ILM 849 (1992).

United States-Canada Great Lakes Water Quality Agreement, Nov. 22, 1978, 30 UST 1383, TIAS 9257, as amended Oct. 16, 1983, TIAS 10798.

Vienna Convention on the Law of Treaties, May 23, 1969, 1155 UNTS 331.

Vienna Convention for the Protection of the Ozone Layer, March 22, 1985, UNEP Doc. IG.53/5, 26 ILM 1529 (1987).

Waigani Treaty, described in UNEP/Guidance 7 (not yet in force).

World Charter for Nature, Oct. 28, 1982, G.A. Res. 37/7 (Annex), United Nations General Assembly, 37th Sess., Supp. No. 51, at 17, United Nations Doc. A/37/51, 22 ILM 455 (1983).