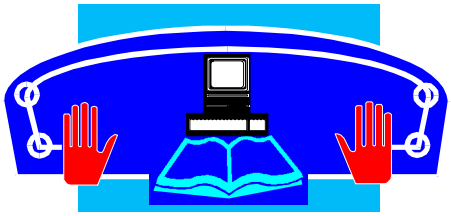

The Mineral And Metal Policy Of The Government Of Canada

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THE MINERAL AND METAL POLICY OF THE GOVERNMENT OF CANADA

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A MESSAGE FROM THE MINISTER OF STATE FOR FORESTRY AND MINES

Canada ranks among the world's most advanced and competitive mineral and metal producers. Almost one half of our country's production is sold abroad in an intensely competitive international market. Together with our other resource-based industries, Canada's minerals and metals industry constitutes the foundation of our economic well-being, helping us pay for those goods and services which we import. As a country, we owe our success to the wise management of the provinces, the enterprise of private investors and the hard work of many thousands of Canadians.

The Government of Canada has and will continue to support the minerals and metals sector through research and technology and geoscientific activities as well as through its responsibilities for overall economic management and international trade.

The minerals and metals industry benefits every Canadian, but these benefits cannot be taken for granted. Important new challenges have emerged on the world mineral scene. These challenges require, more than ever, a concerted response by governments and the private sector. In this light, the government's commitment to restoring good working relationships with the provinces and the simplification of the complex system of federal policies and programs affecting the minerals and metals industry take on an added urgency and importance. Each player needs to be clear on what everyone else is doing.

The September 1985 report of the Ministerial Task Force on Program Review was an important beginning in changing the way in which the federal government conducts its business. Since that time, several steps have been taken to ensure that the federal government's mineral-related policies and programs are relevant and timely.

A major recommendation of the ministerial task force was that there should be an explicit policy to guide the Government of Canada's minerals- and metals-related actions. This recommendation was very much in line with our view that government should be less complex, and that all parts of the federal government should be pulling in the same direction.

One of the purposes of this document is to ensure that everyone at the federal level is working together, regardless of agency or department. It also indicates clearly to provincial governments, industry and labor what can and cannot be expected of the Government of Canada in minerals and metals.

Together with the provinces and territories, industry and labor, we can ensure that the Canadian minerals and metals sector makes the greatest possible contribution to Canada's prosperity, now and in the future.

Gerald S. Merrithew

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1. THE CHALLENGE

The minerals and metals industry is a vital segment of the Canadian economy. A strong minerals and metals industry benefits every Canadian, but these benefits cannot be taken for granted. Important changes are taking place in mineral supply, demand, technology and marketing that will shape the future course of mineral development in this country.

The importance of these changes is only now becoming fully appreciated. Investors, management and labor bear the major responsibility for responding. Governments, too, must ensure that their activities reflect changed circumstances.

The policy described in the following pages defines a flexible and supportive role for the Government of Canada towards the minerals and metals sector, one that enables provincial governments and industry to respond to their particular circumstances and challenges.

IL THE OBJECTIVES

In promoting the exploration, development, production and utilization of Canada's mineral and metal wealth, the Government of Canada has set six objectives:

a. to provide a fair and balanced fiscal and regulatory framework;

b. to foster the development of the minerals and metals sector as a foundation for regional economic development;

c. to promote improved technological performance and increased international competitiveness in all facets of the industry;

d. to assist workers and communities affected by industrial adjustment

e. to facilitate enhanced mineral and metal exports and access to new and traditional markets; and

f. to provide timely and accurate economic. technical and scientific information required by the industry and by the federal and provincial governments, labor and the general public.

In meeting these objectives, the Government of Canada acknowledges and respects provincial primacy in the management of their natural resources. The need and desire to work cooperatively with provincial governments is a fundamental principle of federal government activities relating to the minerals and metals industry.

A. A Balanced Fiscal and Regulatory Environment

The minerals and metals industry is subject to a broad range of federal and provincial fiscal and regulatory policies that influence investment and competitiveness. The Government seeks to provide a fair and balanced fiscal and regulatory framework that will encourage the optimum development of Canada's mineral and metal resources. Stability in the fiscal and regulatory regime is also recognized as an important characteristic of sound policy.

MINERAL TAXATION

From the beginning of its mandate, the Government of Canada has made clear its intention to review the current tax system. Some important improvements have already been introduced in a gradual and measured way. Further and more comprehensive reforms of the tax regime will be based on the principles of fairness, simplicity, economic growth, competitiveness and stability of tax revenues. The aim is to provide a fairer tax system and to encourage a continuing improvement in the competitive position of our economy and the private sector, consistent with our commitment to greater social justice.

REGULATORY REFORM

Investment and competitiveness in the minerals and metals sector are also influenced by a variety of regulatory requirements and government-mandated programs. The rate, growth and proliferation of new regulation will be limited as much as possible while protecting the public wherever appropriate.

FOREIGN INVESTMENT

Foreign capital has played a significant role in developing the country's resource potential. Recognizing this, the government has set aside the practice of seeking 50 per cent to 60 per cent Canadian equity in new nonfuel mineral resource projects.

TRANSPORTATION

The Government of Canada believes that the new transportation legislation will be of major benefit to the minerals and metals industry, one of the principal users of rail transportation. The new national transportation legislation will reduce economic regulation and permit greater reliance on market forces within the transportation sector.

ENVIRONMENTAL PROTECTION

The preservation of environmental quality is essential to the protection of Canada's resource base.

The Government of Canada takes the view that the early identification and prevention of potential environmental problems hold the key to environmental protection. To this end, it supports the incorporation of environmental principles into mineral development and fosters a philosophy of sustained growth that integrates renewable resources and environmental imperatives with economic, commercial and technological considerations.

OFFSHORE IMINERALS

There is increasing private-sector interest in exploring the Canadian continental shelf and the 200-mile economic zone. The Government of Canada intends to establish, in full cooperation with the provinces, a legal regime which will facilitate Canada's ability to secure maximum benefits from its off shore mineral resources.

THE NORTH

The Government of Canada, through the Department of Indian Affairs and Northern Development, has provincial-type responsibilities for mineral and metal development in the Northwest Territories and the Yukon. Consistent with these responsibilities, a Northern Mineral Policy has recently been released. Its objective is to further encourage investment in northern mining and to ensure that the industry remains internationally competitive. It takes account of the special circumstances and needs of the mineral sector in the Yukon and Northwest Territories.

B. Regional Development

Canada's minerals and metals industry has contributed greatly to regional economic development and prosperity. The industry has been a leader in extending Canada's frontiers. The integral part that the minerals and metals sector plays in many areas of Canada and the lack of alternative, viable economic opportunities means that this industry will continue to be an important element in the Government of Canada's regional development strategy.

The **Government of Canada is committed to fostering the development** of the minerals and metals sector as a foundation for regional economic development.

C. Technological Advance

Technological innovation will be critical to the continued strength of the Canadian minerals and metals industry in the face of slow growth in world demand, the introduction of new industrial materials and concerns for adequate environmental protection. The Government of Canada has long maintained as an objective the highest level of technological performance and international competitiveness in all f acets of the minerals and metals industry.

RESEARCH IN SUPPORT OF INDUSTRY

An increasing involvement by the private sector in setting prorities and sharing the costs of government research in support of industry is a central principle of the government's new Science and Technology Policy.

Consistent with this policy, the Government of Canada's mineral-related R&D funds will be used as a lever to increase expenditures in the private sector. The Canada Centre for Mineral and Energy Technology (CANMET) will therefore give particular priority to supporting strategic investments which join several companies in precompetitive research, before developing them in their own laboratories to suit their individual market and operating demands.

HEALTH, SAFETY AND ENVIRONMENTAL RESEARCH

Research and development in health and safety and environmental protection may yield little, if any, competitive advantage to an individual company, yet these serve the broader interests of all Canadians. The Government of Canada is committed to working with industry on the early identification of health, safety and environmentaf hazards and the development of safe and environmentally sound technologies and standards for the minerals and metals industry.

INDUSTRY LINKS

The strong links between CANMET and the minerals and metals industry will need to be reinforced. Recognizing this, the Government of Canada is strengthening the National Advisory Committee on Mining and Metallurgical Research to give it a more direct role in the planning and execution of CANMET's R&D programs. Renamed the Minister's National Advisory Council on CANMET, one of its main aims will be to ensure that CANMET's activities are more closely targeted to the needs of the industry.

Over the longer term, additional changes to CANMET's organization and funding may be considered. The National Advisory Council on CANMET will play a key role in charting the future course of the government's minerals- and metals-related R&D.

D. Labor and Community Adjustment

The minerals and metals industry, and the workers and communities dependent upon it, have always been subject to the vagaries of the economic cycle.

Now, the pressures of structural change are imposing additional uncertainties on communities and workers.

The government cannot insulate workers and communities from downswings in international mineral markets. As an export-dependent industry selling into a highly competitive international market, Canadian minerals and metals producers cannot be sustained through subsidies or other artificial support. But the government can ease the adjustment process and get people back into the workforce.

The Government of Canada remains committed to working with labor organizations, management, and provincial and territorial governments to assist workers affected by industry rationalization and to enable mining communities to achieve their full economic potential.

E. Commercial Policy and Market Access

Canada's export efforts in the minerals and metals sector must respond to the business and trade practices of our customers and competitors. The international marketing of these commodities is now more complex than during the 1960s and 1970s. Cost competitiveness remains essential but it is no longer enough. Noncommercial factors are often of prime importance in sourcing decisions by customers. Hence, while the marketing of Canada's minerals and metals remains a private sector responsibility, the current reality requires the Canadian industry to have strong support from government. The aim of the Government of Canada is to cooperate with industry to facilitate enhanced mineral exports and access to new and traditional markets.

IMINERAL MARKET INTELLIGENCE

The Government of Canada has an important role to play in briefing and debriefing industry on developments in global minerals and metals trade. Timely, relevant and incisive market information and analysis on consuming and competitor countries are an essential component of any initiative to improve commercial policy and market access for the minerals and metals industry. Effective dissemination of this information can improve the export strategies of individual Canadian companies. Mineral market intelligence and reporting will play an increasingly important role in the early identification of market opportunities and the planning of export financing and other types of marketing assistance.

MARKETING MISSIONS

The government has a key role in organizing technical and marketing missions to open doors in those countries where government involvement is a prerequisite to market success. This is especially true in centrally planned economies and also in certain developing countries where governments take a very active role in domestic economic and trade management.

MARKET TRANSPARENCY

The Government of Canada supports the need for greater market transparency for minerals and metals and the establishment of international commodity arrangements on a case-by-case basis. Intergovernmental commodity study groups can improve awareness of how national policies interrelate with the realities of international trade.

DEVELOPMENT AID AND EXPORT FINANCING

The government acknowledges that mineral development, particularly in the less developed countries, will remain an important and growing source of supply for many minerals and metals, in competition with Canadian industry. It also recognizes the important role that mineral development can play in the economic growth of those countries.

In providing official development assistance in support of mineral projects abroad, the Canadian International Development Agency takes fully into account the economic viability of the project, its developmental impact on the recipient country, its impact on international mineral markets and its ef feet on Canadian industry.

Similarly, with respect to export credits, the Government of Canada takes fully into account the economic, financial and commercial viability of projects and the ability of Canadian firms to implement the projects and to supply equipment and services in countries considered to be credit-worthy.

F. Economic and Scientific Information

As a part of its mineral policy, the Government of Canada will ensure that its role of providing timely and accurate economic, technical and scientific information required by the minerals and metals sector, labor organizations, federal and provincial agencies and the general public is developed to the maximum.

GEOSCIENTIFIC INFORMATION

Because mines have a finite life, the industry must constantly renew itself through the exploration and development of new deposits. But exploration is risky. Valuable deposits of minerals and metals are extremely rare, representing only a tiny fraction of the ear th's crust. **Government support of basic geoscientific information and mapping will continue as a means of reducing exploration** risks **and avoiding costly duplication** of efforts by the private sector.

Provincial governments also acquire and disseminate geoscientific information. The resources available to geoscience in individual provinces may vary, depending on the interests and priorities of provincial governments concerning their nonrenewable resources and regulation of associated industrial activity. The Geological Survey of Canada (GSC) will continue to work closely with provincial agencies and to complement their activities in the minerals and metals field.

Geoscientific information is also essential to governments as background for developing and maintaining mineral-related policies and regulatory frameworks, in better understanding industrial circumstances and conditions, and in facilitating national and regional inventories of mineral and metal resources or future resource potential. On a national scale, the GSC will cent inue to concentrate on providing an up-to-date national geoscientific knowledge base that simultaneously serves a variet y of government policy needs, including minerals and metals programs, public safety, national security and sovereignty considerations.

ECONOMIC INFORMATION

The government also has a role and responsibility in gathering and disseminating information essential to its regulatory functions. Collecting basic industry statistics, monitoring of ore reserves, exploration, production and processing capabilities, and assessing developments for each commodity are an essential part of its ongoing responsibilities. The Government of Canada will ensure that its demands upon the minerals and metals industry are kept within reasonable levels and that information is disseminated to provinces and industry in a timely and useful manner. A two-way flow of information is to be encouraged and the government will be looking to advice from industry and the provinces on developments in the national int crest.

THE MINERAL AND METAL POLICY OF THE GOVERNMENT OF CANADA

L INTRODUCTION

This policy statement sets out the Government of Canada's role, objectives and strategies for encouraging and promoting the exploration, development, production and utilization of the country's mineral and metal resources for the present and future benefit of all Canadians.

The directions adopted here have been guided by the following initiatives:

- the government's economic policy statement of November 8, 1984;
- the views and recommendations in the report of the Natural Resources Study Group of the Ministerial Task Force on Program Review; and
- the review of the study group's report by the House of Commons Standing Committee on Energy, Mines and Resources in its report of December 17, 1986.

Also reflected are the results of ongoing consultations since February 1985, involving discussions with industry associations, individual companies, organized labor, financial institutions and provincial departments responsible for mines and minerals, on a framework for government action in the minerals and metals sector. More recently, a series of regional forums was held to identify initiatives for responding to competition from other suppliers of minerals and metals.

The statement also takes account of an ongoing dialogue with the National Advisory Committee on the Mineral Industry, the National Advisory Committee on Mining and Metallurgical Research and the Independent Industrial Advisory Committee on Earth Sciences on issues of concern to the industry.

The policy described in the following pages defines a flexible and supportive role for the Government of Canada towards the minerals and metals sector, one that enables provincial governments and industry to respond to their particular circumstances and challenges. As such, it avoids a uniform, national blueprint for mineral development. This would be incompatible with our federal structure and the realities of both a large and diverse country and a heterogeneous mining sector.

II. THE MINERALS AND METALS INDUSTRY

The minerals and metals industry is a vital segment of the Canadian economy. It provides a livelihood, directly and indirectly, for hundreds of thousands of Canadians from British Columbia to Newfoundland involved in exploration, mine development and production. Activities are concentrated in and around some 300 mines and processing facilities producing 60 different minerals and metals. In 1985 the industry accounted for 2.6 per cent of our Gross Domestic Product, 4.1 per cent of investment and 12.5 per cent of our export trade.

For many communities, minerals and metals are the key to their economic base. Some 120 **mining communities** in Canada depend largely on mining or mineral processing. Other communities serve as bases for fly-in - fly-out operations. Mineral development clearly is an important source for economic activity in rural Canada and in the North.

The movement of mineral and metal products constituted about half of rail traffic and a third of domestic shipping in 1985. These effects are felt far beyond the mine or processing plant and give this sector truly national dimensions.

A strong minerals and metals industry benefits every Canadian, but these benefits cannot be taken for granted. Important changes are taking place in mineral supply, demand, technology and marketing that will shape the future course of mineral development in th-is country.

III. A PERIOD OF CHANGE

The past fifteen years have been turbulent for the Canadian minerals and metals industry. Cyclical factors, including those associated with the energy crises of the 1970s and the international recession of 1981-83, tended to dominate supply-demand relationships. Not only did these factors contribute to a highly volatile international market, but they tended to produce unreasonable expectations about the ongoing prosperity of this industry and the constraints governing future industry investment.

The failure of world mineral markets to recover full y from the 1981-83 recession marked a significant turning point for the Canadian minerals and metals industry. Notwithstanding substantial cost cutting, productivity gains and corporate restructuring, industry's profits have remained low. International prices have decreased in line with falling costs of production and, despite efforts to raise throughput, industry revenues in real terms are lower than those for much of the 1970s.

The reasons for this situation have become more readily apparent. Underlying these cyclical fluctuations have been important structural changes taking place in world mineral and metal markets. World economic growth has slowed, and changes in the metal content of finished products and in the basket of goods and services demanded in industrialized countries have reduced the metal intensity of final demand. In addition, minerals and metals now face greater competition from a range of raw material substitutes such as ceramics, plastics and composites.

Finally, a rapid increase in the level and diversification of world mineral and metal production over the past decade has contributed to excess capacity.

Overlying these supply and demand trends are significant changes in the way that minerals and metals are traded worldwide. The increasing role of governments in both consumer and competitor countries has introduced new complexities, competitive pressures among producing countries are intensifying, and noncommercial factors are limiting opportunities for increased market penetration.

The importance of these changes is only now becoming fully appreciated. Investors, management and labor bear the major responsibility for responding. Governments, too, must ensure that their activities reflect changed circumstances.

IV. THE GOVERNMENT OF CANADA'S ROLE

The Government of Canada supports the exploration, development and production of minerals and metals and their utilization in domestic and export markets.

The role of the Government of Canada in relation to minerals and metals arises principally from its broad constitutional responsibilities for management of the economy, international and interprovincial trade, and matters affecting the national interest. In addition, certain activities can be more efficiently and comprehensively carried out at a national level: for example, research and development, the establishment of standards and the gathering of economic and scientific information.

The Government of Canada acknowledges and respects provincial responsibility for the management of the mineral resources within their boundaries. This responsibility was confirmed and strengthened by the Constitution Act of 1982. The need and desire to cooperate with the provinces to ensure a vigorous minerals and metals sector is a fundamental principle of federal mineral policy. The respective actions of federal and provincial governments must be complementary, and there must be a high degree of coordination and consistency in our respective policies and programs.

The Government of Canada believes that the private sector is best placed to allocate resources among alternative activities and investments. To survive and prosper in international mineral and metal markets require speed and flexibility, with decisions taken on the basis of sound commercial considerations. At the same time, fundamental and ongoing changes worldwide in mineral and metal supply, demand and technology, cannot be altered by government. Nothing that the Government of Canada can do, for example, will turn international mineral prices around. Canada, although a significant producer of many mineral and metal commodities, will remain a price-taker in world markets and will have to compete on the basis of the costs of production. In such a highly competitive world environment, the viability of the Canadian minerals and metals industry cannot be maintained through subsidies or other artificial support.

For these reasons, detailed strategies that attempt to identify and direct resources towards investment in specific commodities or technologies have been avoided. Ultimately, it is the private sector that must assess the risks, marshal the resources and deal with the outcome of its investment decisions. In directing the government's own resources towards the minerals and metals industry, the policies outlined here are aimed at a greater responsiveness to priorities identified by the private sector.

V. THE OBJECTIVES OF MINERAL POLICY

In promoting the exploration, development, production and utilization of Canada's mineral and metal wealth, the Government of Canada has set six principal objectives:

a. to provide a fair and balanced fiscal and regulatory framework;

b. to foster the development of the minerals and metals sector as a foundation for regional economic development;

c. to promote improved technological performance and increased international competitiveness in all facets of the industry;

d. to assist workers and communities affected by industrial adjustment

e. to facilitate enhanced mineral and metal exports and access to new and traditional markets; and

f. to provide timely and accurate economic, technical and scientific information required by the industry and by the federal and provincial governments, labor and the general public.

Within these broad objectives are specific initiatives and programs that constitute the Government of Canada's strategy for the minerals and metals sector. Consistent with federal budgetary constraints, these activities are to be undertaken with currently available personnel and financial resources.

A. A Balanced Fiscal and Regulatory Environment

The minerals and metals industry is subject to a broad range of federal and provincial fiscal and regulatory policies that influence investment and competitiveness. Some of these policies are aimed directly at the minerals and metals sector. Others

are not so specifically targeted, but are part of the wider policy environment in which this industry and other industries operate. The Government seeks to provide a fair and balanced fiscal and regulatory framework that will encourage the optimum development of Canada's mineral and metal resources. Stability in the fiscal and regulatory regime is also recognized as an important characteristic of sound policy.

MINERAL TAXATION

The tax system is an element in fostering investment, maintaining competitiveness and promoting a positive investment climate. The role of the federal and provincial tax systems is important. The Government of Canada imposes corporate income tax and, in the territories, mining royalties. The provinces impose provincial corporate income tax as well as mining taxes and royalties. Other indirect taxes and charges also apply at federal and provincial levels.

From the beginning of its mandate, the Government of Canada has made clear its intention to review the current tax system. Some important improvements have already been introduced in a gradual and measured way. Further and more comprehensive reforms of the tax regime will be based on the principles of fairness, simplicity, economic growth, competitiveness and stability of tax revenues. The aim is to provide a fairer tax system and to encourage a continuing improvement in the competitive position of our economy and the private sector, consistent with our commitment to greater social justice. The income tax system should be simpler to understand and to comply with, and should provide an environment that more effectively encourages productive economic activity. In addition to the reform of the income tax system, the sales tax system is also in need of reform to remove the serious competitive biases that now deter Canadian exports and favor imports.

REGULATORY REFORM

Investment and competitiveness in the minerals and metals sector are also influenced by a variety of regulatory requirements and government-mandated programs. The government recognizes that these requirements can impose significant costs on mining and processing operations. Consequently, new federal legislation and regulation are reviewed to ensure that federal regulatory action is aimed at promoting greater economic and administrative efficiency, while maintaining protection for the public. Annual publication of the Federal Regulatory Plan provides information about proposed regulatory action over the coming year, thereby enabling all affected groups to comment on proposals. The Government of Canada recognizes the vital role for an efficient marketplace and a dynamic entrepreneurial spirit, and that regulation should not impede these values without the most persuasive justification. The rate, growth and proliferation of new regulation will be limited as much as possible while protecting the public wherever appropriate.

FOREIGN INVESTMENT

Foreign capital has played a significant role in developing the country's resource potential. Recognizing this, the Government of Canada acted early in its mandate to remove barriers to foreign investment and, through the Investment Canada Act, to create a positive climate for new equity investment. Canadian ownership and control of the minerals and metals sector are generally at satisfactory levels and the industry is attracting adequate interest from both domestic and foreign investors. Accordingly, the government has set aside the practice of seeking 50 per cent to 60 per cent Canadian equity in new nonfuel mineral resource projects.

TRANSPORTATION

The new national transportation legislation will reduce economic regulation and permit greater reliance on market forces within the transportation sector. The changes will benefit rail shippers considerably. The legislation eliminates collective rate making and gives shippers more flexibility to negotiate improved rates and services through the use of confidential contracts. Captive rail shippers will benefit from competitive rail access as well as dispute-resolution mechanisms. Confidential contracts will also permit railways to compete more effectively for transborder traffic. The Government of Canada believes that the new transportation legislation will be of major benefit to the minerals and metals industry, one of the principal users of rail transportation.

ENVIRONMENTAL PROTECTION

The preservation of environmental quality is essential to the protection of Canada's resource base. Acid rain, toxic waste management, and land management and rehabilitation raise important issues and responsibilities for the minerals and metals industry and for government. The Government of Canada takes the view that the early identification and prevention of potential environmental problems hold the key to environmental protection. To this end, it supports the incorporation of environmental principles into mineral development and fosters a philosophy of sustained growth that integrates renewable resources and environmental imperatives with economic, commercial and technological considerations. This early integration can result in greater cost effectiveness than efforts to restore environmental quality after the fact.

The government recognizes, however, that measures to deal with existing environmental questions may impose on the industry additional costs that are

not faced by many of our international competitors. Accordingly, some $150 million has been allocated to assist companies in meeting more stringent environmental standards through the Acid Rain Abatement Program. This program is an important element in Canada's commitment to reducing sulphur dioxide emissions by 50 per cent by 1994.

OFFSHORE MINERALS

There is increasing private-sector interest in exploring the Canadian continental shelf and the 200-mile economic zone. However, federal-provincial jurisdictional difficulties that prevent the awarding of clear titles to possible mine sites and the lack of an appropriate regulatory framework are inhibiting the development of identified deposits. The Government of Canada intends to establish, in full cooperation with the provinces, a legal and regulatory regime which will facilitate Canada's ability to secure maximum benefits from its offshore mineral resources. In this context, it is seeking to develop a simple, uniform and cooperative management system for mineral development activities across all areas of Canada's continental shelf.

THE NORTH

The Government of Canada, through the Department of Indian Affairs and Northern Development, also has provincial-type responsibilities for mineral and metal development in the Northwest Territories and Yukon. Consistent with these responsibilities, a Northern Mineral Policy has recently been released. Its objective is to further encourage investment in northern mining and to ensure that the industry retains its international competitiveness. It seeks to take into account the special circumstances and needs of the mineral sector in the Yukon and Northwest Territories. By creating an atmosphere of greater certainty, by improving geoscience activities and government services and by providing for a better dialogue on northern mineral issues, the Northern Mineral Policy will help to strengthen the economy in each territory.

B. Regional Mineral Development

Canada's minerals and metals industry has contributed greatly to regional economic development and prosperity. The industry has been a leader in extending Canada's frontiers. Many parts of the country owe much of their current economic activity to mining and mineral processing. The integral part that the minerals and metals sector plays in many areas of Canada and the lack of alternative, viable economic opportunities means that this industry will continue to be an important element in the Government of Canada's regional development strategy.

The Government of Canada is committed to fostering the development of the minerals and metals sector as a foundation for regional economic development.

Federal-provincial Mineral Development Agreements (MDAs) serve this objective by strengthening and diversifying the minerals and and metals sector of the provincial and territorial economies. The agreements provide for specific initiatives within each province or territory based on local interests and priorities, including geoscience, mining and mineral technology, economic evaluation, infrastructure support and other development assistance. A system of industry advisory forums has evolved within each agreement to guide the planning and execution of MDA programs. There is also an increasing trend toward industry cost sharing where this is appropriate. These developments will be encouraged and strengthened. MDAs have already been signed with nine provinces and the Yukon. A total of $138 million over five years has been allocated to this program.

C. Technological Advance

Technological innovation will be critical to the continued strength of the Canadian minerals and metals industry in the face of slow growth in world demand, the introduction of new industrial materials and concerns for adequate environmental protection. A primary aim of the Government of Canada is to promote improved technological performance and increased international competitiveness in all facets of the industry.

The Government of Canada has identified science and technology (S&T) and research and development (R&D) as important instruments for enhancing industrial competitiveness. To ensure an optimum national effort, the government has adopted a National Science and Technology Policy involving the federal, provincial and territorial governments. Of particular relevance is the industrial development of advanced technologies (e.g., microelectronics, advanced industrial materials, biotechnology) and their application in the resource industries. Several other policies (e.g., Technology Centres Policy) deal with the application of federal S&T resources to promote increased industrial competitiveness. Additional federal policies deal with health and safety and environmental standards. These general government policies are relevant to the minerals and metals sector and the development of related technologies in the sector's industrial operations.

RESEARCH IN SUPPORT OF INDUSTRY

In the minerals and metals industry, as in other industries, an individual company that invests in research and development expects to capture the

benefits for itself. If it cannot hold the results proprietary it gains no competitive advantage and has little incentive to undertake the research. **Because the benefits of basic, precompetitive research are difficult to capture, government support** for such work is commonplace in Canada and in other countries.

Increased involvement by the private sector in setting priorities and sharing the costs of government research in support of industry is a central principle of the government's new Science and Technology Policy. The Canada Centre for Mineral and Energy Technology (CANMET) maintains a broad range of S&T expertise, coupled with special equipment and facilities to serve many industrial needs and a wide variety of companies. In a world of limited financial resources, the most effective way to use these facilities is for the private sector to join with government in technology development. Accordingly, the Government of Canada's mineral-related R&D funds will be used as a lever to increase expenditures in the private sector.

Such a strategy can be especially effective if several companies join to research precompetitive technologies, before developing them in their own laboratories to suit their individual market and operating demands. In this way, the minerals and metals industry would assume a larger proportion of the R&D cost burden but would also benefit more directly from the research. Experience with such shared projects in recent years has convinced the government of the merit of this approach. Examples include ground control in Ontario mines, potash mining technology and increased productivity in the iron ore industry.

For the many small companies with little or no R&D capabilities, large joint projects are impractical. Other strategies such as workshops, demonstrations and personal contacts help management to analyze and develop their operations. Small research-oriented companies making advanced products require R&D contracts and grants, and access to the wide S&T experience of organizations **such as** CANMET to reinforce their modest R&D capabilities.

Government has stressed how important S&T is to economic progress. Consequently, the government, through CAN MET, **must ensure that Canadian operators have access to the technology, information and** scientific awareness they need to lower production costs, improve productivity and introduce new technological developments.

Because it can produce only 2 per cent to 3 per cent of the world's technology, Canada has made good use of foreign technology in the past. A continuing national effort is needed to ensure that external technological developments are evaluated for **their** usefulness and competitiveness to Canadian operations, **and that they are available in suitable** forms for integrating into Canadian operations in the minerals and metals sector. The government will promote the Technology Inflow Program to help achieve this.

HEALTH, SAFETY AND ENVIRONMENTAL RESEARCH

There are areas, however, where market incentives for individual companies to **pursue technological advances may be insufficient.**

Research and development in health and safety and environmental protection may yield little, if any, competitive advantage to an individual company, yet these serve the broader interests of all Canadians. Although the frequency of mine accidents has declined, serious injuries and fatalities still occur. Exposure to noise, dust and fumes poses health hazards to workers. Flue gases, mine tailings and effluents can also cause environmental damage, to be paid for by generations to come. The Government of Canada is committed to working with industry in the early identification of health, safety and environmental hazards and the development of safe and environmentally sound technologies and standards for the minerals and metals industry.

The government also has important responsibilities for certain standards and regulations on performance and safety (e.g., explosives and radiation protection), as well as for national and international harmonization of standards and regulations and the coordination of provincial and industrial efforts. Other standards, such as materials performance and certification of critical skills and equipment, can influence the industry's operations and products considerably. In cooperation with other interested groups, industry and government must work **together** to set, revise and harmonize Canadian and world standards. The **government believes that well** defined national standards can provide Canadian industry with strong competitive **advantages.**

INDUSTRY LINKS

To implement these new directions, the strong links **between** CANMET **and the minerals and metals industry** will need to be reinforced. Recognizing this, the Government of Canada is strengthening the National Advisory Committee on Mining and Metallurgical Research to give it a more direct role in the planning **and execution of** CANMET's R&D programs. Renamed the **Minister's** National Advisory Council on CANMET, one of its main aims will be to ensure that CANMET's activities are more closely targeted to the needs of the industry.

Over the longer term, additional changes to **CANMET's** organization and funding may be **considered.** The National Advisory Council on CANMET will play a key role in charting the future course of the government's minerals- and metals-related R&D.

In the meantime, CANMET will continue its efforts to provide for the most productive use of its resources and to ensure that government funds are used as a lever to promote increasing private sector expenditures, through jointly funded projects and industry secondments whenever possible.

D. Labor and Community Adjustment

The minerals and metals industry, and the workers and communities dependent upon it, have always been subject to the vagaries of the economic cycle. Now, the pressures of structural change are imposing additional uncertainties on communities and workers. The Government of Canada recognizes that efforts must be made to assist workers and communities affected by industrial adjustment.

The government cannot insulate workers and communities from downswings in international mineral markets, but it recognizes that layoffs and closures are costly in human and economic terms. It has therefore implemented a series of programs designed to ease the adjustment process and to get people back into the workforce. The Canadian Jobs Strategy offers many flexible program solutions to the circumstances faced by workers and mining communities. Noteworthy are programs to retrain displaced workers and to assist workers in relocating to regions of greater job opportunities.

The Government of Canada, in cooperation with provincial governments, employers and labor organizations, has looked closely at the problems of mining communities. The recommendations of the *1982 Report of the Task Force on Mining Communities* many of which have been implemented, have helped governments to respond more effectively to mining community problems. More recently, federal and provincial ministers responsible for mines have focused on identifying ways to finance mining community adjustment.

Economic diversification has frequently been cited as a key to the future for many mining communities. Unfortunately, history has shown that not all communities will survive the closure of the mines on which they depend. For others, concerted economic development efforts can renew their economic viability.

Through the Canadian Jobs Strategy, the Government of Canada promotes economic diversification in single-industry towns. The Community Futures Program is based on cooperation between the federal government, local representatives from business and labor, and the provinces to address specific local problems and encourage economic development. This initiative is very promising, and many mining communities in several provinces have already been selected for the program.

The Industrial Adjustment Service (IAS) of Employment and Immigration Canada is also a time-proven program that operates at the firm, sector and community levels. IAS can bring together management, labor and community representatives to identify and generate innovative solutions to the problems of labor adjustment raised by current or anticipated dislocations in the minerals and metals sector.

The Government of Canada remains committed to working with labor organizations and mining communities, along with provincial and territorial governments, to assist the workers affected by industry rationalization and to enable mining communities to achieve their full economic potential.

Although government has an important role in labor and community adjustment, government programs can never provide all the answers. A tripartite approach, involving leadership by employers and labor and supported by all levels of government, is essential. The basis for more extensive cooperation to address the problems facing this sector appears more positive than ever. While respecting the primacy of the collective bargaining process in Canadian labor-management relations, the Government of Canada will actively encourage initiatives by labor and management which seek to enhance communication and permit both parties to participate jointly in strengthening Canada's minerals and metals sector.

E. Commercial Policy and Market Access

Canada's export efforts in the minerals and metals sector must respond to the business and trade practices of our customers and competitors. The international marketing of these commodities% now more complex than during the 1960s and 1970s. Cost competitiveness remains essential but it is no longer enough. Noncommercial factors are often of prime importance in sourcing decisions by customers. Hence, while the marketing of Canada's minerals and metals remains a private sector responsibility, the current reality requires that the Canadian industry have strong support from government. The aim of the Government of Canada is to cooperate with industry to facilitate enhanced mineral and metal exports and access to new and traditional markets.

The government believes that international trade in minerals and metals should be governed by market principles. It strongly supports such major institutions as the General Agreement on Tariffs and Trade, which aims to maintain an open and secure world trading environment and is actively engaged in a new round of multilateral trade negotiations launched in September 1986 at Punta del Este, Uruguay.

The United States is the largest market for Canada's minerals and metals, accounting for about

half of our total production. A bilateral trade agreement with the United States will be important for sustained and secure access to this market. Canadian exporters of minerals and metals have not been immune from repeated U.S. producer efforts to inhibit imports, regardless of competitive market considerations and U.S. consumer interests. The Canadian minerals and metals industry stands to gain much from more open and favorable access to its major export market.

MINERAL MARKET INTELLIGENCE

The increasing role of foreign governments in minerals and metals trade can present problems with which the Canadian private sector alone is not always well equipped to deal. The Government of Canada has an important *role* to play in briefing and debriefing industry on developments in global minerals and metals trade. Timely, relevant and incisive market information and analysis on consuming and competitor countries are an essential component of any initiative to improve commercial policy and market access for the minerals and metals industry. Effective dissemination of this information can improve the export strategies of individual Canadian companies. Mineral market intelligence and reporting will play an increasingly important role in the early identification of market opportunities and the planning of export financing and other types of marketing assistance.

Through the Department of Energy, Mines and Resources and the Department of External Affairs, the Government of Canada has an extensive network for following up on important industry developments. The reporting requirements from each post abroad vary depending upon the importance of each country as a producer or as a market for Canadian products. In some posts of prime importance to the Canadian minerals and metals industry, specialized mineral counselors carry out this liaison function, while in other posts and missions serving multilateral organizations, Canadian government trade officers perform these tasks.

MARKETING IMISSIONS

The government has a key role in organizing technical and marketing missions to open doors in those countries where government involvement is a prerequisite to market success. This is especially true in centrally planned economies and also in certain developing countries where governments take a very active role in domestic economic and trade management.

The government must also help preserve access for Canadian suppliers to traditional markets, as well as assist in the development of new market opportunities. In all these market support efforts, some of which warrant ministerial involvement, Canada's ability to provide a secure, long-term source of minerals and metals will be repeatedly emphasized.

MARKET TRANSPARENCY

The Government of Canada supports the need for greater market transparency for minerals and metals and the establishment of international commodity arrangements on a case-by-case basis. Intergovernmental commodity study groups can improve awareness of how national policies interrelate with the realities of international trade. For lead and zinc, a successful intergovernmental consultative arrangement has been in place for more than a quarter of a century and similar opportunities are being explored for other mineral commodities. The views of industry will be an important consideration in decisions regarding Canadian participation in such organizations.

DEVELOPMENT AND EXPORT FINANCING

The government acknowledges that mineral development, particularly in the less developed countries, will remain an important and growing source of supply for many minerals and metals, in competition with Canadian industry. It also recognizes the important role that mineral development can play in the economic growth of those countries. Accordingly, in providing official development assistance in support of mineral projects abroad, the Canadian International Development Agency (CIDA) takes fully into account the economic viability of the project, its developmental impact on the recipient country, its impact on international mineral markets and its effect upon Canadian industry. [Much of this assistance is delivered through Canadian geophysical and engineering companies. As a result, Canadian industry has carved out important international markets that extend well beyond the initial development assistance.

Similarly, with respect to export credits delivered through the Export Development Corporation (EDC), the Government of Canada takes fully into account the economic, financial and commercial viability of projects and the ability of Canadian firms to implement the projects and supply equipment and services in countries considered to be credit-worthy. Consistent with our international obligations, such EDC financing is at rates not less than those determined by the OECD Consensus on Official Export Credits, which for developed countries are very close to commercial rates.

CIDA and EDC may jointly provide financing to a project in certain less developed countries, provided all normal EDC and CIDA financing criteria are met. In cases where Canadian exporters are being confronted with mixed credit competition, the

Government of Canada may decide to supplement EDC financing with appropriate confessional financing in order to put Canadian exporters on an equal footing with their competitors. However, the Government of Canada continues to work to limit the use of confessional financing within the OECD consensus. It should be noted that the consensus prohibits the use of confessional financing for exports to developed countries.

F. Economic and Scientific Information

As a part of its mineral policy, the Government of Canada will ensure that its role of providing timely and accurate economic, technical and scientific information required by the minerals and metals sector, labor organizations, federal and provincial agencies and the general public is developed to the maximum.

GEOSCIENTIFIC INFORMATION

Because mines have a finite life, the industry must constantly renew itself through the exploration and development of new deposits. But exploration is risky. Valuable deposits of minerals and metals are extremely rare, representing only a tiny fraction of the cart h's crust. Government support of basic geoscientific information and mapping will continue as a means of reducing exploration risks and avoiding costly duplication of efforts by the private sector.

The Geological Survey of Canada (GSC) has in place several R&D streams to increase the effectiveness of mineral exploration and development and to improve the future technological performance of industry. To maintain our competitive position we must improve our understanding of the formation of mineral and metal deposits. The GSC will continue to devote resources to this task to enhance the industry's capacity to discover new world class deposits.

The GSC is also developing sophisticated data integration and high-speed processing techniques to permit faster recognition and higher quality interpretation of mineral and metal deposit signatures. GSC work on terrain hazards, including unstable slopes, foundation and permafrost conditions, addresses specific mineral development questions related to siting, design, construction and mitigation of environmental impact.

The GSC's national facilities can also achieve the economies of scale and critical mass required for such specialized activities as developing seafloor mapping and exploration technologies and for the research, development and testing of advanced geoscientific methods, including airborne geophysical systems. Finally, the GSC will maintain its cooperative programs with other national and international organizations, to provide access to an important global network that is a basis for monitoring and anticipating developments influencing mineral and metal markets.

Geoscientific information is also essential to governments as background for developing and maintaining mineral-related policies and regulatory frameworks, in better understanding industry's circumcumstances and conditions, and in facilitating national and regional inventories of mineral and metal resources or future resource potential. The GSC will continue to conduct resource assessments and to provide updated mineral intelligence to assist government agencies in policy development, planning and regulation. In addition, geoscienti fic information serves many public purposes, including identifying areas of seismic risk and naturally occurring toxic elements, effective land use planning, identifying potential oil and gas deposits and defining the seaward extension of Canada's boundaries. On a national sale, the GSC will continue to concentrate on providing an up-to-date national geoscientific knowledge base that simultaneously serves a variety of government policy needs, including minerals and metals programs, public safety, national security and sovereignty considerations.

Provincial governments also acquire and disseminate geoscientific information. The resources available to geoscience in individual provinces may vary, depending on the interests and priorities of provincial governments concerning their nonrenewable resources and regulation of associated industrial activity. The GSC will continue to work closely with provincial agencies and to complement their activities in the minerals and metals field. Regional. projects will be carried out in close cooperation with the relevant province, particularly under federal-provincial mineral development agreements.

The National Mineral Inventory, managed by the Mineral Policy Sector, describes some 19 500 known mineral and metal occurrences in Canada. It is used by government to analyze and assess mineral development activities and by industry and prospectors to plan for exploration programs. Considerable effort is required to establish and maintain the inventory, but it is a necessary source of basic information for commercial exploration. Users of the system have requested that the coverage be expanded and that the service be fully computerized. The Government of Canada will ensure that the National Mineral Inventory provides an effective service to industry.

ECONOMIC INFORMATION

The government also has a role and responsibility in gathering and disseminating information essential to its regulatory functions. Collecting basic industry statistics, monitoring of ore reserves, exploration, production and processing capabilities, and assessing

developments for each commodity are an essential part of its ongoing responsibilities. The Government of Canada will ensure that its demands upon the minerals **and metals industry** are kept within reasonable levels and that information is disseminated to provinces **and industry in a timely and** useful manner. A two-way flow of information is to be encouraged and the government will be looking to advice from industry and the provinces on developments in the national interest.

VI. CONCLUSIONS

This statement defines a flexible and supportive policy framework for the minerals and metals sector. It acknowledges and respects the role of provincial governments in resource development and responds to the needs identified by the private sector.

In its objectives and strategies for the minerals and metals sector, the Government of Canada has identified policy responses that take account of the changing and more difficult international trading environment facing this industry. It recognizes that fundamental changes in mineral and metal supply, demand and technology are taking place worldwide, and that in such a highly competitive world market, decisions must be taken on a sound commercial basis. Strategies that attempt to direct resources towards specific investments and technologies, or to support unproductive activities or those that are not commercially viable, are not appropriate.

The Government of Canada recognizes the substantial contribution that the minerals and metals industry has made, and can continue to make, to national economic well-being and to social and regional development in Canada. This industry provides an important livelihood for many Canadians, especially in more remote locations, and is an avenue for employment and investment in many downstream activities and associated service industries. Maintaining a strong and viable minerals and metals industry will benefit every Canadian.

APPENDIX

FACTORS AFFECTING THE PERFORMANCE OF THE CANADIAN MINERALS AND METALS INDUSTRY

INTRODUCTION

The past 15 years have been a turbulent time for the Canadian minerals and metals industry. This period, characterized by sharp price swings in response to shifts in supply and demand, contrasts with the stable, gradually rising minerals and metals prices of the 1950s and 1960s.

In these circumstances, it is appropriate to review the Canadian industry's performance over this period in order to appreciate those initiatives that have already been taken to maintain its international competitive position and the factors that are likely to shape its future development.

THE INTERNATIONAL CONTEXT

Mineral Prices

Much of the volatility in international minerals and metals prices during the 1970s and 1980s can be attributed to the exaggerated economic cycles experienced during this period. Figure 1 shows the real price trends for Canada's major metals, demonstrating the magnitude of the cycles that have hit the industry. Early in the 1970s, concerns about the scarcity of resources and security of supplies, linked with the energy crisis, boosted mineral prices and promoted greater mineral investment during 1973-74, both in Canada and abroad. The subsequent downturn in international economic activity and continuing slower growth in the major industrialized countries substantially reduced demand for minerals and metals, resulting in an excess supply and lower prices. This cycle was largely repeated beginning in 1979-80, but economic policies to bring down inflation in the western world plunged the international economy into a major recession during 1981-83, from which minerals and metals prices have yet to recover.

Although not shown here, the prices for nonmetallic minerals have a similar history. For example, potash prices also peaked in 1980 and have declined since then as well. By year-end 1985, potash prices in the United States (which absorbs about 70 per cent of Canadian production) had fallen to the lowest on record since Canadian producers entered the market in 1962, and recovered only slightly during 1986. Prices for export coal held up longer than those for other minerals, peaking in 1982. However, several price cuts in recent years have reduced average 1986 export prices to levels 20 per cent below those of 1982.

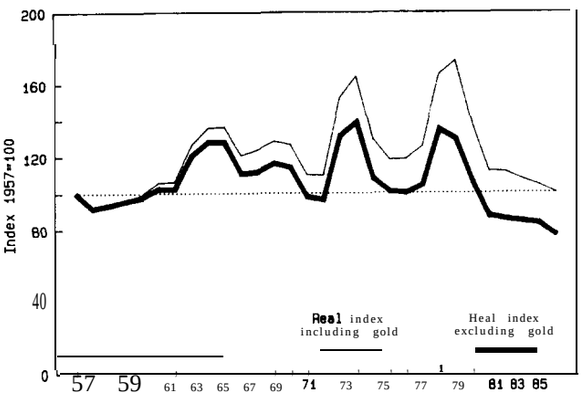
The outstanding exception to this trend, of course, has been gold. Gold prices have consistently outperformed those of other minerals and metals, showing a sustained increase in real terms over the period shown in Figure 1. Taken together with other commodities, real prices received by Canadian producers during 1986 were at the same level as in the mid-1 950s, indicating that gold has been able to offset, at least until now, the declining real price for other metals. As a natural consequence, gold has attracted an increasing share of industry exploration and investment.

Structural Change

Several factors have contributed to the collapse of real prices for minerals and metals during the 1980s. Recent periods of economic instability have tended to mask important structural changes taking place in these markets on both the demand and the supply side. In addition to a slowdown in the rate of world economic growth, which has reduced the rate of growth in world demand for minerals and metals, there has been a significant decline in the quantity of

FIGURE 1

CANADIAN REAL METAL PRICE INDEX
1957 - 1986



Note: Index adjusted using the GNE deflator. Index weighted by production including copper, iron ore, zinc, gold, nickel, silver, lead and molybdenum.

Figure 1 is based on a price index developed by the Mineral Policy Sector at Energy, Mines and Resources Canada. The index includes copper, iron ore, zinc, gold, nickel, silver, lead and molybdenum and covers more than 82 per cent of Canadian metal production. Prices used originate in *Metals Week* and *World Bureau of Metal Statistics.* The iron ore price index is a composite iron ore price index developed by the sector. Prices have been weighted according to production. Nominal values are adjusted using the Canadian GNE deflator.

minerals and metals required to produce a given unit of output over the last **decade or so. Technological innovation** has been a driving force of such change.

This process is captured in the concept of intensity of use, which measures the consumption of a material per unit of national income. For minerals, this has been on the decline in the industrial world for many years. The intensity of use of most metals rises in the early stages of an economy's industrialization and then falls as this process continues. There is now some concern, however, that this relationship may not hold to the same extent for newly industrializing countries. Technological change and new materials may permit a country to partially 'skip' the more metal-intensive stages of the development process, contributing to a more pessimistic **outlook** for growth in mineral and metal demand.

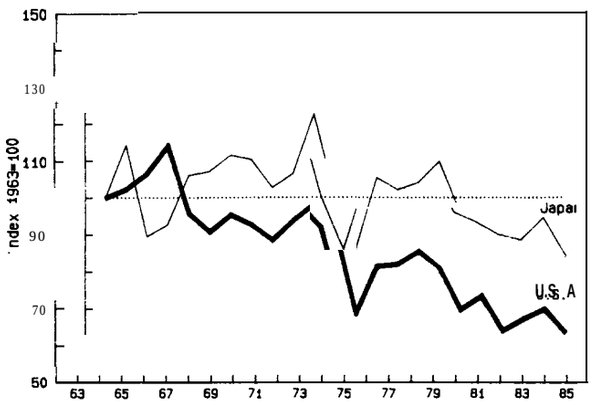
Two forces have contributed to this declining intensity of use for minerals and metals; one product related and the other related to changing industrial structure. On the product side, improved technology has **enabled mineral-consuming industries to cut costs and to maintain or improve performance by reducing the metal content of products.** This has been achieved through downsizing, more efficient use of minerals and metals, and the application of newly developed substitutes. Second, the mix of goods demanded in mature industrialized economies has shifted away from material-intensive products in favor of knowledge-based industries and services. Heavy industry and infrastructure development have been replaced by service and high-technology industries as the major sources of growth in developed countries.

As an indication of the decline in intensity of use for minerals and metals in recent years, Figure 2 shows physical base metal consumption, using constant 1980 values as weights, as a proportion of real Gross National Product (GNP) in the United States and Japan since 1963. Consumption as a share of GNP has clearly been on the decline in the United States since 1966 and in Japan since 1973. These trends capture the effect of declining intensity of use in these two important consuming markets. Thus, although total mineral consumption is increasing in these economies, it is not keeping pace with overall economic growth. These trends are expected to continue and possibly accelerate as further technological advances are made.

Important structural changes have also been evident on the supply side. Relatively high mineral prices during the 1960s and 1970s encouraged mineral production in many countries. As a consequence, a much larger share of world mineral and metal production is now undertaken in countries like Australia and Brazil and in the developing world. In some cases, mineral development was seen as a means of promoting and financing economic development.

FIGURE 2

BASE METAL CONSUMPTION
AS A SHARE OF U.S. AND JAPANESE G.N.P.
(CONSTANT 1980 CURRENCIES)



Note: Index based on consumption of Cu, Pb, Ni and Zn in constant currency as a percentage of real GNP.

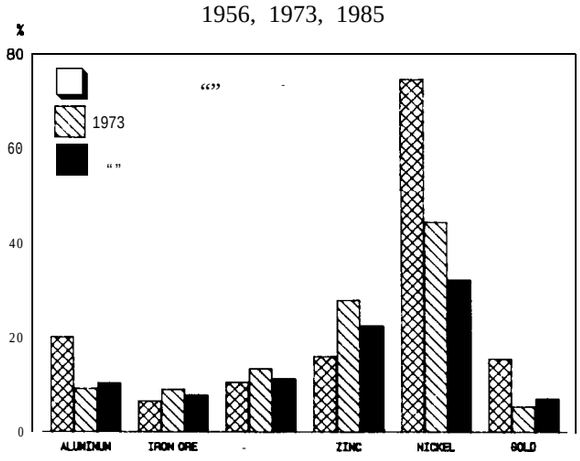
As Figure 3 shows, Canada's share of world mineral and metal production has changed substantially, primarily because of the increase in mineral production in other countries. Canada's share of nickel production has fallen sharply. Zinc, copper and iron ore have also declined slightly, after reaching a peak in the early 1970s. On the other hand, the earlier fall in the share of gold and aluminum production has been arrested, and investment in Canada is increasing.

The emergence of major new sources of supply has substantially increased price competition on world mineral markets. One manifestation of this process has been the collapse of producer pricing systems for nickel and aluminum and their replacement by a more open market system based on commodity exchanges. This has meant a dramatic reduction in the ability of producers of these commodities to influence the price of their products.

The impact of these structural changes has been compounded by a range of noncommercial practices. These have become more important determinants of the nature and structure of world mineral markets. For example, foreign exchange considerations have promoted greater use of barter and countertrade. Security of supply and diversification policies in resource-deficient countries have also limited the scope for increased sales by major mineral producers. Tariff and nontariff barriers, often increasing with

FIGURE 3

CANADIAN SHARE OF WESTERN WORLD PRODUCTION
OF SELECTED MINERALS AND METALS
1956, 1973, 1985



Note: **Smelter production** for aluminum; mine production for remaining commodities.

the degree of processing undertaken, continue to distort the pattern of world mineral trade. As a consequence, being the lowest cost supplier is not necessarily a guarantee of market access.

These changes in the structure of mineral markets have coincided with significant changes in international financial markets, following the collapse of the Bretton Woods system of fixed exchange rates in the early 1970s. The move to a flexible system of exchange rates has been accompanied by the progressive deregulation and internationalization of financial markets in OECD countries. As a consequence, short-term capital movements have become an important, and at times more significant, factor than trade flows in determining the relative values of the currencies of industrial countries.

In contrast, the exchange rates of mineral-producing countries in the developing world are still largely determined by trade flows, and thus ultimately by the prices of their major export products. Even in the trade area, the exchange rates of industrialized countries such as Canada are influenced by a larger basket of goods and services. Unlike many of our mineral competitors, therefore, Canada's exchange rate does not necessarily adjust to changing mineral prices. Canadian producers can be faced with falling U.S. dollar mineral prices and an appreciating Canadian dollar, both of which depress the value of export receipts in Canadian dollar terms.

THE CANADIAN MINERALS AND METALS INDUSTRY PERFORMANCE, 1963-1986

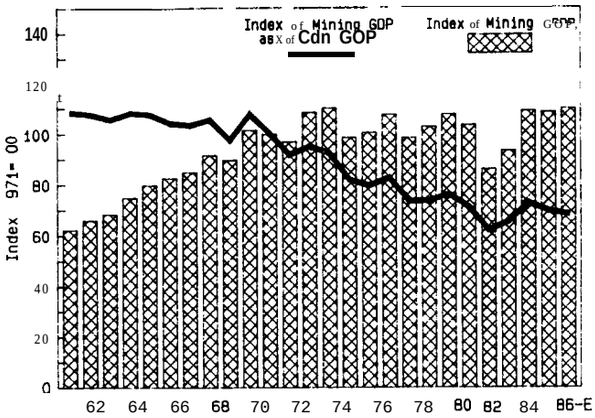
The Changing Position of the Industry in the Canadian Economy

On the basis of aggregate mine output, the Canadian minerals and metals industry has gone through two distinct phases since the early 1960s. Real value added in this industry increased steadily between 1960 and 1970 from $1.9 billion to $3.1 billion (in 1971 dollars). This accounted for a fairly constant 4 per cent of total Canadian GDP, meaning that the industry was able to keep pace with growth in the Canadian economy. However, following the initial downturn in mineral prices early in the 1970s and the subsequent volatility in commodity markets, the situation has changed. Real value added in the industry has remained at roughly the same level since 1970, while other **sectors** of the economy have continued to experience relatively strong growth (Figure 4). As a consequence, the industry's share of real GDP had fallen to about 2.6 per cent by 1985. This represents a reduction of some 35 per cent in the industry's share of total Canadian GDP since 1970.

This stagnation in mineral and metal industry growth and the decline in its share of Canadian GDP is mirrored in the level of capital expenditures in the industry over this period. The pattern of expenditures shown in Figure 5 is generally consistent with the price trends portrayed in Figure 1. Over the late

FIGURE 4

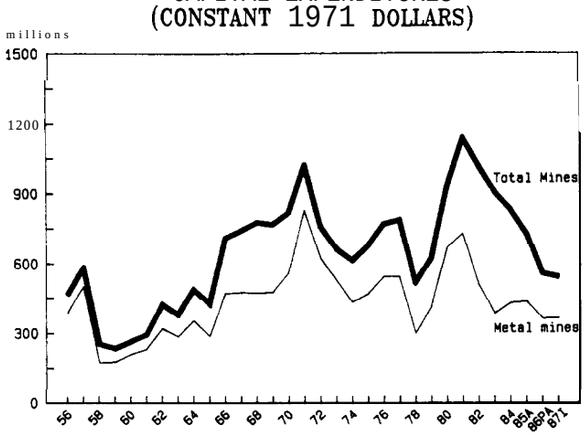
CANADIAN MINERALS AND METALS INDUSTRY
GROSS DOMESTIC PRODUCT
(CONSTANT 1971 DOLLARS)



Note: Includes metallic and nonmetallic minerals to the refined stage. E-Estimate

FIGURE 5

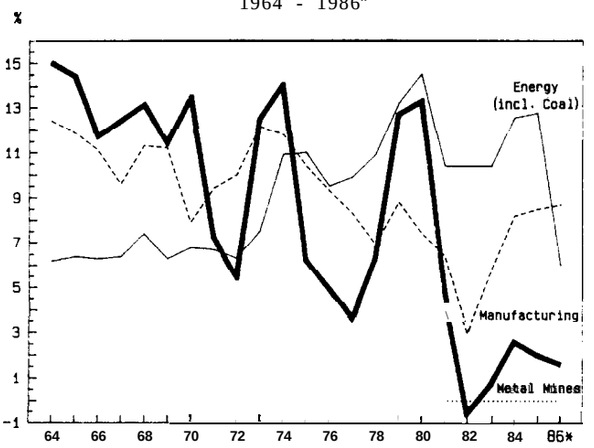
CANADIAN MINERALS AND METALS INDUSTRY CAPITAL EXPENDITURES (CONSTANT 1971 DOLLARS)



Note: EMR composite capital cost index used as deflator. A-Actual; PA-Preliminary Actual; I-Intentions

FIGURE 6

RETURN ON CAPITAL (INFLATION ADJUSTED) BEFORE TAX: MINING, MANUFACTURING AND ENERGY 1964 - 1986"



Note: Crown royalties treated as a cost. * Estimate based on first two quarters of 1986

1970s and early 1980s, coal and precious metal projects accounted for the major proportion of this investment. With the completion of the major coal projects around the turn of the decade, investment has been on the decline. The year 1987 marks the seventh straight year for declining mining investment in Canada, the longest uninterrupted decline in the industry's post - World War 11 history. It is noteworthy that much of the current investment is in the gold sector.

Industry Profitability

One of the main reasons for the decline in capital expenditures in the minerals and metals sector is apparent in Figure 6. During the 1960s, the real return on capital **for metal mines** in Canada was strong and, in fact, better than that for the manufacturing or energy sectors. These high rates of profitability were associated with steadily rising real capital expenditures, which increased mining GDP and maintained its share of the expanding Canadian economy. Since 1970, however, the industry's real return on capital has been highly variable, with the predictable consequences for investment in the minerals industry. Notwithstanding the two major cyclical fluctuations, which temporarily restored industry returns to 1960 levels, industry profitability has **been on a downward trend** since the early 1970s. Indeed in 1982, the industr y's real return on capital was negative for the first time since World War 11. This is in marked contrast to the less volatile trends for energy and manufacturing.

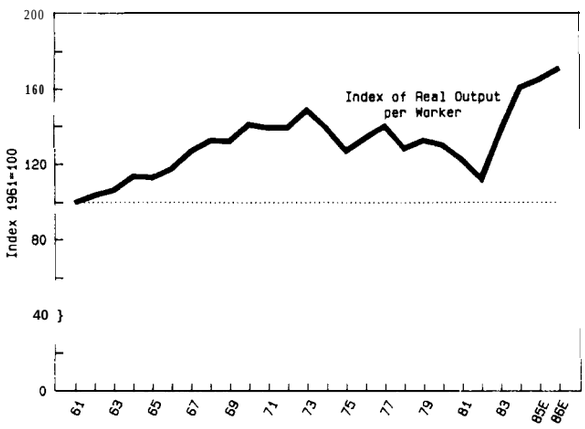
The real return on capital for the nonmetal mining sector (not shown) has been lower than that for metal mining since the late 1970s, and has been negative since 1982. This has been largely due to the situation in the asbestos and potash sectors. The profitability of the asbestos industry has been severely affected by health and environmental concerns in Western Europe and the United States.

An important factor in the industry's declining profitability y **during the 1970s** was falling productivity. The trends in real output per worker shown in Figure 7 reflect the impact of all those inputs into the production process that affect the productivity of labor: age of plant and equipment, ore grades, waste-to-ore ratios and mining methods, as well as the quantity and quality of labor. Changes in technology and mining methods lead to different relationships between capital and labor, and ultimately to changes in output per worker.

Between 1973 and 1982 total industry employment rose steadily while real output stagnated so that real output per worker fell by some 30 per cent. The effect of this decline in productivity was com**pounded by a 30** per cent increase in real weekly earnings, mostly between 1973 and 1976. The result of these developments was an increase in the industry's unit labor costs. This additional cost pressure whittled away much of the benefit resulting from the higher prices prevailing from 1974 to 1976 and from 1979 to 1981.

FIGURE 7

CANADIAN PRIMARY MINERAL PRODUCTION
TRENDS IN PRODUCTIVITY
1961 - 1986



E-Estimate

Industry Rationalization

The Canadian industry has responded to the collapse of world mineral prices during the 1980s with sustained cost cutting, productivity improvements and corporate restructurings. High-cost mines have reenclosed, Iess profitable operations soldoff and new mining plans and methods adopted with the aim of lowering costs and expanding output. In some cases, the closing of high-cost operations has been accompanied by a pooling of remaining facilities in a given area into a single operating partnership. This has enabled companies to reduce unit operating costs significantly by concentrating productionat the highest grade ore-bodies and by using the most efficient processing plants within their combined properties. Along with the rationalization of existing operations, the industry has increasingly focused its exploration efforts and capital investment on expanding the production of gold, the one major mineral where margins are still healthy.

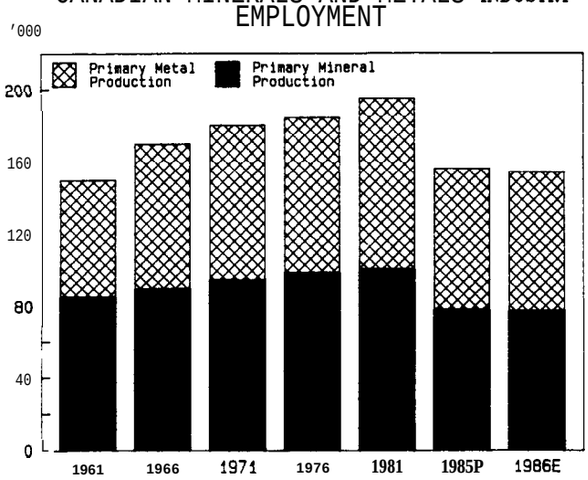
This adjustment process has also produceda fundamental realignment of theindustry's ownership structure. Many nonmining companies that invested heavily in the industry in the 1970s have since lost enthusiasm for their investments and have sought to sell their mining company holdings. Most of the purchasers have been mining companies with the management expertise, the mining experience and the financial resources necessary to take a longer term view. Second, in an effort to reduce debt loads, mining companies have sold off nonmining assetsor minority holdings in other mining companies that were not providing sufficient cash flow. The result of this reshuffling of Canadian mining assets has been an increase in corporate concentration in the base metals sector of the industry. However, this trend has been moderated by emergenceof new mining companies involved inthecountry's rapidly growing gold production.

Industry productivity, by any of the standards by which it can be measured, has been raised dramatically by the introduction of new mining methods and technologies. Computerization and mechanization of the mining process has substantially increased the amount of ore that can be mined during a given shift. In some cases these measures have been complemented by a redesign of mining plans that has also reduced waste-to-ore ratios. The result of this process is apparent in Figure 7; between 1982 and 1986 real output per worker in mining increased by more than 50 per cent.

An unfortunate byproduct of this streamlining of operations has been significant cuts in employment. The labor force has been reduced, voluntary retirements and relocations have been actively encouraged, and hiring has virtually ceased. By 1985, total employment in the mining and mineral processing industry had been reduced by some 20 per cent from the 1981 high of 195000 (Figure 8). Employment levels are now much closer to the levels prevailing in the early 1960s, but real output per worker is 75 per cent higher.

FIGURE 8

CANADIAN MINERALS AND METALS INDUSTRY
EMPLOYMENT



Note: Includes metallic and nonmetal minerals to the refined stage. P-Preliminary; E-Estimate

The increase in productivity is also largely responsible for the moderate upturn in the industry's return on capital since 1983 (see Figure 6), although clearly the latter is still at relatively low levels. These cost reductions by Canadian producers in recent years have not restored the industry's profitability to healthy levels.

Financial Position

The more difficult market conditions for minerals and metals during the 1980s have also had a profound impact on the industry's financial position. The decline in cashflows during the recession forced the industry to raise large amounts of debt to complete the capital spending programs initiated in 1979-80; industry debt more than doubled between 1979 and 1982. Total debt increased a further $2 billion to stand at $10.3 billion in 1986, representing about 70 per cent of equity invested. The combination of increasing debt, falling prices and high real interest rates has significantly increased the industry's interest costs as a percentage of revenue. During the 1970s, net interest costs for the industry as an aggregate were usually between 2 and 3 per cent of revenue; since 1982 this ratio has generally been between 6 and 8 per cent.

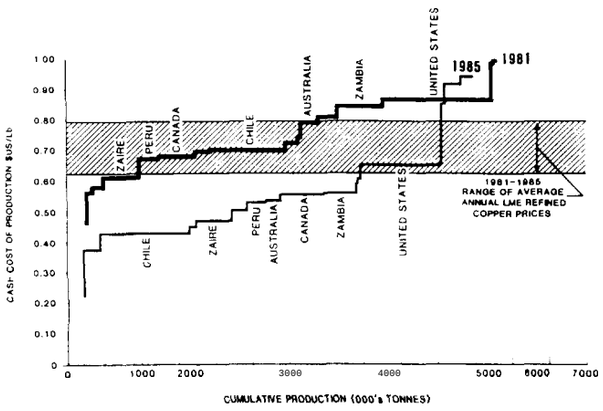
Competitive Position

The continued deterioration in real commodity prices has led to a worldwide reduction in operating costs; Canadian producers have not been alone in substantially reducing their unit production costs. A good example of this has been in the copper industry (Figure 9). Even though Canadian copper producers cut average cash production costs from $US 0.68/lb in 1981 to less than $US 0.56/lb in 1985, their competitive position has been substantially eroded by the more successful cost-cutting efforts of competitor countries. If anything, the Canadian copper industry appears to have lost ground. With the cost structure of copper production reduced throughout the world, copper is now generally available at a lower price. As a result of continuing overcapacity, international prices have been following the downward trend in the costs of production, falling from an average of US $0.80/lb in 1981 to US $0.65/lb in 1985. This lower price is much closer to the average cash production costs of Canadian producers, reducing the industry's margins.

In some cases, foreign producers have had their competitive position maintained or improved by favorable exchange rate movements. This factor has become increasingly important as a determinant of the competitive position of the Canadian industry. As most mineral prices are denominated in U.S. dollars, a decline in the value of a country's currency

FIGURE 9

AVERAGE PRODUCTION COSTS OF MAJOR COPPER PRODUCING COUNTRIES



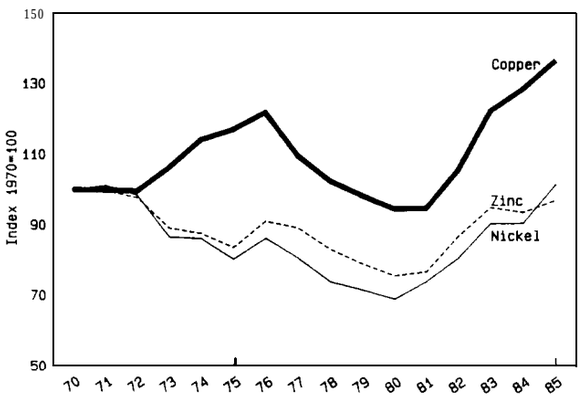
against the U.S. dollar results in a higher price for these commodities in terms of domestic currency. The immediate effect of this is to increase the producer's margin between cost and price. To the extent that the margins of Canada's competitors have been increased by more than those of Canadian producers through exchange rate shifts, they are in a position to sell at lower prices, which affects the relative competitive position of the Canadian industry.

To capture the implication of exchange rate changes for a country, the concept of real effective exchange rates has evolved. This term means that relative inflation rates in the countries under examination have been removed to produce 'real' exchange rates. When the real rate for the Canadian dollar is compared with a collection of other countries' real exchange rates, the result is a real 'effective' rate. Figure 10 shows the behavior of these rates and the implied change in competitive position for Canadian copper, nickel and zinc producers over the period 1970 to 1985. The countries selected for each commodity are our major competitors for those metals; each country is given a weight in the index equal to its share of the total production of all countries in the basket. The exchange rate here is defined as the number of units of the 'foreign' currency required to buy a unit of Canada's currency; thus an index increasing in value indicates declining competitive position and a falling index indicates the reverse.

With the exception of the copper industry, the relative weakness of the Canadian dollar against most other competitor currencies during the 1970s had the effect of enhancing the competitive position

FIGURE 10

CANADIAN REAL EFFECTIVE EXCHANGE RATES AGAINST COMPETING MINERAL PRODUCERS



Note: Inflation **adjusted** Cdn $ compared to a basket of inflation-adjusted currencies of major competitors in each metal weighted by production.

of the Canadian industry and thus increasing industry returns. Since 1981, however, there has been a sharp appreciation in Canada's real effective exchange rate with our major mineral competitors even though the Canadian dollar has tended to decline against the U.S. dollar.

Much of this turnaround has been due to the relatively greater fall in the value of these competitor currencies against the U.S. dollar. The decline in world commodity prices over the last few years has shifted the terms of trade against resource-dependent economies and forced down the external value of their currencies. As long as mineral prices remain depressed, the terms of trade of developing-country mineral exporters will continue to exert downward pressure on their real exchange rates. In the case of commodities such as copper, where the competition is dominated by third world suppliers, the effects of exchange rate movements have been more pronounced and the competitive position of the Canadian industry has been seriously eroded. For commodities **such as** zinc, where the competition to the Canadian industry is more from the industrialized **OECD** countries, the realignment has been more moderate and the real effective exchange rate has returned to the level of the early 1970s. More recently the decline of North American currencies against those of European countries has improved Canada's competitive position.

WORLD TRADE

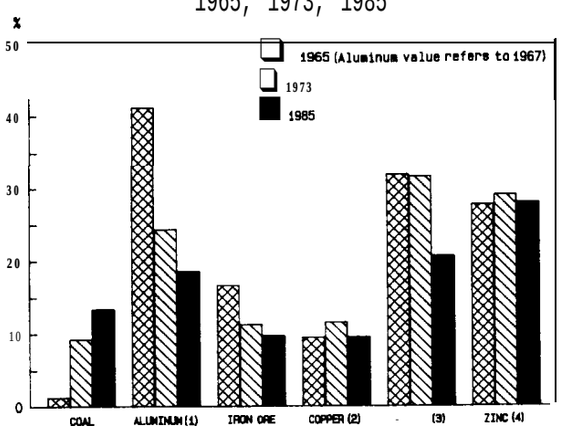
The total effect of these developments on the Canadian minerals and metals industry is illustrated by its changing share of world trade in minerals and metals (Figure 11). Canada has generally been able to hold its share of western world exports in zinc and refined copper. Even with the increase in aluminum production, its share of international trade in this commodity has slipped progressively over the past two decades. So too has its share of the trade in copper concentrate and iron ore. On the other hand, Canada has benefited from recent investment in coal and its proportion of western world coal exports has expanded.

Industry Outlook

The failure of world mineral markets to recover fully from the 1981-83 recession is a significant turning point for the Canadian minerals and metals industry. Notwithstanding substantial cost cutting, productivity gains and corporate restructuring, industry profitability has remained low. Significant excess capacity still exists worldwide and international prices have followed the downward trend of production costs. Industry revenues in real terms are lower than those for much of the 1970s. Many of the factors at work over the past few years will continue to influence the future trading environment for minerals and metals and the competitive position of the Canadian industry.

FIGURE 11

CANADIAN SHARE OF WESTERN WORLD TRADE OF SELECTED MINERALS AND METALS 1965, 1973, 1985



Note: (1) Unwrought; (2) Refined; (3) Ores and Concentrates; (4) Slab

The Canadian minerals and metals industry is faced with strong competitive challenges. The development of new materials and production technologies poses a threat to the existing markets for many minerals and metals. The growth in aggregate demand for minerals and metals will probably remain moderate. On the supply side, the increase in the number of producers and their success to date in containing costs may mean that supplies will remain readily available to the world market. **Many developing-country mineral producers possess mineral deposits that are at least equivalent to those now being mined** in Canada; having potential exchange **rate advantages as well, they represent viable, long-term suppliers of minerals and metals to** the world market.

These world market forces will continue to force the Canadian minerals and metals industry to restructure and rationalize its operations. The industry must continue to be resourceful and innovative in its efforts to raise productivity and lower unit costs. More effort must be directed towards research and development into new uses for minerals and metals. The Canadian industry can and will respond to this competitive challenge.