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Assessment and Comparative Analysis of Iran's Mineral Policy: Lessons and Recommendations

by

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The Compassionate, The Merciful

ABSTRACT

The overriding objective of this research was to develop an understanding of Iran's policy environment, within which the country's mining sector operates, in relation to that of the rest of the world. In an effort to diversify the country's economy, the first five-year development plan (FFYDP) provided a solid structure for the development of the Iranian mining sector. Although the plan attached high priorities to increasing the share of the private sector in mineral activities, the actual capital invested by this sector in mining projects was much less than anticipated during the plan period. This observation constitutes the early context for this research.

To develop that understanding, a multi-level methodology for both the Iranian policy environment and its international counterparts was adopted. For Iran's policy environment, this multi-level methodology covered:

- 1) A comprehensive assessment of government *Policies* for the mineral sector as well as the sector's performance during the FFYDP.
- 2) A thorough examination of the views and comments of all active stakeholders, including Ministry of Mines and Metals (MMM) officials, mining company executives, and co-operatives and individual operators. This information collection was accomplished in three phases: informal discussions, interviews, and formal questionnaires with debriefing follow-ups, where the respondents made many comments on most aspects of the formal questionnaire.
- 3) An objective examination of financial statements of mining enterprises was also performed.

The comparison of Iran to the international context consisted of two major parts:

- 1) An assessment of the policy environment of three mineral-endowed developing countries through case studies, and
- 2) A detailed examination of the views and comments of large international mining enterprises.

This parallel and comparative approach has led to an overall finding that Iran's mineral policy environment has been relatively ineffective in attracting additional investment to the sector. To remedy this situation, policy recommendations, based on the analysis and implication of all components of the above research, are put forward. However, some challenging research questions remain, a list of which constitute promising areas of future research.

RÉSUMÉ

L'objectif principal de ce travail de recherche est de développer une compréhension de l'environnement politique dans lequel le secteur minéral iranien opère en relation avec ceux du reste du monde. Dans le but de diversifier l'économie du pays, le premier plan quinquennal de développement iranien (PPQD) a fourni une structure solide pour favoriser l'épanouissement du secteur minéral. Bien que ce plan ait porté une attention particulière à l'augmentation de la part du secteur privé dans les activités minérales du pays, le capital privé investi dans le secteur fût beaucoup moins élevé que prévu pendant la période du plan. Cette observation constitue le point de départ de ce projet de recherche.

Pour développer une compréhension valable de la situation iranienne, tant au niveau des politiques internes du pays qu'au niveau de celles de ses contre-parties internationales, une méthodologie à volets multiples est utilisée. En ce qui concerne les politiques internes du pays, l'analyse couvre les volets suivants :

- 1) Une évaluation complète des politiques minérales du gouvernement et de la performance du secteur pendant le PPQD.
- 2) Un examen détaillé des opinions et des commentaires de tous les intervenants dans le secteur minéral, y compris les cadres du Ministère des Mines et des Métaux (MMM), les dirigeants de compagnies minières, et les opérateurs miniers indépendants et en coopératives. La cueillette des données fût accomplie en trois phases: discussions informelles, entrevues, et questionnaires formels avec suivis, dans lequel les répondants ont fait plusieurs commentaires sur la plupart des aspects du questionnaire.
- 3) Un examen objectif de rapports financiers d'entreprises minières iraniennes.

La comparaison du secteur minéral iranien au contexte international a été abordée en deux volets :

- 1) Une évaluation de l'environnement politique de trois pays en voie de développement possédant un patrimoine minéral important.
- 2) Un examen détaillé des opinions et commentaires de grandes entreprises minières internationales relatifs.

Cette approche parallèle et comparative nous mène à constater qu'en général, l'environnement politique iranien n'a pas été très efficace pour attirer des investissements supplémentaires au secteur minéral. Pour remédier à cette déficience, l'auteur propose des changements qui se basent sur les résultats des cinq volets énumérés ci-haut. Cependant, quelques questions importantes demeurent sans réponses et celles-ci constituent une liste de sujets prometteurs de recherche future.

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CHAPTER 1

INTRODUCTION

In this chapter, the dominant role of the oil-industry in Iran's economy and the significant problems this has caused are discussed. An important alternative source of wealth and investment of economic development, i.e., Iran's mineral resources, is given consideration. Based on these observations, this chapter goes on to set out the significance and rationale of the research, and briefly introduces issues related to the methodological aspects of the study.

1.1 GENERAL BACKGROUND

Iran is well endowed with solid mineral resources, although its oil wealth is what commands world attention. There is little doubt that oil has been Iran's main export commodity for many years, accounting for 84% of the total foreign exchange income in 1997-98¹ (EIU, Country Profile - Iran, 1999). However like most other developing countries (DCs) with abundant reserves of oil, Iran has developed its oil industry to the neglect of its solid mineral wealth and it is only recently that the need to redress the imbalance in this uneven development has been realized. The abundant mineral reserves

¹ The Iranian calendar starts on the 21st of March of the Christian calendar and ends on the 20th of March of the following year.

of Iran constitutes a basis for diversification of the economy away from oil, as well as a significant source of non-oil income when suitably processed and exported to foreign markets.

1.1.1 The Role of the Oil Industry in Iran's Economy: A Brief Overview

Following the inception of oil-production activities in Iran in the 1940s, the country's revenues grew in the 1960s because of production and price increases. As a result, the oil industry became a dominant force in the country's economy. As shown in figure 1.1, this trend continued in the early 1970s, particularly in 1974, when Iran's income from oil exports increased significantly due to the sharp oil price increase of October 1973.

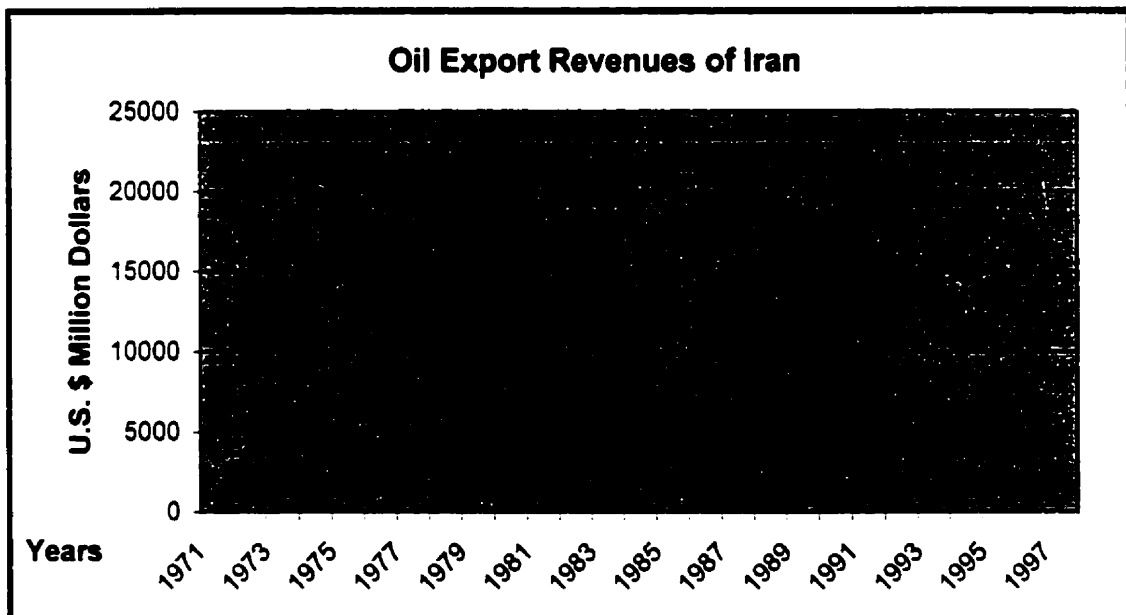


Figure 1.1: Oil Export...., Source: for years 1971-92, EIU, Country Profile-Iran, 1993, p. 17, and for years 1993-97, EIU, Country Profile-Iran, 1999, p. 43.

The oil price boom resulted in a tremendous inflow of petro-dollars and made the country wealthy. However, due to poor planning, the substantial development of the oil economy during the 1970s did not command a diversified economy, and virtually, by the late 1970s, the oil-based economic boom had led to economic recession and government

borrowing². It should be noted, however, that cracks were beginning to appear in Iran's economy long before the late 1970s: a study of Iranian economic development strategies from 1930 to 1978 concluded that despite some unbalanced growth in the modern sectors of the economy in the 1960s and 1970s, the main characteristics of the economy resembled those of an underdeveloped economy. This was largely attributed to the "*rentier state*" position of the country and the almost total reliance on domestic oil resources to finance government expenditures (Soofi, 1982).

Following the Islamic Revolution in 1979, and the early years of Iraqi-imposed war (1980-88), the idea of planned development was formulated, leading to major changes in the structure of the economy. The government expanded its control by nationalizing large mines and industries as well as important parts of foreign trade. It also assumed management or ownership of a number of medium-sized privately owned enterprises, either because the owners had fled the country, or because of financial wrongdoing.

The war launched the economy into a period of recession and except for a brief period of recovery in 1982-83, Iran's oil revenues gradually decreased. This decline was due to export capacity restrictions caused by the war, and other events (such as a major decrease in oil prices), which were outside of the government's control.

The 1980-1988 war, along with the reduction in oil income that seriously weakened the government's financial position, caused major economic problems. These problems included low investment, high government current expenses, rapid growth of the services sector, high inflation, and constant unemployment, which collectively resulted in low rates of economic growth during the war.

² For more details see: (1) Meghji, Z. M., "Iran: the Petroleum Economy Syndrome", Carleton University, a Thesis written for the degree of Master of Public Administration, 1982; (2) Economic Intelligence Unit, Country Profile - Iran, 1993-94.

Following the cease-fire of August 1988, it was decided to employ the resources of the private sector in a program of economic reform and privatization to rebuild the country. The government, therefore, prepared the First Five-Year socio-economic Development Plan (FFYDP), covering the period 1989/90 to 1993/94.

This plan not only attempted to improve the then current economic situation, but also addressed what had been Iran's achilles heel for decades -- namely the over-reliance on oil exports that had created a one-crop economy. Therefore, the government's plan emphasised the development of the country's mineral resources. This was seen as an excellent opportunity for economic development. Some of the finer points of the FFYDP are discussed in Chapters 5 and 6.

1.1.2 Importance of the Mineral Sector of Iran

The two main factors that make the development of the mineral sector so vital for Iran are its economic importance and the fact that it is a possible way out from an extremely oil-based economy to one with a more diversified nature.

The economic importance of the mineral sector is underlined by the following points:

- i. Presently, more than 40 different minerals are extracted from Iranian mines; the annual volume of mineral products is more than 100 million tonnes; the annual value of mineral and metallurgical products is about \$US 4.5 billion; the annual value of exports is about \$US 500 million; 112 000 people are directly active in the mines and the production of metals; and the products of this sector are linked with hundreds of various economic activities including major and minor industries, particularly in the construction, metals and military areas.
- ii. Due to tremendous losses brought about by the war, Iran needs new sources of revenues to repair the war damages and produce necessary investments in the

economy. The development of the mineral sector can create considerable revenues for government from royalty and taxes, duty on imported goods, administration fees, and land rents or equity earnings (dividends).

- iii. As outlined in the development plans of the country, the economic strategy of Iran is to shy away from an oil-based economy and to export other items, especially those with more added-value. The exploration and development of mineral deposits can form a good base for the exporting industries by providing mineral resources and converting them into manufactured goods. This can, therefore, increase the non-oil exports substantially and, hence, is given high priority. At the moment, however, in light of a considerable scope for expansion, widespread exploration for minerals is still at an early stage.
- iv. The development of the mineral sector contributes to Gross Domestic Product (GDP) growth and improves the Balance of Payment (BOP) of the country through capital inflow for project construction (wages, payments to in-country suppliers of services, stores and equipment), and overseas earnings from the sale of products³.
- v. The development of mineral resources can also have an influence on other industries. This sector increases the demand for goods and services produced by other local industries (in particular, transport and construction), and supplies vital inputs for the manufacturing, agriculture and construction sectors; it also provides a base upon which further processing industries can be developed. Mining projects are often located in remote regions. They frequently require essential infrastructure such as utilities, ports, roads and railways, and training and health facilities. This promotes the country's regional and social development.
- vi. The development of mineral resources generates substantial employment and enhances the level of skills in the work force not only in direct mining activities, but

³ Against these must be debited the repayment of loans and interest to investors.

also in a range of supporting, value-added, down-stream and up-stream sectors such as transportation, equipment maintenance, equipment manufacturing, semi-fabrication, fabrication and construction.

- vii. The reality at present is that Iran's resources excluding oil and natural gas do not play a significant role in the country's national economy and international trade, in spite of the fact that they represent a large proportion of the world's mineral stock. For instance, despite the existence of iron, limestone, coal and reserves of fossil fuel that could form a basis for a steel industry, this sector is not well developed.

The second factor that makes the development of the mineral sector so vital to Iran is the fact that it is as a possible way out from an extremely oil-based economy. This factor is underlined by the fact that Iran's oil revenues have substantially decreased over the last fifteen years, a trend predicted to continue over future years. Given the high rate of population growth⁴, the oil revenues are not sufficient to meet the country's need for sustainable development anymore⁵.

To emphasize the importance of non-oil export growth, the following table projects the production and consumption of crude oil in Iran in 2010, under four different scenarios, using a constant growth rate for production and four different rates for growth in consumption.

⁴ 2.5% per annum from 1989 to 1999.

⁵ To highlight this problem in view of the recent decline in world oil prices and the resulting decrease in Iran's foreign exchange earnings, Iran News (Jan. 21, 1999) reports that it is estimated that the government will face a considerable deficit which will certainly cause severe economic difficulties for the country. However, many experts maintain that the present oil crisis has an advantage if it forces policy-makers to be confronted with the situation sooner rather than later. One thing is certain: since the oil prices are partly politically - rather than wholly economically - motivated, as long as a large portion of the country's revenue is oil-based, such crises in the economy are expected. Therefore, it is high time that such high expectations from an oil-based economy were abandoned, to prevent similar scenarios from being played out in the future (Ibid., Iran News).

Table 1.1 Production and Consumption of Crude Oil in Iran in 2010
(Thousand Barrels Per Day)

Scenarios	Production	Consumption	Export
Scenario I, Growth Rate in Consumption: 6.7% (Current)	3500	3951	-451
Scenario II, Growth Rate in Consumption: 5%	3500	3056	444
Scenario III, Growth Rate in Consumption: 4%	3500	2622	878
Scenario IV, Growth Rate in Consumption: 3%	3500	2246	1254

Source: Adeli, M. H., "Analysis of the Non-oil Exports of Iran from a Macro-economic Point of View", Management Knowledge, "Danesh-e-Modirriat", Tehran University, Issue 27 & 28, Winter 1994 & Spring 1995, p. 9.

The prediction of the volume of production and consumption in Iran shows that given existing growth rates, domestic consumption of crude oil will equal production in 2009-2010. At that point, therefore, the oil revenues of the country will be zero. Given the present rate of growth in population, the population of the country will have reached eighty-five million at that time.

In the table below, four scenarios of growth in non-oil exports are projected.

Table 1.2 Non-oil Exports under Various Growth Scenarios (Million Dollars)

Scenarios	1993-94	1999-2000	2009-2010
Scenario I, Growth Rate of 8.4% (Second FYDP)	4400	6165	13810
Scenario II, Growth Rate of 10%	4400	7795	20221
Scenario III, Growth Rate of 12.5%	4400	8920	28965
Scenario IV, Growth Rate of 14%	4400	9658	35803

Source: Ibid. p. 14.

According to an assessment⁶, if Iran wants to maintain the existing per capita share of foreign exchange revenues, the GNP must rise at an annual growth rate of 7.4%, and the annual growth in the rate of non-oil exports has to reach 14%.

In the light of the above observation, Iran has no choice but to utilize its other economic sectors and improve its non-oil sector exports dramatically. Therefore, given the economic importance of the mineral sector and its present state, it seems logical to argue that Iran needs to become an economically prosperous mining country by giving priority to the development of the country's mineral resources, not only for domestic use but also for export⁷. However, other sectors such as agriculture and manufacturing should not be ignored. The mineral wealth of the country should be used to promote an acceptable growth rate in production and export in the longer term. A logical basis for the achievement of this objective is a clear and sound mineral policy that will help the country attain self-reliance and sustain diversified economic development. Such a policy should ideally be based on the non-renewable nature of mineral resources and must aim to attract private investment, to increase government revenues over time, and integrate the mineral sector with the rest of the economy. As well, the monitoring the activities of major mining enterprises as well as conservation and environmental concerns should not be neglected.

⁶ Adeli, M. H., "Analysis of the Non-oil Exports of Iran from a Macro-economic Point of View". Management Knowledge, "Danesh-e-Modirriat", Tehran University, Issue 27 & 28, Winter 1994 & Spring 1995, pp. 4-21.

⁷ To illustrate the role of the mineral sector in economic development, it is noteworthy to mention the results of a study by the Australian Research Council (1998). The investment of \$3.6 billion in new mining and mineral processing projects in Western Australia is expected to create 39 000 jobs in the construction phase and approximately 22 000 new jobs in the production phase. It should also cause the GNP to increase by 3.3% and 2.8% in the construction and production phases, respectively. This results-statement is based on a comprehensive study, which is part of a project funded by the Chamber of Minerals and Energy of Western Australia and the Australian Research Council.

1.1.3 Investment Position in Solid Mineral Resources in Iran

The enormous mineral potential of Iran, with estimated total reserves in billions of tonnes and 2450 active mines engaged in the extraction of over 40 different minerals, requires investment for its development. At present, the extraction ratio is not in proportion with the quantity of reserves. Thus, even if it were assumed that no further exploration was undertaken to increase known reserves, a significant supply would result from the exploitation of mineral deposits in Iran. This justifies the need for massive investments in the mineral and related industries.

As the following figure shows, the amount of capital invested by the private sector in the mining projects during the 1989-90 -- 1993-94 plan period was about 20% of total investment. This was much below expectation⁸.

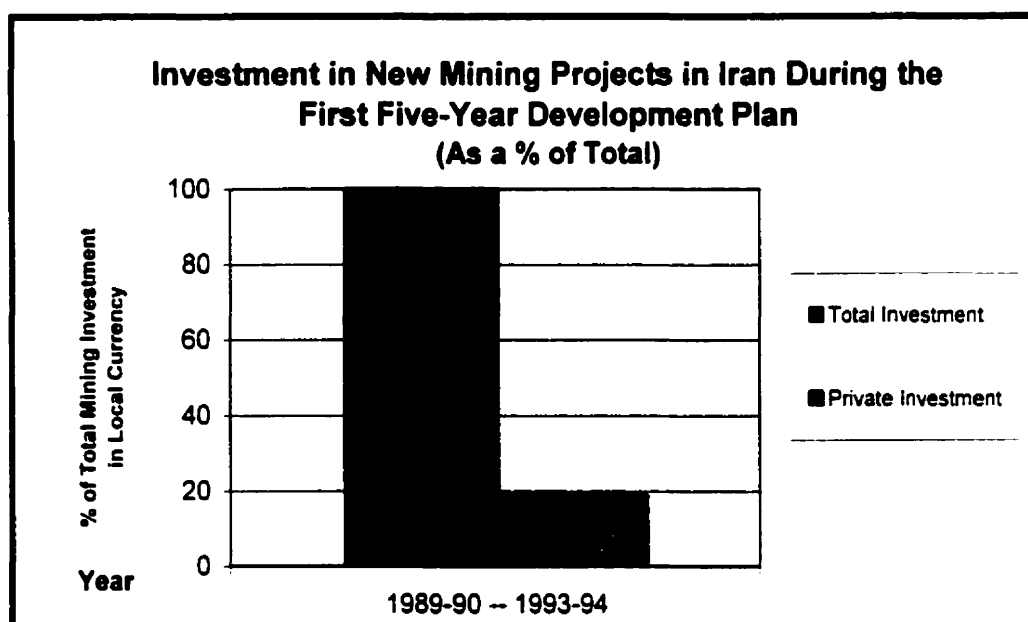


Figure 1.2: Investment in new..., Source: Calculated using data from Organization of Planning and Budgeting of Iran, 1995, and Ministry of Mines and Metals, Annual Report, June 1994.

⁸ Details are discussed in chapter 6.

Therefore, this research project was initiated with the working hypothesis that the mineral policy of the government during the FFYDP was ineffective in attracting private investment to the mineral sector of Iran despite the fact that this was a top priority of the plan.

The problem arising from insufficient private investment is that the funds made available for all investment projects derive from oil export revenues, are limited, and the mining sector competes with other industrial and agricultural projects for these funds⁹. It is clear therefore, that the development of the mining sector cannot be undertaken merely by the government alone, making non-governmental investment funds a realistic necessity for developing the mineral industry. As the Minister of Mines and Metals once stated¹⁰, the country has to stop petro-dollar investment in the mineral sector. Rather, this sector has to be converted into a foreign currency-earner to create enough income for its own development and renewal.

The question here is how can the country stimulate private (local and foreign) investment in the mineral sector? An easy solution is not at hand, because the investment climate in Iran, as in other countries, primarily depends on a series of factors such as political and economic stability, attitude of the government towards private and foreign investment, the extent of controls on imports, prices and foreign exchange, and legal and administrative settings for investment, which all affect the stability and profitability of mining operations.

Furthermore, to attract domestic and foreign investment, the mineral sector must compete with other sectors of the local economy as well as with the mineral sector of other

⁹ Asre Ma, a Persian Political and Social Biweekly (April 19, 1995) shows there has been a close correlation between the amount of capital investment and oil revenues over the past 15 years in the country.

¹⁰ Ministry of Mines and Metals of Iran, Summer 1991.

countries in the international marketplace. Therefore, the country needs to establish appropriate mechanisms for attracting and screening local and foreign investment in the mineral sector. Each sector of the economy, whether private or public, should eventually provide the required level of capital investment by itself, and should not rely on any other sector. Gaining capital through petro-dollars is not a virtue. Rather, it is a burden to Iran's strategic oil sector and if allowed to continue, a deterrent to the mineral sector.

1.2 THE OBJECTIVES OF THE RESEARCH

Basically, the main purpose of this study is *to explore what policy measures can be applied to the mineral sector of Iran to increase private (domestic and foreign) investment*. More specifically, the main objectives of this research project are as follows:

1. To document Iranian government policies in the mineral sector and its performance during the FFYDP in an economic sense. e.g. in terms of productivity, investment, profitability, debt management, value-added, technological change, foreign exchange earnings, employment, etc.;
2. To investigate the impact of various vehicles such as privatization and foreign capital investment on the ultimate productivity of the mineral sector of Iran;
3. To explore the views and ideas of Iranian mineral sector insiders regarding a) the laws and regulations governing mining activities in Iran, b) the strengths and weaknesses of Iranian mineral policy, c) the state of the market, d) the problems and difficulties of those active in the mineral sector, i.e., small, medium-sized and large mining enterprises, e) Suggestions of those engaged in the sector to improve current mineral policy;
4. To seek the opinions of international mining companies concerning investment in the mineral sector of Iran;

5. To review the recent experiences of other developing countries in attracting private investment and to recommend ways in which such policies can be indigenized in Iran; and ultimately,
6. To propose policy implications to form a new mineral policy framework for Iran aimed at attracting private, local and foreign, investment.

1.3 RATIONAL AND SIGNIFICANCE OF THE RESEARCH

- i. This research concerns the management of mineral resources in DCs, and in Iran. in particular. The fact that this research tackles dilemmas associated with mineral economics and management places the research plan within a multidisciplinary area. Therefore, issues that have roots in fields related to engineering, economics, management, the environment and the law, amongst others, should be considered.
- ii. Although there are abundant articles on aspects of mineral policy and mineral economics in both developed and developing nations, there is little by way of a more holistic approach towards the study of mineral policy concerning any one particular country such as Iran (see Sinding, 1993). This study is the first of its kind on mineral policy in Iran. To date, there appears to be no scholarly analysis in this area. It is thus hoped that this research has the potential of shedding light on the peculiarities of Iran's mineral economy and policy constraints hindering its development, not only within the country, but also with other DCs.
- iii. This kind of study describes the complexities of economic, social and political elements influencing policy choices and implementation in mineral producing countries. It can also enlighten ongoing debates on alternative policy modes of restructuring state-owned mining enterprises, by delving into the role and adequacy of government interventions in economic activities, particularly those related to the mining sector.

- iv. The administration of mineral wealth, especially in DCs, has been much-debated. While it is basically true that an excess of mineral resources can be crucial in the economic development of a country, it has been pointed out previously that unless caution is exercised in the conception, planning and execution of mineral policy, sustainable economic growth is not assured (Mikesell, 1997; Sachs and Warner, 1995; and Auty, 1993).
- v. The intricacy of issues related to the formulation of a mineral policy requires that major elements, in particular mineral development models, taxation and rent capture, investment, financing and property rights, technical and administrative management of mineral activities, the organizational framework and government involvement be dealt with.
- vi. A new method, the “participatory process”, is employed in conducting the research plan. This method does not simply rely on a simple questionnaire-based survey (see section 1.4.3). The rationale in using this method lies in the widely believed notion that policy analysis that merely relies on statistics and figures does not always represent reality. Further, such data does not guarantee the formulation of a good policy. Many scholars believe that in order to draft a good mineral policy, the views and comments of the real players in the industry should be considered (Seidman and Walde, 1998; Agarwala, Schwartz and Ponchamni, 1994). In order to gain clearer insights into the features of Iran’s mineral sector and obtain the opinions of those directly involved, the author traveled to 10 provinces in Iran, conducted open-ended interviews with many people in the mineral industry and obtained complete responses to many questionnaires. Even though this caused considerable bureaucratic disturbances within the organizations concerned, and required substantial financial resources, it facilitated the plan for a more realistic and acceptable policy formulation. It is hoped that this will give new insights into the methodology of this type of research.

1.4 RESEARCH METHODOLOGY

As mentioned, the central question of this thesis concerns the exploration of a range of policy measures that Iran can adopt to increase private (domestic and foreign) investment in the mineral sector. To tackle this multi-faceted objective, both qualitative and quantitative methods of data collection were used, enabling the research to proceed on the basis of a tripartite hierarchical scheme, namely at the “sectoral”, “national”, and “international” levels. When demanded by the research, issues were discussed from a multidisciplinary perspective.

The following briefly highlights the research phases (in no particular order):

1.4.1 Literature Review

Library information, periodical journals and magazines, along with documents of the World Bank, the United Nations, and professional seminars are used to explore the general trend of mineral policies in DCs in recent decades (i.e., in terms of state participation, privatization, and foreign investment in mining ventures).

1.4.2 Analysis of the Performance of the Mineral Sector of Iran

The first phase of this analysis comprises the assessment of the current state of the mineral sector in Iran by using data and statistics relating to geological activities, production of minerals and metals, new projects, growth rate of the mineral sector, type of ownership of mining companies, value added of the products, export of mineral substances and metals, local and foreign investment in mine development, privatization, and training and research.

The second phase involves using the data collected to compare the targets and actual performance of Iran’s mineral sector during the FFYDP. These analyses are, in particular,

intended to identify the areas in which the mineral sector has underachieved, and sets the agenda for analysis in other chapters.

In order to assess the health of the mineral industry, a detailed financial analysis of a large sample of mining companies ranging from small privately-owned to large state-owned companies during the first development plan was conducted in the third phase. The results of this analysis are presented in appendix.

1.4.3 Field Study (Semi-structured Interviews)

In an attempt to define strategic components and issues in Iran's mineral policy, a series of semi-structured, yet open-ended, personal interviews and a questionnaire-based survey were conducted among mining company officials, individual and co-operative miners, and government officials responsible for the mining sector in Iran. Areas covered by the survey include both intended and realized current mineral policies, the mining code, foreign investment, and labour law, amongst others.

The main reason for conducting the semi-structured and open-ended interviews was the realization that in developing countries, formal surveys employing rigid questions inhibit the free expression of opinions and that engaging those concerned in discussions, rather than involving them in formal questionnaires would lead to more realistic results. It was hoped also that the face-to-face exchanges would allow the development of insights into what was "*on the ground.*"

1.4.4 Questionnaire-based Structured Survey

The questionnaire was designed on the basis of a number of variables identified from the literature review and case studies, which were thought to play varying strategic roles in influencing investment decisions of mining companies in DCs. The questionnaire was then submitted to a group of large foreign mining company officials, and invited their

views and experiences on important factors that influence their decisions to invest in mining ventures of DCs in general, and in Iran, in particular. This survey is hoped to shed some light on the *Prevailing Reality* of multinational companies and developing countries based on the cumulative experience of firms active in the mining and extractive sector.

1.4.5 Case Studies

In an attempt to study aspects of mineral policy that encourage private investment, case studies were also conducted on mineral sector activities, mineral policies and their outcome in three mineral-endowed developing countries. Case studies were done in 2 stages. The earlier served to identify critical issues that impact the efficacy of policies attracting foreign investment in developing countries, to assist in the design of a questionnaire for a more comprehensive survey in Iran and among foreign companies. In the later stage, further information was collected to serve as a platform for comparison of Iran with a selective list of countries.

The case studies involved reviewing major aspects of mineral policy in these countries, in particular, those related to the legal and institutional framework and fiscal regimes, state participation and control in mineral development, privatization, current performance and plan, and incentives and obstacles to mineral development. These are investigated to assist in establishing a proper framework for developing mineral policies aimed at accelerating private investment in Iran's mineral sector.

Chile, Indonesia and Nigeria were chosen for detailed case studies on the grounds that:

- i. These countries possess considerable mineral resources, and the contribution of mineral exports to export revenues is substantial (in Chile and Indonesia);

- ii. They are from different continents, i.e. from South America, Asia and Africa, and thus have various socio-economic backgrounds. Therefore, their experiences can be useful.
- iii. Chile is known as one of the most successful cases in terms of mineral development;
- iv. Both Chile and Indonesia are known to have progressive mining codes and desirable investment environments;
- v. Indonesia is comparable to Iran in many respects: it is a Moslem, oil-exporting and mineral-endowed country, with a similar GDP;
- vi. Nigeria also is an oil-exporting and mineral-endowed country, but its mineral resources are undeveloped. Nigeria has experienced many difficulties in developing its mineral resources;
- vii. Both Indonesia and Nigeria (like Iran) are OPEC members and the oil sector has a great influence on their economic policies; and
- viii. Iran, Indonesia and Nigeria are also among the members of the newly established D-8 Group¹¹.

1.5 ORGANIZATION OF THE THESIS

This thesis incorporates 10 chapters, each of which in turn are divided into several sections.

¹¹D-8 is a group of eight developing Islamic countries. The members of the D-8 include Iran, Turkey, Indonesia, Malaysia, Nigeria, Bangladesh, Pakistan and Egypt, which are from Asia, Africa and Europe, with a population of 800 million. This group is a broad-based body, which aims to pave the way for co-operation among Islamic developing countries. The main goal of this economic group is to help economic and social development of the member countries through expansion of multilateral co-operation in various fields and political consultations (Iran News, May 1997).

Chapter 1 provides a thorough introduction to the mineral industry of Iran with particular reference to the role of the oil industry in initially stifling its development and later generating the impetus for its resuscitation. This chapter outlines the research plan.

Chapter 2 deals with state participation in mineral project development, with inferences drawn from various DCs.

Chapter 3 deals with privatization of state-owned mining companies. It outlines the rationale and methods of privatization.

The international aspect of the mineral industry is intimated in **chapter 4**. The role of foreign investment and multinational corporations (MNCs), the principal participants in mineral development, come under close scrutiny in this chapter. Some aspects of foreign investment such as the benefits of foreign investment both for LDCs and multinational mining companies, forms of foreign investment, policies to attract foreign investment, and areas of conflicts between the investors and host governments are discussed.

Chapter 5 aims to provide an accurate economic assessment of the current state of Iran's mineral sector in terms of various indicators such as production, investment, profitability, value-added of the sector, technological changes, and employment. This provides background knowledge on how the mineral sector has performed in the recent past, and how it is performing currently.

Chapter 6 is an attempt to assess the performance of the mineral sector during the FFYDP. The investigation is done by using official statistics and economic variables.

Chapter 7 deals with the case studies of Chile, Indonesia and Nigeria, three developing economies that have various experiences with their solid mineral resource sector and could provide useful lessons for Iran.

Chapter 8 presents the results of the field study. This survey on the Iranian mining sector assesses the views and comments of those involved -- governmental agents, mining companies, cooperatives and individuals -- and forms a solid base for mineral policy formulation.

The results of a survey among large mining companies on their views and thoughts concerning investing in the mineral sector of DCs, and in Iran in particular, is presented in **chapter 9**.

Chapter 10 concludes the study and recommends mineral policy initiatives aimed at increasing private investment in Iran's mineral sector.

Appendix I presents the results of the financial analysis of Iranian mining and metallurgical companies during the FFYDP. The analysis was done by collecting and standardizing financial statements of companies, and computing and analyzing relevant financial ratios.

CHAPTER 2

STATE PARTICIPATION IN MINERAL PROJECTS OF DEVELOPING COUNTRIES

2.1 INTRODUCTION

Also known as the “less-developed countries” (LDCs), developing countries are today the most important source of world mineral supply. In many LDCs, the mining sector has been seen historically as the engine of growth for generating substantial benefits in terms of government revenues and foreign exchange receipts to support economic growth. The decades of the 1950s and ‘60s witnessed a strong growth in the mining sector, both in developed and developing countries. This trend was basically due to rapid growth in the demand for ores and metals, caused by the development of heavy industries and the demand for production of capital goods (Bomsel, 1990). The increased economic benefits in, and returns to, the mineral industry led to increased government involvement in the implementation and control of mining projects. State-owned enterprises (SOEs) involved in mineral production grew from practically nothing in the early 1950s to almost one third of the world’s mineral industry in the early 1980s. In 1981, for example, government equity holdings in developing countries were 41% in bauxite, 58% in copper, and 62% in iron ore (Radetzki, 1985b).

As a result, government regulations restricted foreign investment, required higher level of national ownership and control, and placed limits on the repatriation of profits in the late 1960s and early '70s (Economic Commission for Africa, 1996, Daniel, 1993, and Walde, 1983). OPEC's success in increasing oil prices in the 1970s and the shortage of some mineral commodities further strengthened these trends (Sims, 1985). Nationalization of mining operations in, for example, Chile, Ghana, Guyana, Bolivia, Zambia and Zaire were direct manifestations of higher desires for the local control of mining operations on the part of host countries. The rest of this chapter examines reasons for state participation in mining projects in LDCs, the disadvantages of such a practice, and offers some policy implications to improve the performance of state-owned mining firms.

2.2 REASONS FOR STATE PARTICIPATION

The reasons for state participation in mineral projects differ amongst developing countries. Their main objectives, however, often fall into one or more of the following:

2.2.1 Revenue Generation

The establishment of large-scale mining projects represents a source of potentially considerable income for developing countries. For many of them, the revenue and foreign exchange earnings derived from mining operations represent a vital factor in national economic planning and survival. As shown in table 2.1, many developing countries relied on mineral and metals exports for over half of their export revenues.

Table 2.1 Reliance on Mineral and Metals Exports of Selected Developing Countries in 1985 (As a percentage of total exports)

Country	Mineral and Metals Exports as a Percentage of Total Exports	Country	Mineral and Metals Exports as a Percentage of Total Exports
Angola	97	Mexico	64
Bolivia	82	Niger	86
Cameron	63	Papa New Guinea	51
Chad	71	Rwanda	70
Congo	89	Syria	65
Egypt	72	Trinidad and Tobago	84
Ethiopia	77	Zambia	94
Mauritania	58		

Source: Ascher, 1994, p. 4., *) The value for Niger is for 1992; source: Mikesell (1997).

Through nationalization and equity sharing, the LDC governments believed that they could gain additional revenue through dividend payments. They also wanted to maximize their revenues and foreign exchange earnings by limiting the remittance of foreign company profits overseas. All these concerns pointed towards increased participation in the sector.

2.2.2 Ownership and Control

The notion of permanent sovereignty over natural resources has been adopted by developing countries as a fundamental rational as well as a legal basis for assuming increased involvement and control over foreign-operated mineral extractive projects (Trobat, 1983). Sovereignty of countries over their national resources has been also affirmed by United Nations resolutions and is internationally accepted (Sims, 1985, and Legoux, 1981).

Beyond its obvious political and philosophical reasons, the resource sovereignty issue has had some socio-economic reasons as well as some policy implications for mineral projects. First, the LDCs wanted to control project performance to ensure that the objectives of the foreign companies did not conflict with their own objectives. Second, by assuming some equity participation, the LDCs assumed that they could exercise their control and influence in key areas of decision-making, such as those affecting employment, marketing and the environment. Third, the LDCs wanted to simplify the transfer of skills and technology by having direct responsibility for project operation and by hiring local workers for skilled positions. Fourth, through equity participation, governments wanted to gain experience and increase information and skills for the purpose of implementing similar projects (Sims, 1985 and Zorn, 1981).

2.2.3 Regional Development Integration

The size and organization of mining projects can contribute significantly to regional development. Such contributions may take the form of decreased costs for consumer goods through improved infrastructure, expanded employment and business opportunities for residents, as well as improved health and educational facilities.

The usual expression of sectoral integration of mining projects in developing countries also involves downstream activities such as smelting and refining. Many mineral-producing countries pursued the integrated industry policy as an industrialization strategy and as a means of increasing their tax revenues. The significant economic benefits generated by mining operations, along with the insensitivity of the multinational companies to the social needs of host countries, seemed to be enough justification for government intervention (Radetzki, 1985b).

2.3 MAJOR CONSEQUENCES OF STATE PARTICIPATION

The most common form of state participation in mineral development in LDCs is the establishment of State Mining Enterprises (SMEs). The major role of SMEs is to establish the means with which natural resources would be converted into capital for investment and consumption. Thus, mining ventures possess an enormous potential in influencing economic development, in terms of the extent to which correct use of the capital is channeled through state enterprises. SMEs were often formed either to take over foreign-owned facilities, or to serve as the major means with which foreign companies and investors would be dealt with (Ascher, 1994). It is important to note that in this chapter, we only consider SMEs in relation to state involvement in mining ventures. There are a number of other reasons for the establishment of SMEs in LDCs:

- i. Prominence of the mineral sector, by itself and in development;
- ii. Desire to capture the economic rents of mineral monopolies;
- iii. Capital requirements;
- iv. Risk aversion;
- v. A weak private sector;
- vi. Unemployment reduction and
- vii. Reduction of income inequalities (Dobozi, 1989; Radetzski, 1985b, and Trebat, 1983).

As previously mentioned, the establishment of SMEs reflects multiple goals and the evaluation of performance is generally very difficult (Strongman, 1994, and Sims, 1985). For instance, low profits may reflect either the social burdens carried, or managerial inefficiency (Mallon, 1981). However, SMEs initially lead to lower output and higher costs, compared to old ownership patterns. Further, due to non-profit (social) goals, SMEs experience high production costs, compared to private firms. There is clear

evidence that managerial inefficiency causes permanently higher costs. SMEs develop excessive capacity and operate uneconomically at full capacity, both policies resulting from soft budget constraints and confessional financing (Dobozi, 1989). In numerous instances, the comparatively vast levels of funding enjoyed by SMEs (compared to private ventures) have resulted in a blunting of their ability in making sound investment decisions, to the extent that such decisions may even be politically motivated. However this is a two-way street, in that governments may also impose upon SMEs conditions and provisos that are fuelled by political agendas (such as obliging an SME into a recruitment drive that is clearly surplus to requirements) (Ascher, 1994).

As SMEs in developing countries are mainly ore extractors, their emergence has not had a significant impact on world mineral markets. Only a few state firms explore, produce, finance, and market self sufficiently: CVRD (Brazil), CODELCO (Chile). PERNAS (Malaysia), Charifien des Phosphates (Morocco), OCPM or SONAREM (Algeria) (Walde, 1981), the National Iranian Steel Co. (NISCO), and the National Iranian Copper Industries Co. (NICICO).

In the following, we will examine some cases of particular LDCs, some of which have successful SMEs and others, which have not. First the cases of Zambia and Bolivia will be discussed. The outcome of nationalization of the copper industry in Zambia was significantly different from the government's original expectation. The Zambian government apparently thought it could achieve its development goals through control of the national copper industry and could, therefore, avoid making major public investments to achieve those goals.

In practice, the mixture and ambiguity of economic and socio-political goals in the Zambian copper industry significantly increased production costs. The government strongly emphasized employment and provided social amenities to employees and local communities. This, along with the costs of setting up the state enterprise, reduced the

importance of profit maximization and cost minimization and weakened the financial position of the industry.

Therefore, the Zambian government, as the major owner, had to bear the financial burden and consequences of its actions. For socio-political reasons the government could not stop the operation, and had to pay the price of maintaining the operation of a financially troubled international industry. As a matter of fact, the overall costs of nationalization were much more than expected. One consequence of Zambia's nationalization of the copper industry was increased indebtedness that forced the government to postpone its development plans (adapted from Radetzki, 1985a, and Libby and Woakes, 1980).

The case of the Bolivian-owned tin company, COMIBOL (Bolivian Mining Corporation) is another example of failure. The company suffered from continuous over-employment, decreases in production and productivity, and politicization of management decisions. Repeated injections of technical and financial aid did not make the situation better (Walde, 1988). Quoting from Mikesell (1971), "The problems of Bolivia's nationalized tin industry have probably been more social and political than technical in origin."

The literature on government intervention in mineral development suggests some successful cases as well. For instance, we can refer to the cases of Chile, Malaysia and Botswana. In Chile, public copper enterprises have achieved considerable performance by increasing production, enhancing the level of technology and expanding exploration activities (Walde, 1988). In Malaysia, a substantial portion of the tin output is produced by state owned mines. These enterprises have shown considerable performance capabilities (Walde, 1988, and Mikesell, 1971). In Botswana, the government succeeded in obtaining major rights over its minerals despite a limited work force, and established four important mines and two related towns on schedule. Botswana's mineral production and its contribution to the national economy and development objectives significantly increased under government policies and control (Johnson, 1981).

2.4 ALTERNATIVE STRATEGIES

The overall outcome of nationalization and control policies and the alternate strategies by which government objectives can be achieved without equity participation are discussed in this part.

2.4.1 Revenue Maximization

It is difficult to prove any causal link between government ownership and higher economic performance of mining projects during the 1960s and '70s. The literature (Kikeri, Nellis and Shirley, 1994, and World Bank Technical Paper No. 181, 1992), in fact, has questioned the "revenue generating potential" of government ownership.

Governments normally gain revenues from mining operations through income taxes, royalties, and equity participation. The government can obtain equity either free or by purchase. In practice, it may be easier to obtain taxes from a foreign mining company than it is to obtain dividends from a state mining enterprise. Even when enterprises are highly profitable, dividend payments can be modest if funds are needed for capital expenditures or debt service. Many governments have also difficulty in treating funds held by state mining enterprises in the same way as funds held by the treasury.

Several kinds of tax, with many advantages, are commonly levied on mineral projects. Royalties and income taxes, for instance, often provide a more certain stream of revenue to the government. More recent forms of taxation, such as the resource rent tax (RRT) and the additional profits tax (APT), also seem to have certainty advantages over equity sharing.

Sims (1985) states that Walrond and Kumar used a computer model to show the effects of the various fiscal options, e.g., royalty, corporate income tax, additional profits tax and equity sharing on government revenue. They concluded that *"The main merit of*

government equity participation would appear to be effective control rather than maximize revenue."

2.4.2 Effective Control

Besides revenue generation, the government may see ownership or equity participation as a means of ensuring effective control, and gaining experience. Governments basically want control over mining ventures in order to monitor company performance in various areas, especially those related to government revenues, and to ensure that foreign firms conform to government policy.

With respect to government control, there are two broad approaches through which the government can exercise its control over the operation of mining companies: by majority control of the board of directors, or through legislation and regulation. The first approach requires qualified government directors to exert their authority over the management board on important policy issues. The second approach requires that government officials responsible for promulgating and enforcing regulations understand the industry that they are regulating and are able to detect violations of the rules. Both approaches require honest and incorruptible government personnel, as well as capable administrative methods and bureaucratic procedures. The need for a regulatory and monitoring structure, however, is not eliminated, even when the government has a majority share in the company.

There is a debate on which approach, i.e., equity sharing or regulation, is more effective for control purposes. Zorn (1981) believes that ownership and effective control are different things, and even 100% equity ownership is not a guarantee of effective control. He adds that substantial control power can be obtained through regulations and effective agreements. He refers, for instance, to the Cerro-Matoso nickel agreement between the government of Columbia and two U.S. mining firms. The agreement provided that government approval was required for some key issues, such as appointment of

management, purchase or sale of goods and services, know-how agreements and annual operating plans, even though the government held only a minority equity position. Also, Lecraw, in 1984, tested the relationship between 153 subsidiaries of transnational corporations and host governments, within certain parameters including equity, and concluded that a high level of equity participation did not imply a high level of effective control (Chermark, 1992). However, Sims (1985) suggests that control of the project is synonymous with government equity sharing. With respect to controlling company performance, the government would probably receive more information as a board member than it would as a regulator.

2.5 MAJOR PROBLEMS OF STATE-CONTROLLED MINERAL SECTORS IN LDCs

In spite of improvements in controlling mineral operations and increased government revenue, LDCs suffer from major problems regarding the development of their mineral resources. These problems are briefly discussed here.

2.5.1 Capital Investment

The mineral industry is a capital-intensive and high-risk activity, with certain unique characteristics such as fixed location, physical uniqueness, as well as dynamic and decreasing nature of ore reserves, and long lead and exposure times associated with mineral projects (Bilodeau and Davidson, 1992). Most developing countries cannot afford the required capital for exploration and development of minerals, and thus are generally dependent on external sources of money. International loans are rarely available for mining projects. This is partly due to the relatively high risk associated with those projects and partly because international financing institutions, such as the World Bank, prefer to supply their own limited funds to basic infrastructure projects like

transportation and power, and to other industries for which private capital is not ordinarily available.

The high debt burden of most mineral producing countries and the frequency of debt rescheduling, along with the trend of host government involvement in the control and management of projects during the 1970s, have made even international private investment less attractive and unlikely in developing country mining projects. Recognizing this problem, developing countries, in general, changed their policies toward foreign capital encouragement and reduced government involvement in the 1980s (Walde, 1988).

2.5.2 Marketing

Export-oriented resource industries cannot succeed without markets and a well-developed marketing organization or direct ties with overseas consumers. Most SMEs in developing countries are completely dependent on marketing structures created and controlled by the modernized economies and large international corporations.

There are many examples of the difficulties of SMEs in marketing their products. Take the example of Guyana for instance, with the 1977 nationalization of the ALCAN bauxite mines. The newly created local company had difficulty in marketing some of its products for which ALCAN, through vertical integration, had no previous problems (Sims, 1985).

2.5.3 Price Fluctuations

The producers of minerals become frequently subject to the effects of wide price fluctuations on the world market and to static demand for their products, and developing countries can only rarely exert any influence over market prices and the marketing structure maintained by developed countries.

Mineral producing LDCs suffer when mineral prices fall, because most of these countries are dependent on foreign exchange revenues derived from mineral exports. Furthermore, as the Botswana Minister of Mineral Resources once said, even when prices rise, market price fluctuations make it difficult for LDCs to formulate development plans (Chiepe, 1980).

2.5.4 Local Processing

Mineral exporting countries can gain substantial benefits from the establishment of mineral processing facilities within their territories (Radetzki, 1977). Primary commodity exporting countries receive only a small part of the final price paid by consumers of the final product. The value of raw materials increases as much as thirty-fold through processing into semi-fabricated products (United Nations, ESCAP, 1980).

Mikesell (1971) believes that the long-run terms of trade have moved against some developing countries because of the inability of their SMEs to develop and process their mineral resources to face changing world demand and supply conditions. In addition to the considerable value-added benefits, another advantage of local processing is that it can rely on the technology, infrastructure and capital already employed by mining enterprises and can use the experiences developed in mining (Radetzki, 1977). It can create new infrastructure, increase employment, reduce the possibility of manipulating profits and tax payments through transfer pricing by the multinational companies, reduce dependence on imports, and improve managerial and marketing skills.

2.5.5 Management of the Mineral Sector¹

Apart from general problems of LDCs in their mineral development plans, a state-

¹ This part is adapted from Dobozi (1989), Shirley (1983) and Zakariya (1980).

dominated mineral sector with a large amount of SMEs causes inefficiencies in that sector. Some of the reasons for this are:

2.5.5.1 Administrative Structure

The inadequate administrative and technical capability of government planning boards, the ambiguous goals of state entities, as well as their low level of knowledge and expertise have resulted in the wastage of resources in many developing countries.

In practice, state enterprises normally take on a life of their own and ignore the goals of global development plans of the government. This tendency originates from the lack of an adequate balance between their financial/commercial independence (autonomy) and accountability to government. They are also weakly controlled, and this causes corruption and misuse of resources and facilities.

2.5.5.2 Balancing Public Control with Autonomy

Most LDCs have not succeeded in balancing their control of SMEs with entrepreneurial factors (Zakariya, 1980). Regarding the control of SMEs, although some control to assure good social profitability is necessary, poorly coordinated interference can make success impossible (Shirley, 1983). Blurring of managerial and oversight functions can undercut the autonomy intended and presupposed in an SME (Op cit., Zakariya, 1980). The case of Zambia's ZCCM illustrates this point. The allocation of sufficient foreign exchange would have made the firm viable. However, since the 1970s, the firm had been cut off from adequate foreign currency, resulting in higher operating costs and deteriorating plants. The government was unable to give the firm the foreign exchange it needed, owing to demands from the rest of the economy (Dobozi, 1989).

A variety of controlling government agencies has created an overly complex and bureaucratic authority. A large SME may be managed by the legislature and powerful interest groups, many of whom know next to nothing about the mineral sector involved,

and devote more attention to procedure than to results. It is also likely that enterprises without any governmental oversight grow into political and economic empires with very little or no public accountability (Ibid., 1989).

2.5.5.3 Overcapacity

Over-investment in SME capacity results from the low cost of capital (i.e., treasury funds) and bureaucratic tendencies to maximize the volume of production rather than profit (Radetzski, 1985). It can be difficult to recoup any funds from a successful SME, due to its drive to reinvest in expansion (Sims, 1985). SMEs also favor domestic investment even when foreign investment would make more economic sense (Dobozi, 1989).

2.5.5.4 Distorted Prices

Poor performance of some SMEs may be due to government-imposed pricing controls. SMEs do not often receive adequate and timely compensation even for losses from government underpricing (Dobozi, 1989). Further, controlled prices are often blamed for financial profitability being a poor predictor of the social profitability of state mining enterprises. However, others are more optimistic about social profitability as a performance criterion in state enterprise goal structure (Ibid.), because by removing controlled prices, market prices may accurately reflect economic profitability (Shirley, 1983).

2.5.5.5 Low Productivity

Overall, state enterprises are often extremely inefficient compared to private firms (Dobozi, 1989). However, some analysts (Shirley, 1983, and Sims, 1985) believe that such inefficiencies are not inherent or systematic, but that proper management can mitigate them. The many commercial and social goals of SMEs, unless prioritized, cause the sector to operate with unresolved conflict. Performance cannot be extrapolated, nor

compared with expectations. Poor management is concealed, as losses are often attributed to noncommercial goals (Shirley, 1983).

2.6 POLICY OPTIONS TO IMPROVE SME PERFORMANCE

Having discussed some problems of SMEs, the important question is how to make such enterprises economically efficient when they are burdened with non-commercial social goals as well as commercial objectives. It should first be mentioned that whatever shape of form any improvements may take, both the government and the SMEs must necessarily and jointly be involved in the processes underlying economic efficiency of SMEs. In practical terms, such a partnership often involves a balancing of autonomy and accountability on the behalf of the SMEs concerned: SMEs should be given the degree of discretion to operate as effectively as possible in an economic sense (e.g.. in initial levels of necessary investment, in seeking foreign loans, and in operational decisions), whilst remaining accountable to the government, in terms of the socio-political agenda(s) laid down by the government.

State firm autonomy would be strengthened by reduced government interference. Strong governmental leadership efforts must ensure that SME investments are initiated with adequate marketing and cost surveys. Firms must be made to understand that their investment decisions may impact world mineral markets and thus affect the profitability of their own operations (Ascher, 1994, and Trebat, 1983).

The extent of governmental involvement in the various operational phases of resource extraction, processing and marketing will also influence the economic efficiency of SMEs. For instance, a government that is not particularly well equipped in dealing with the exploration phase may overspend the budget put aside for this phase, thus resulting in reduced profit margins upon product marketing. Therefore, both the government and SMEs should consider whether it would be more efficient to enlist the expertise of the

private sector in certain phases of the operation, if it results in greater economic efficiency. In terms of more practical tools available for improving the economic efficiency of SMEs, the first area that should be considered is Goal Programming (Dobozi, 1989). This is a quantitative technique in multi-objective decision-making comprising six steps:

- i. Identify goals;
- ii. Evaluate the means of achieving them;
- iii. Assign a weight to each goal in conformity with some politically specified order of preference;
- iv. Assign weights to over and under achievement of relevant targets;
- v. Determine the optimal investment portfolio; and
- vi. Simulate the impact of time on relevant targets (e.g., employment, distribution of income, etc.)

Once the noncommercial (social) constraints are identified and costed, governments can instruct firms to maximize their profits, while operating within the set of constraints. Firms may either be reimbursed or their profit targets lowered. However, after such a compensation, firms would be accountable for achieving profit targets (Mallen, 1981).

Although the government's pricing policy should deter abuse of monopoly positions, it should permit reasonable return on investment, assuming normal efficiency. If there are price distortions, shadow-pricing procedures can be used to evaluate SME efficiency consistent with economic efficiency. However, as shadow prices can be complex to calculate and administer, the best solution is to move prices closer to market prices by removing distortions whenever feasible (Shirley, 1983).

Effective and good management is a prerequisite for appropriate execution of a long-term strategy, progression of core programs, optimal use of resources, and coordination with other entities to avoid duplication of work. Improvement of management depends on the rewards for improvement and management training. A non-assured management position, a performance-based career system, a rotation of top and specialized managers, insulation of the firm from outside politics, improvement of staff quality and sanctions against officials who make improper decisions, coupled with the optimisation of personnel numbers and the implementation of pay scales competitive with private industry would improve SME performance (World Bank, 1995, Ascher, 1994, and Walde, 1983).

Another key factor affecting the development and sustainability of SMEs is the availability of financial resources. Reliable resources to finance personnel, infrastructure and operations are indispensable to the fulfillment of the responsibilities of institution (World Bank, 1995). One apparent way of improving the availability of financial resources of SMEs would be for them to pay a lower rate of natural-resource tax in comparison to private ventures. However, this may have the effect of artificially inflating the profit margins of the SME, thus reducing the governmental scope in assessing the true profitability of the SME venture. Therefore, there have been arguments favouring the same levels of taxation in SMEs as those imposed on private ventures (Ascher, 1994). However, caution must be exercised here, since, whilst equating the tax regime of private ventures and SMEs go some way towards ensuring that the government can exercise adequate control over the surplus, it may absorb SMEs towards inadvisable foreign borrowing.

2.7 CONCLUSIONS

From an historical perspective, during the 1960s and '70s, LDCs have shown great interest in nationalizing their mines, mainly in the hope of increasing revenue and

gaining effective control over multinational companies. In general, many LDCs succeeded in gaining greater control over their projects, but failed to generate greater economic benefits directly from nationalization. A smaller group of developing countries was successful both in exercising control and in increasing economic benefits. An overall review of the performance of LDCs during this period, however, shows that they failed to rationalize the role of minerals in long-term development planning. Their major problems, some of which were discussed, still remain unsolved.

The nationalization trend of mineral resources in developing countries, along with their high debt burden, has served to inhibit the transfer of capital and technology. The reduction in foreign company investment along with the lack of local capital caused a decline in the development of new resources. In response to the situation, the LDCs changed their policies, moving "*from restriction back to business*" (Walde, 1988). The LDCs took new measures to attract foreign investment and mobilize the necessary financing for mining projects. However, state participation in the mineral development of many LDCs is still dominant.

Some reasons for equity participation in large mining projects were examined. Although equity has the advantage of lowering the MNCs perception of political risk in a project, such a benefit does not simply materialize as a result. To take advantage of equity ownership, disciplined and coordinated work is required.

It is also the case that a more advanced economy may lead to increased benefits from government equity, in that the rest of the economy enjoys more project linkages. However, an important equity position may not necessarily achieve this aim, because a small poor country without a skilled workforce may not be able to invest substantial capital in its mining operations (Sims, 1985).

Even when taking the multiple social goals of SMEs into account, government equity in large mining projects may not be worthwhile compared to sound regulation and taxation of private firms. When considering an equity stake, it is important for governments to clarify their objectives, and ask themselves whether all the costs, time and effort placed into an equity stake justify the benefits that may be gained. If the objectives are mainly centered on political ideology, a production sharing agreement with the private sector might be preferable to an equity stake. Similarly, if the objectives focus on control and entrepreneurial training, then government cash outlays could be minimized by drawing up a contract with the foreign company that requires a gradual phase-in of local workers.

CHAPTER 3

PRIVATIZATION OF STATE-OWNED MINING ENTERPRISES IN DEVELOPING COUNTRIES

3.1 INTRODUCTION

Since the beginning of the worldwide economic recession of 1981-82, the world economy has changed dramatically. This recession had some serious impacts on mineral investment, mineral prices and demand, and on the availability and terms of financing. Soetjipto (1993) states that it was in the second half of the 1970s, in fact, that world mineral markets entered a period of uncertainty and that new mining projects were confronted with the continuous decline of major mineral commodity prices. He argues that this situation was mainly a result of increased exploration and mine development activities in developed countries in the late 1960s and early 1970s.

Mineral prices in real terms have decreased to their lowest level for decades, and the economic recovery from 1983 to 1986, reflecting the cyclical nature of mineral prices, has done little to raise them. Few mineral development agreements have been signed. Investment has mainly focused on precious metals and on projects of a much smaller scale than projects of the 1970s (Walde, 1988).

The continuous weakness in prices and demand are further aggravated by an array of parameters, such as limited, if not shrinking, financing and investment capital (partly due to developing countries' increasing indebtedness), an increasing reductions in metal use in developed countries (partly due to substitution and to recycling and conservation), particularly in Germany and Japan (Economic Commission for Africa - ECA, 1996). These conditions combined with huge losses of some large scale state-owned projects (mainly due to mismanagement) have collectively necessitated a *reassessment of the mineral policies* of past decades, especially in developing countries (Economic Commission for Africa, 1996, and Walde, 1988). This reassessment in turn has paved the way for introduction of sweeping changes.

The paradigm that emerged in the mid-1980s focussed on private capital initiatives and privatization of public mineral enterprises (Morgan, 1994). This was a reversal in past policies of the 1960s and 1970s, from increased state participation and control of mining industry¹, to privatization and denationalization² of this sector.

Following the presentation of background information, the author reviews several critical issues surrounding privatization before presenting a brief discussion of privatization trends in the mineral sector as well as the methods and procedures used in the privatization of state-owned mining enterprises. Conclusions highlight the critical points of the chapter.

3.2 BACKGROUND

As the literature suggests, the performance of state-owned enterprises (SOEs) and the business environment are among the key factors that explain why privatization has become

¹ There is an increasing de-mystification of the ownership-control paradigm. As mentioned in chapter 2, there is no strong evidence to suggest that ownership is necessary for control.

² Denationalization is a term used to signal the previous process of nationalization or take-over of otherwise privately-held mining enterprises.

so important in the early 1980s (Price Waterhouse, 1996, ECA, 1996, and Lieberman, 1993). In the early 1990s, another key factor that helped demonstrate the prominence of privatization was the fiscal and debt crisis in many developing countries (Mateen, 1994).

This is also confirmed by Ramamurti (1992). In a broad-based study, Ramamurti examined 83 developing countries to find the reasons that motivated them to pursue privatization. The study concluded that privatization is more likely to be pursued by countries with “high budget deficits”, “high foreign debt” and “overused state enterprises.”

3.2.1 Performance of State-owned Enterprises

As mentioned in chapter 2, generally, state-owned enterprises are those with a corporate identity, which have objectives that are primarily economic and designed to add wealth to the community. They may also be used as a vehicle to achieve socio-political objectives of governments (Powell, 1987). The particular form of enterprise of concern in this study is the State-owned Mining Enterprises (SMEs), engaged in the extraction of minerals and the production of metals. Most of these enterprises were established in the 1950s (Radetzki, 1985), and have grown since the early 1960s. The SMEs play a range of roles, from complete control of mining operations to helping private, usually foreign, investors. In most countries, the growth of SOEs was instrumented by substantial regulatory practices, tight controls over entry and outlet in specific industries, regulated prices and quantities, and tough bureaucratic measures and labor laws that reduced labor mobility and competitiveness.

The statistics on SMEs in developing countries suggest that their performance has steadily declined (ECA, 1996, Strongman, 1994, World Bank Technical Paper No. 181, 1992, and Powell, 1987). The poor performance of SMEs is partly due to the general problems that arise from the social, economic and political environment of developing countries. The environment often lacks adequate supporting institutional infrastructure, which results in limitations, both in quality and quantity, on training centers and facilities, on electric power

and water supplies, on transport networks, on banking and insurance facilities, and on technical and managerial capacity (Powell, 1987).

Apart from the general problems mentioned above, other contributory problem areas to particularly poor performance of SMEs are as follows³:

- i. The objectives and goals of state companies are often unclear and ambiguous. Furthermore, there is often a conflict between the microeconomic/commercial goals (e.g., profit maximization and high productivity) and macroeconomic, socio-political pressures (e.g., job creation and regional development), which are politically correct. These conflicting issues cause inconsistencies in decision-making rationale from the point of view of company objectives.
- ii. In the appointment of top-level management to state-owned enterprises, political considerations normally take precedence over business considerations and the managers are not necessarily experienced in the sectors in which they are appointed to serve. There is often a lack of direct management skills along with frequent restrictions on management autonomy.
- iii. There is often a lack of qualified workers and technicians. State companies have difficulties in motivating employees. The level of wages and fringe benefits is often lower than that in the private sector, and there are poor employee training policies and facilities. Employment is often based on nepotism rather than on capability and competence.
- iv. From the government's point of view, a successful SOE may be looked upon as termed by Morgan (1994), a "*milk cow*", i.e., it funds other government departments when the business is good. Therefore, necessary reinvestment in the industry may suffer.
- v. State companies are difficult organizations to control. As Walde (1983) states, "they

³ Adapted from (Morgan, 1994 and Powell, 1987).

grow into powerful political, financial and economic empires, unbridled by public or government control." With SOEs, getting the right balance of proper control and necessary intervention is very difficult (Sims, 1985).

- vi. Government organizations are often bureaucratic. Efficiency is low and they are likely to be overstaffed. Head offices are often in capital cities and not necessarily close to the business. They generally suffer from faulty coordination and planning, often due to several levels of hierarchy. The SOEs are also weakly controlled, which may cause corruption and misuse of resources and facilities.
- vii. There are often unnecessary investments in SMEs due to the low cost of capital (i.e., that of treasury funds), and bureaucratic tendencies to maximize production rather than profit (Radetzki, 1985).
- viii. Most SMEs in DCs are completely dependent on marketing structures created and controlled by the modernized economies and large international corporations. Large mining projects are technologically complex and at times sophisticated. Most state-owned companies have difficulties in providing the technical and managerial services required to operate these projects.
- ix. The corporate strategy is often inward looking, characterized by internal promotion of the firm with few outside relationships or exchange programs.
- x. A lack of foreign capital along with restricted regulations applied to state-owned companies make business hard and can quickly cause a critical shortage of spare parts and equipment.

3.2.2 Business Environment

As mentioned earlier, several economic problems confronted the mineral industry in the early 1980s, including but not limited to: price and consumption declines, restrictions on financial resources, and low level of investment in the mining sector.

It was difficult for any mineral company to operate in such an environment, and mining enterprises were faced with a tough economic situation. This unfavorable environment, coupled with the general problems of state owned companies, resulted in the poor performance of the majority of state-owned mining companies in DCs. This made privatization an attractive alternative to most governments. It was argued that privatization would increase productivity and effectiveness, and eventually provide efficient and quality services to the public (Shahabuddin, 1993).

3.2.3 Other Factors

Other factors that encouraged the path to privatization were:

- i. To raise funds necessary to cover budget deficits and other obligations of government, and to provide funds for the government's other capital projects;
- ii. To reduce the participation of the state in the economy;
- iii. To dispense a lawful and organized environment in which free enterprise could run;
- iv. To minimize the financial dependency of State Mining Enterprises (SMEs) on the national budget;
- v. To increase domestic and international business confidence and to attract recognized mining companies willing to make a long-term commitment (i.e., 15-20 years);
- vi. To increase government benefits from the mining sector (taxes, royalties, duties, improved infrastructure, etc.);
- vii. To lower costs, improve efficiencies, and return companies to the path of profitability;
- viii. To reactivate the mining sector with fresh ideas, companies, professionals, and machinery and equipment, in order to provide a more competitive mining base;
- ix. To provide for the efficient and profitable use of national resources;
- x. To encourage wider business ownership through public offerings;

- xi. To improve working conditions and rewards for mining-sector personnel;
- xii. To generate new sources of cash flow and financing for mining enterprises;
- xiii. To improve the efficiency of SMEs through joint-venture relationships; and
- xiv. To reduce levels of hierarchy and bureaucratic procedures, and make companies more outward-looking and market-orientated. (Adapted in part from ECA, 1996, Morgan, 1994, Bear and Corney, 1993, Powell, 1987, and Yarrow, 1986).

Apart from these factors, it is important to mention that maintaining efficiency in the mineral sector requires constant investment in technology such as computer-based supervision to reimburse higher development costs. New processing technologies have changed the commercial plausibility of ventures in several mineral sectors. Also, environmental legislation has increased the fixed costs of exploration and production, including the cost of impact studies, new technologies that ensure environmentally safe operations, and future land reclamation. To meet all these costs, mineral ventures have been important targets for privatization in recent years (Price Waterhouse, 1996).

Surprisingly, as Morgan (1994) states, many reasons for privatization are similar to those that have been mentioned earlier for nationalization⁴. He argues that, *"If appropriate legislation and controls are not put in place, there is a danger, therefore, that the cycle may repeat itself."*

It should be noted that despite the considerable advantages of privatization in the long-term, there are some associated costs. Referring to the Ukraine privatization experience, MacNeil (1994) states that political instability, corruption, inflation and social inequality could be products of massive privatization (Samson, 1994).

⁴Yarrow (1986) concluded that *"competition and regulatory policy are more important determinations of economic efficiency than ownership per se"*.

3.3 A BRIEF REVIEW OF PRIVATIZATION TRENDS IN THE MINERAL INDUSTRY OF LDCs

Governments globally often try to resist private interference in their extractive sectors by appointing these industries as "strategic" and placing them under state control. The extractive sectors (including the mineral sector) are considered strategic not only because they contribute to the GDP and the treasury, but also because they symbolize state supremacy and power. In a 1990 study, three out of the top ten mining companies were state enterprises or companies controlled by the state (Price Waterhouse, 1996).

Historically, however, due to the reasons mentioned earlier, most nations opened their mineral resources to foreign mining companies. Since 1985, more than 90 nations have adopted new mining laws or are revising existing laws (Eggert, 1997, and Price Waterhouse, 1996). Supplementing these changes, the impartiality of investment laws has allowed foreign ownership of state mineral enterprises for the first time in decades. In a number of countries, including Botswana, Ghana, Chile and Indonesia, private investment in the mineral sector already exceeds public investment (Ibid., Price Waterhouse, 1996). The following figure shows the private sector share of mineral production in developing and transition economies.

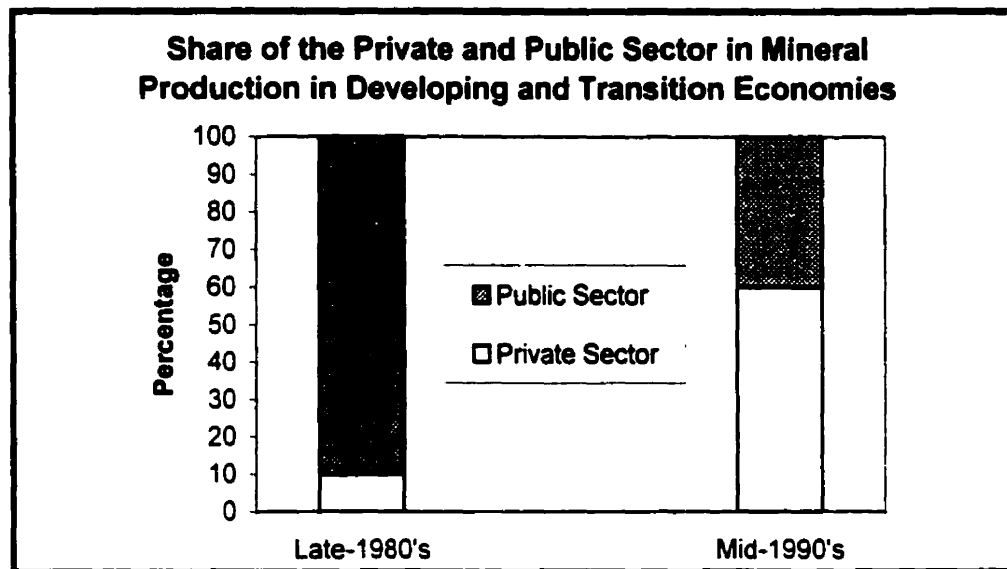


Figure 3.1 Share of Private . . ., Source: Privatization in Extractive Industries, Price Waterhouse Publication, 1996, p. 4, cf. Price Waterhouse Home Page.

As illustrated in the above figure, because of privatization of important large SMEs in South American countries as well as in Russia in particular, the share of the private sector has considerably increased over the 1990s. At present, in countries with important mining sectors, private operators control an estimated 60% of mineral production. As recently as eight to ten years ago, significant private sector mineral production in the developing world was limited only to a few countries, including South Africa, Namibia, Gabon, Indonesia, and Papua New Guinea.

3.4 METHODS OF PRIVATIZATION

The most common methods of privatization are as follows⁵:

⁵ Compiled from Morgan, 1994, and Vuylstecke, 1988.

3.4.1 Public Offering of Shares

This method consists of the sale of all or part of the shares of a company to the public⁶. This is particularly suitable if a mining company is in good condition but there is a lack of required capital for further expansion. As the price of shares is market-controlled in this method, it is more acceptable compared to other methods from an economic and political point of view. (Vuylstecke, 1988, and Morgan, 1994)

Walker (1988) suggests that the initial pricing of company shares should be low in order to attract more buyers and thus help support privatization. This method enables governments to spread share ownership very widely. However, Nowell (1994) believes that dispersed share holding among many can weaken the accountability and hence the quality of management. In some cases, two categories of shares (i.e., preferred and common) were created to enable a small group of shareholders to control management.

3.4.2 Private Sale of Shares to Selected Buyers

This approach consists of the sale of all or part of the government's shares in state-owned companies, through negotiation or a competitive bidding process, to an individual or a group to revitalize the enterprise, mainly through technological upgrading, but also through access to international markets. In most cases, the government retains an interest and an involvement in management. This is preferred for weak companies, because of its flexibility in negotiation, ease in determining the price of shares, as well as the simplicity associated with the procedure. It may be also the only alternative if the equity markets are not well developed or the size of the enterprise does not justify a public offering.

⁶Bolton and Roland (1992) argued that some fraction of equity should be maintained by the state in order to provide the government with future revenues and control.

3.4.3 New Private Investment in SMEs

This form consists of a public offering (or sometimes, a limited offering to selected buyers) of new shares to a targeted company or groups of individuals to provide funds and bring in special skills, technology, and markets. This method is often used when the primary objective is not divestiture but provision of new equity by private sector. This can also be used to solve funding problems for undercapitalized enterprises.

3.4.4 Sale of SME Assets

In this method, the SME's assets are sold. Here, given the geological and surface assets of the SME, its performance and future potential, consultants assign a floor value to the company.⁷, following which the government sells the company to the highest bidder. This method is considered the most normal form of privatization in the mining sector (Morgan, 1994).

3.4.5 Fragmentation (or Breakup into Parts)

On occasion, a state-owned mining company is not only integrated into smelting and refining, but may also operate fabricating plants. When there is no demand for the whole company or the government's objective is to privatize only certain components, the SME must be split into several entities which are sold separately. This process also allows the application of different marketing methods to different entities. Morgan (1994) argues that this method may not guarantee a continuing healthy mining industry.

3.4.6 Management/Work-Force Buyout

This approach is recognized as a means of transferring SME assets to management and

⁷According to Garrido (1992), assessment methods of the assets of the SMEs include the following: book value, value of the flow of possible earnings, and market value.

employees, even when the projected value is low, in order to create an incentive for higher productivity. It is used particularly in smaller mines or facilities (Ibid., Morgan, 1994).

3.4.7 Lease and Management Contracts

This approach is used when the government is unwilling to transfer the sovereign right to minerals in the ground. However, the operator would most probably require freedom to act and have complete control over operating procedures, planning and possibly development strategies over a limited contract period.

There is a major difference between a lease and a management contract. Under a lease agreement, a fee is paid to the government, but under management contracts, the government pays the contractor (which has good management skills and expertise) to run the mining company. This approach may also be planned as an intermediate step to full privatization.

The following table summarizes the basic methods of privatization, each method's characteristics, applicability, pros and cons.

Table 3-1 the Basic Methods of Privatization

Method Characteristics	Applicability	Advantages	Limitations
<p>1. Public Offering of Shares</p> <p>Distribution to the general public of all or part of shares in public</p>	<p>SOE around going concern with reasonable earning potential</p> <p>Objective is widespread ownership</p>	<p>Generally more appropriate for larger offerings from direct sale</p> <p>Often more politically acceptable</p>	<p>Structure or condition of company may not permit public offerings</p> <p>Pricing mechanisms to be defined</p> <p>Measures are necessary to effect management changes</p>
<p>2. Private Sale of Shares</p> <p>Sale of all or part of government shareholding in a SME to a single entity or group. It can be partial or full privatization (e.g., transformation into joint venture).</p>	<p>Size of enterprise may not justify public offering</p> <p>In absence of equity market, may be only alternative</p> <p>Preliminary step to public offering when the presence of new partners necessary to turn enterprise around</p>	<p>Because of flexibility, preferred method for weak-performing enterprises</p> <p>New owner known and can be evaluated</p> <p>Flexibility in negotiation</p> <p>Purchaser may bring benefits (management, technology, market access, etc.)</p>	<p>SOE may need private financial restructuring: difficult decision on whether to rehabilitate prior to sale</p> <p>Often is not acceptable politically in developing countries</p>
<p>3. New Private Investment in SME</p> <p>Primary share issue subscribed by the private sector.</p>	<p>Where primary objective is not divestiture but provision of new equity by private sector</p>	<p>Addresses funding problems of undercapitalized enterprises</p> <p>Offers flexibility; used as first step to, and in conjunction with, sale of government-held equity</p>	<p>Dispersed share holding among many can weaken the quality of management</p>
<p>4. Sale of SME Assets</p> <p>Sale of assets (instead of shares) to private sector</p>	<p>Where sale of shares not feasible or objective is sale of individual assets</p>	<p>Permits privatization of SMEs not salable as going concern.</p>	<p>Problems regarding sale of assets as a result of liquidation or major restructuring</p> <p>Related debt liabilities often not assumed by purchaser.</p>

Continued overleaf...

...The Basic Methods of Privatization

Method Characteristics	Applicability	Advantages	Limitations
5. Fragmentation Re-organization of a SME into several entities. Each entity can be privatized separately	Where objective is to only privatize certain components Where SME is a monopoly, and breakup will improve competition Where market will not absorb whole SME	Permits privatization of parts when no taker for the whole Permits application of different methods to different parts	Complexity in applying different methods to individual entities
6. Management / Work-Force Buyout Acquisition by management and/or work force of controlling interest in SME	Used particularly in smaller mines or facilities Where the company has competent and professional management as well as skilled and stable work-force	Incentive to productivity May be solution for SME not salable otherwise May be solution for employment problems	Cash flow or other security required as underlying element of Management/work-force buyout Risk to employees
7. Leases and Management Contracts No ownership transfer Under lease, fee is payable to the government; under management contracts, the government pays for management skills.	Where privatization of ownership of SME is not appropriate. Where state is unwilling to transfer ownership to private sector but wants private sector management	May be planned as intermediate solution rendering later sale possible May also be planned as an intermediate step to full privatization	Continued financial liabilities of the state with respect to ownership of assets Under management contract, the government still needs to inject funds to support operations Maintenance/renewal obligations

Adapted from: Morgan, 1994, and Vuylstecke, 1988.

Regarding methods of privatization, as Walker (1988) states, "there is no single perfect method for privatization. They all have their failings, and they can be mixed in a number of ways." Combinations of any of these methods can be used to meet certain requirements in the privatization process. All situations must be dealt with on a case by case basis.

However, Price Waterhouse (1996) states that governments have recently begun to favour the divestment of large-scale mining enterprises. World-class facilities often attract international interest, through public offering of shares. Management-service contracts and lease holding have not frequently been used.

3.5 THE PRIVATIZATION PROCESS

Privatization implies fundamental change, because of the transfer of the assets and/or the authority to control functions that take place in an SOE. This results in the redefinition of the role of the state in the production and distribution of income (Armella, 1994, and Aspe, 1994). In the competitive environment of private ownership and improved market competition, "there is no room for direct subsidies to production and nor for any other distortions that might inhibit the development of efficient enterprises" (Aspe, 1994).

It is stressed in the literature (ECA, 1996, Morgan, 1994, and World Bank, Technical Paper No. 181, 1992), that privatization of SMEs will be unsuccessful if the fiscal regime, environmental legislation, mining code and institutional frameworks suitable for private enterprises are not yet in place. It is quite important for a buyer to feel confident that a fair and competitive legislation is in place for incoming companies (ECA, 1996, Newell, 1994, and Aspe, 1994). Orr and Ulen (1993) suggest that in order to create solid buyer confidence, legislations must restrict the government's option of reversing privatization in the future.

On the other hand, for a successful privatization, all necessary arrangements should be made to encourage employees and small investors to become shareholders (Miller, 1994). The privatization plan must formulate multi-year programs to deal with both small and large enterprises in the mineral sector. The scheme of these programs also needs to seriously consider social safety nets and labour retraining measures to diminish related welfare problems.

Many developing countries emulate their privatization strategies from the western world. These countries fail to realize that for any system to work, it must have the supportive environmental context within which to operate.⁸ The experience of many developing countries suggests that privatization without proper planning and the creation of the appropriate environment may fail. Unless the basic required environment is in place, more countries will fail in the privatization experiment and will blame privatization rather than the process used to privatize (Shahabuddin, 1993).

The full process of privatization must include the following:

- i. Creation of a conducive legislative, structural and operational framework;
- ii. Technical and economic assessments; and
- iii. Financial and promotional activities.

3.5.1 Legislative and Structural Framework

An effective privatization process requires that a fair legislative and an institutional framework be put in place before the actual privatization. This is particularly necessary to attract the qualified investors and to clearly establish the basic rules and regulations under which companies must operate. To do this, a methodical strategy for privatization is needed. This requires the formulation of multi-year programs, covering both small and large enterprises in the mineral sector. To establish such a framework, government needs to clearly define and state its intent and mining policy.

⁸ A report by the International Finance Corporation (IFC), the private sector arm of the World Bank, evaluates investment trends in developing countries and analyses the reasons for high levels of private investment in East Asia. According to the report, the strongest private sector investment responses occur a) in an open, export-oriented economy; b) where the local currency is readily convertible to a hard currency so that firms and individuals can shift legally from one currency to another; and c) in countries that have a large-scale privatization program. The IFC's findings make no mention of tax rates, the freedom to repatriate profits, investment codes, or political stability (World Bank, IFC, 1993).

Private mining investors normally require that certain policy preconditions be set before they decide on a major investment. These typically include:

- i. Sound macro-economic and trade policies with few restrictions on mineral exports and imports of machinery, equipment, parts, etc.;
- ii. Fair, stable and transparent regulations that clearly explain the rights and obligations of an investor and the government;
- iii. A satisfactory fiscal regime that provides adequate returns to investors;
- iv. Clarity and stability in the fiscal regime and environmental management;
- v. Assured access to foreign exchange at market rates;
- vi. Guaranteed access to international arbitration bodies in case of disputes;
- vii. Access to internal-sourced finance; and
- viii. Effective support of private mining enterprises by well-organized organizations (World Bank technical paper No. 181, 1992, and Morgan, 1994).

In practice, the sequence of actions to establish those policy preconditions are as follows:

- i. Appropriate legislation (economic, investment and mining codes) must be passed to cover, totally or partly, the above-mentioned factors.
- ii. Once the mineral policy is in place, it is necessary that the overseeing organization (Ministry of Mines and/or Natural Resources) be restructured to carry out the law and to encourage and facilitate new investments in the mining sector.
- iii. Full coordination among all affected ministries (such as the Ministry of Finance, Revenue and Taxation agencies, Central Bank, Budgeting & Planning and Development Agencies, etc.) is necessary to ensure that the fiscal regime applicable to mining ventures is fully integrated into the country's overall financial and

development framework and that important issues such as tax rates (corporate, sales, export and personal), tax holidays, depreciation / depletion rates, offshore retention and tax write-offs are addressed.

- iv. Guidelines for privatization must be established by the relevant ministries (Mining and Finance), covering, usually, the establishment of a privatization office, terms of reference, assets to be privatized, objectives, and timing, control and management (adapted from Morgan, 1994).

3.5.2 Technical and Economic Assessments

In the privatization plan, technical and economic assessments of the ventures by an *independent third party* must be made. The following important points in the evaluation process must be addressed.

- i. The evaluation methodology, designed by a professional consultant, has to be explained. Evaluation reports must reflect current trends in the industry and show the SME's competitive position.
- ii. Site visits for the consultant must be conducted and technical, commercial, environmental and financial assessments have to be made. In assessments, optimization alternatives that can be initiated with additional capital must be considered.
- iii. Attention must be paid to the fact that the large mining companies tend to harbor many small and sometimes hidden enterprises as service companies, e.g., engineering and drawing offices, and warehousing and shipping services; these all need to be evaluated and included in the assessment.
- iv. All of the financial, social and environmental liabilities must be identified. This is a very important step, since these liabilities could greatly affect future cash flows.
- v. Net present values at discount rates applicable to the industry must be calculated. Technical and economic reporting must be undertaken and supported by sensitivity and

risk analysis applied with respect to the major variables (Ibid., Morgan, 1994).

3.5.3 Financial and Promotional Activities

To attract foreign investors it is suggested (Morgan, 1994, and World Bank, 1992) that suitable experienced advisors be appointed to review all the economic aspects and put them on an international macro-economic and corporate/banking footing for likely buyers. Other activities include:

- i. A buyer's information memorandum (BIM) will need to be produced that contains the technical and economic information that an investor wishes to know.
- ii. The BIM will have to be sent to likely buyers or interested parties and the consultant must follow up by telephone, letter or visits, to encourage participation.
- iii. The bidding procedure and sale structure must be set within the government's objectives. The options for sale should be flexible enough to meet the buyer's wishes if possible.
- iv. Promotion must continue throughout the sale period. It can take the form of press conferences, symposia, visits, etc. Often, unlikely partnerships may develop; these should be encouraged to add value and attract better offers.
- v. Likely buyers must be listed and an information room staffed to receive them should be prepared on site. Appropriate guides must also be available.
- vi. Following sound and transparent procedures in requests for tender, evaluating bids and executing the sale are very important. The key issues here are good pre-qualification of bidders, clear terms of reference and preferred bidding format, to make the sale decision fair and straight-forward.

3.6 MAIN OBSTACLES TO PRIVATIZATION

3.6.1 Political and Socio-economic Problems

Privatization in extractive industries remains politically volatile. Nationalist emotion tends to withstand private manipulation of the national patrimony. Moreover, given the massive capital and technological requirements of the industry, private involvement in the mining sector hints at foreign involvement, inflaming further national sensitivities.

New standards under regulatory regimes can cause problems for resource production operations. For instance, Peru's expected sale of Countryman, the country's largest producer of zinc, lead, and silver, collapsed in May 1994 because of unsettled environmental liabilities from past operations. In Papua New Guinea, friction with landowners forced the subsidiary of an Australian mining operator to abandon its stake in the Mount Kare gold prospect and sell its 51% share to the minority shareholder (Price Waterhouse, 1996).

The privatization of large mining enterprises may mean the laying off of tens of thousands of laborers. In changing and developing economies, high unemployment rates and the absence of social security makes it impracticable to privatize, or to undertake the downsizing needed to attract private investors (ECA, 1996).

Other obstacles to privatization include a lack of free-market culture, misconstrues over who owns the SOEs and how much they are worth, a poor physical infrastructure, a lack of a legal framework regulating the conduct of business, and the shortage of investment capital (McIntosh, 1994).

3.6.2 Other Obstacles

Critical issues that are likely to become problematic in the process of privatization include:

3.6.2.1 Pricing

In practice, pricing a mining venture is very difficult. A given price depends on the inherent value of assets and their productivity; but it is also affected by the procedures used in the privatization process. Sale price is a function of value of assets, current productivity of those assets (SME's operating efficiency), the discount factor used on the future stream of income, including risks of all kinds, sale conditions and buyer's credibility. Many governments are criticized for wrong pricing, allowing the private sector to buy mining ventures at a price very much below market value (Walker, 1988)⁹. As mentioned before, governments sometimes set the initial price of shares below the market price in order to attract more investors.

3.6.2.2 Preparation of the SMEs

The process of privatization needs a period of preparation for governments to restructure SMEs. Therefore, the question of how much restructuring and improvement an SME needs before privatization becomes an issue.

If the government does not take the necessary steps to improve the operational and financial status of the company, the sale price may be low. If the government carries out too much restructuring, the preparation period will be too long and this will waste time. Governments themselves cannot often prepare a detailed plan to cover all of the issues related to the process of privatization, e.g., establishing the necessary legal, financial and investment conditions. Strongman (1994) recommends that governments seek the assistance of consultants with experience in *both* mining and privatization. This can partly solve the problem.

⁹ Quiggin (1995) states that following an analysis of a number of case studies of real and suggested privatization, it was realized that in many cases, the sale price was around 50% of the present value of the stream of net earnings foregone.

3.6.2.3 Legal and Financial Issues

Major problems related to legal and financial issues tend to occur in the allocation of financial liabilities between the seller and the buyer, in the carrying out the sale transaction, and due to unclear declarations of overall government policies on privatization, and regulatory and a fiscal frameworks for the mineral sector. These problems prevent the buyers from evaluating incentives, obligations, and existing environmental and other problems properly (Morgan, 1994, and Strongman, 1994). Two other significant issues of privatization are political and institutional support (Lieberman, 1993).

3.7 CONCLUSIONS

Starting in the 1950s and continuing in the 1960s and 1970s, many developing countries nationalized mining enterprises and focused on public sector intervention in mining activities. Their main objective was to maximize returns to the state and people. As discussed previously, the end-result of state participation in mineral projects has fallen rather short of this goal. The state-owned mining enterprises have been poorly managed and have gradually become technologically outdated.

The poor performance of SMEs is due to factors such as unclear, ambiguous and conflicting enterprise objectives, difficulties in motivating management and employees, ineffective pricing policies, political pressure on management and low levels of efficiency. The worldwide recession of 1980/1981 has also had a major impact on the mining sector. As mentioned, mineral prices dropped to their lowest level for decades, and because of the unavailability of investment funds, few mineral development agreements were signed. The continuing weakness in mineral prices, along with the huge losses incurred by SMEs, the unavailability of investment capital, and budget deficits in most of the DCs, led to a reassessment of previous policies. Most mineral policies of the 1980s emphasized privatization of public mineral enterprises.

The author reviewed the reasons, motivations and justification for privatization. Amongst these, the most important are considered to be the reduction of government deficits, the improvement of SME efficiency, the raising of domestic and international business confidence, the generation of new sources of cash flow for enterprises, the creation of attractive conditions for future investment, the reduction of bureaucratic procedures, and the rendering of mining companies more outward-looking and market-oriented.

The process of privatization in the mineral sector and the procedures and methods used in the privatization of mineral projects were also reviewed. The important issue here is that privatization will be unsuccessful if the fiscal regime, mining code and required institutional framework are not first established. It is important that investors feel confident that a suitable environment exists to support their operation. Therefore, actions to increase confidence in the stability of developing countries can attract local and foreign capital to the mineral sector.

CHAPTER 4

FOREIGN INVESTMENT IN MINERAL PROJECTS OF DEVELOPING COUNTRIES

4.1 INTRODUCTION

In recent decades, foreign direct investment (FDI) has been the dominant source of funds for development projects in many LDCs. The mineral sector with its unique features -- i.e., the high risks inherent in the exploration phase¹, high capital-intensity and long-term involvement, intensive international competition, and political, operational and economic risks (e.g., nationalization and technical failure in the recent past) -- is still a primary source of FDI for LDCs.

A relatively small number of multi-national companies (MNCs), directly or indirectly, control the crucial stages in both the operational chain and marketing of most primary commodities in LDCs. These MNCs operate through their global network of sister

¹Ritchie (1993) states that the probability of actually making a commercial discovery during the exploration phase is low, possibly as low as one in 1000. Also, Mackenzie and Bilodeau (1982), in their analysis of Australian exploration discovery statistics for the period from 1955 to 1978, showed that from 100 mineral deposits discovered, only 43 could be considered economic on a pre-tax basis. This number, however, reduced to only 33 following tax considerations.

subsidiaries and affiliated companies in a complex web of financial, managerial, technological and organizational inter-linkages (United Nations, Selected Papers, 1993, Johnson and Pintz, 1985).

The general theory of foreign direct investment is well covered in the literature. However, the added complexities of the mining and extractive sectors, their impact on FDI, MNCs and host countries, and their interdependencies have remained largely uncovered. This chapter aims to investigate some of the integral aspects of FDI particular to the mining sector.

To this end, this chapter first reviews the relevant FDI issues from a mining perspective. It then examines the impact of MNCs on mining operations in LDCs, from the viewpoint of both LDCs and MNCs. This is followed by an examination of the conflicts that arise between the LDCs and MNCs as a result of foreign investment.

4.2 THEORITICAL BACKGROUND OF FDI

A large body of scholarship, ranging from Monopolistic Advantages (Hymer, 1976), Oligopolistic Reaction (Knickerbocker, 1973) and Internalization (Buckley and Casson 1976, Rugman 1979), to the Eclectic Theory (Dunning 1973, 1977, 1980 1988) have addressed various aspects of foreign direct investment. This section critically examines the theoretical underpinnings of FDI.

Monopolistic Advantage Theory. Hymer (1976) demonstrated that FDI occurred largely in oligopolistic industries. This means that the small number of dominant firms in these industries must hold advantages not available to others, including local firms. He argues that their advantages may include economics of scale, superior technology, superior knowledge in marketing and management, and access to sources of finance. FDI takes place because of these product, factor, and market imperfections. Those firms, e.g., MNCs who can take advantage of such imperfections, develop and maintain

monopolistic advantages over other firms, which can provide control over markets. This control can in turn further enhance their monopolistic (locally) or oligopolistic advantages globally. Caves (1982) indicated that superior knowledge alone was sufficient for an investing firm to produce differentially superior products that would give it some control over the selling price and an advantage over indigenous firms, when and if the local firms could still muster the necessary resources to sustain their operations. Both the necessary and sufficient conditions for the incidence of monopolistic / oligopolistic advantage are present in the mining sectors of LDCs: a limited number of firms are usually involved; and these firms have access to superior input factors, including technology, sources of finance as well as access to and some control over international markets. It is these *firm-specific advantages* (FSAs) that gives them a *differential advantage* over local and other firms. Replication of the same advantages in several locations allows them the economies of scale that they can further use to enhance their market power. In the case of mining, such FSAs alone may not necessarily lead to a successful operation. Local firms, by definition, have *location-specific advantages* -- LSAs (e.g., access and local knowledge of the subsoil resources, access to government...), the basis for creating a differential advantage.

Oligopolistic Reaction Theory. Knickerbocker (1973) postulated that in oligopolistic industries, companies *react* to each other's moves, and imitate each other to reduce the risk of being out-competed. His theory is based on two findings: 1) the tendency of firms in a number of industries to cluster together their direct investments in foreign countries; 2) Most companies at the forefront of international expansion are typically in industries dominated by oligopolies. The objective of Knickerbocker's exposition was to make a case for a relationship between the clustering together of foreign investments and the desire of oligopolists to react to the moves of rivals. In the case of mining, both of these conditions are satisfied when a foreign firm independently or in joint-venture with a local firm establishes a successful operation. The success of the first operation has a signaling effect, indicating that risks are manageable.

As mentioned earlier, for most mineral commodities, a relatively small number of MNCs based in developed countries dominate the sector through the control of the important stages in both the operational chain and the marketing of minerals, at least in industrialized countries, if not worldwide (United Nations, Selected Papers, 1993, Johnson and Pintz, 1985). These findings substantiate the requisite condition under which MNCs can indeed operate oligopolistically, take advantage of market imperfections, and further influence market conditions to enhance their firm-specific advantages (e.g., market power, economies of scale, etc.).

Relatively superior mining operations run by MNCs in LDCs, as compared to those operated by local firms, set up the condition to support both Hymer's monopolistic advantage theory and Knickerbocker's oligopolistic reaction theory of FDI. These conditions are relatively simple and can be met easily:

- i. For a foreign firm to possess differentially higher FSAs than local firms (e.g., demonstrated access to superior technology, marketing, operations, etc.)
- ii. Set up conditions to neutralize potentially higher LSAs of local firms, through arrangements such as joint-ventures with locals, or a promise of higher revenues to governments and investors to outbid the efforts of local firms for a given mineral property. As such, even a successful "junior" mining firm from an advanced industrialized country holds the potential to become successful in both developing and developed countries. The replication and combination of such operations in several locations, all enhanced by the benefits of knowledge and learning from one location and applied to others -- an advantage not available to a local / single site operators -- can send the firm on its way to becoming a mining MNC.

Internalization Theory. First explained by Buckley and Casson (1976), followed by Rugman (1979) and others, MNCs are assumed to hold a monopolistic or semi-monopolistic control over their own internal assets, such as technological, managerial and marketing know-how. When MNCs expand into international markets, they can earn

additional profits in markets where these assets are further applied. This is mainly due to economies of scale, multi-operation and knowledge. At least part of the fixed cost associated with generating the necessary knowledge or expertise leading to their FSA is absorbed by another operation, making that FSA more advantageous.

MNCs often decline to transfer their FSAs to the non-affiliated firms through contractual agreements, such as licensing, for a number of reasons: 1) this may result in the MNC giving away its technological and managerial know-how (FSA) to a potential competitor; 2) licensing does not often give the MNC the adequate control over manufacturing and managerial decisions in the foreign country; 3) the MNC's know-how may not be transferable to a third party; 4) a transfer to a third party / agent over which the MNC has less than full control may compromise the MNC's FSAs, causing larger long-term losses than short-term benefits. As a direct result, MNCs internalize their capabilities. Internalization allows for replication, further development and exploitation without long-term losses.

Eclectic Theory. Dunning (1973, 1977, 1980, and 1988) extended the internalization theory by including location-specific factors and explaining how these factors influence the nature and direction of FDI. Dunning's location-specific advantages (LSAs) refer to those advantages that accrue to an MNC due to the use of *resource endowments or assets tied to a particular foreign location* -- such as mines -- that a firm combines with its own specific assets (FSA) to enhance profitability. Thus, ownership-specific advantages, such as technology, patents, trademarks and management know-how, combined with the LSAs, further enhance both the long-term viability and profitability.

4.3 FDI IN THE MINING CONTEXT

With regard to FDI in the mineral sector of LDCs, a number of scholars, such as Mikesell (1971), Johnson and Pintz, (1985), Brower (1987), Walde (1988), Bomsel (1990), Claessens (1993), Aldous (1993), Frecker and Sharwood (1993), Brown, Faber

and Sisulu (1994) and Strongman (1994), have discussed both its role and that of MNCs in mining operations of LDCs, though none of them have analyzed the general theory of FDI applied to the mineral sector. While the role of MNCs in resource development projects located in LDCs have been described as "agents of change" and "engines of economic development" on the one hand, they have also been criticized for their "short sightedness", "greater concern for profits", "political interference" and for "discouraging the development of local industries" in host countries on the other hand (Selassie. 1995. Johnson and Pintz, 1985).

Both sides of the argument carry truth in various contexts.² Most LDCs regard mineral resources as their *heritage*, to be used for their own national development, and as a source of valuable foreign earnings. However, they usually lack the technological expertise, human resources and the capital to develop them. They realize that they are dependent on FDI to develop these resources for meeting their national goals without compromising their national heritage (or even sovereignty). MNCs, on the other hand, can offer their expertise to develop these country- or location-specific resources, but are adverse to yielding control to LDCs or compromising their FSAs. This *uneasy relationship* also distinguishes the mineral sector from others, and assigns a much higher, and at times active, role to the government in shaping the operating environment of the mining industry.

As the impact of MNCs is growing in the international mining marketplace with globalization, the more fundamental question for policy makers in LDCs is how to make this relationship more mutually-beneficial to both the country and the MNC (Selassie.

² It is important to point out that in discussing the pros and cons of foreign investment in LDCs, one is not attempting to reach a judgement about whether foreign investment *per se* should be involved in the development of mineral resources in LDCs. It is inevitable that foreign investment will continue to be present in the mining sectors of almost all LDCs sooner or later, and to varying degrees of influence. Therefore, the position taken by the author throughout this chapter is that of examining aspects of an already existing phenomenon, from the perception of both the MNCs and the LDCs.

1995). Any involvement of MNCs in LDCs is basically a form of partnership, and partnerships need mutual understanding and compromises to succeed

4.3.1 Location-Specific Advantages (LSA) of Investing in LDCs

Exploitable location-based benefits for the MNCs, when they invest in LDCs, include:

- i. *Availability of Strategic Resources.* Most strategic minerals are found and exploited in LDCs. Many developed countries are running out, or have already run out of these key minerals.
- ii. *Higher Ore Grades.* Mineral deposits in LDCs have higher ore grades, and thus tend to be potentially more profitable to mine, than deposits in developed countries. This is because comparable deposits in developed countries have been exhausted. However, the developmental cost of infrastructure as well as operational risks are much higher in LDCs.
- iii. *Local Factor-Inputs.* LDCs offer cheap factor-inputs (e.g., labor, energy, locally produced goods, etc.) which can enhance profitability.
- iv. *More Favorable Fiscal Regime.* Recent policies of mineral-endowed LDCs are providing higher benefits to foreign investors by liberalizing mining as well as foreign investment codes and fiscal policies.

4.3.2 Firm Specific Advantages (FSA)

Advantages of MNCs range widely:

- i. *Availability of and Access to Capital and Expertise.* There has been a continuous increase in the capital requirements of mining operations, thereby making the mineral industry highly capital intensive. The shortage of capital and expertise to develop the mineral wealth of LDCs leads to genuine dependence on foreign investment. Furthermore, the long gestation periods of such projects make them and

their financing more risky and costly. The high debt burden of LDCs further complicates this situation.

- ii. *Downstream Integration.* Downstream integration of mining projects in LDCs is mainly for "value-adding" activities, such as smelting and refining operations, which in turn lead to increased employment, diversification of the tax base and reduction of transfer pricing possibilities (Radetzki, 1977). Along with such downstream integration comes a higher procurement of local goods and services. Such objectives and policy expectations are often beyond those common in the developed world, which is contrary to normal operating policies of MNCs.
- iii. *Risk Sharing.* The involvement of foreign partner(s) results in risk sharing (or spreading). As risk sharing is beneficial to both the LDCs and MNCs, host governments grant special incentives (such as tax holidays, lower tax rates, special allowances, early write-off provisions and concessions regarding the remittance of dividends) to make the partnership attractive. LDCs in most cases have no choice but to risk the development of their mineral sector. MNCs, on the other hand, have greater freedom regarding whether or not to get involved in the development of an LDC's mineral resources.
- iv. *Technological Osmosis.* Apart from lacking capital, many LDCs lack the technology and expertise required for mine development and operation. Therefore, such countries view foreign investment as a way of technology transfer. MNCs can easily provide such transfers.
- v. *Expansion Opportunities.* There is also the issue of rehabilitation or expansion of existing mining projects in LDCs, which, on average, amounts to about 60-75% of the cost of starting new projects (on a per tonne basis). LDCs usually require foreign investment for such expansions as well. In light of the reduced time required to further develop these resources and the reduced (fully absorbed in some cases) risks, as compared with those of exploration and new mine development, such expansion projects offer advantageous opportunities to MNCs.

4.3.3 Asymmetries

Asymmetries arise from differential bargaining powers due to differences in size, expertise, mobility, and flexibility of the MNCs and host governments. For example, most small mineral producing LDCs, with their so-called one crop economies, are *heavily dependent* on revenue from the mineral sector, while the MNCs can diversify their dependence on minerals across several countries. Success in local projects depends on both expertise and technology, which LDCs find difficult to procure, while MNCs can provide it easily. Access to international markets, enhanced by marketing and managerial expertise, is the long-term critical ingredient of sustained development in LDCs, which only MNCs can provide. While host governments can develop policies to control local conditions (LSA), MNCs, through their sister-subsidiary network and traditional strength and practices, provide countervailing forces.

The mineral resources of LDCs are integral components of national development. Thus, the LDCs need to develop a set of policies toward FDI and MNCs to be able to achieve their developmental goals. These policies may not bode well with MNCs, which give rise to tenuous and potentially conflictive, yet symbiotic, relationships between MNCs and LDCs.

4.4 EMPOWERING OR INHIBITING FACTORS TO LOCATION SPECIFIC ADVANTAGES

Dunning's general theory of FDI faces several challenges in its application to mining. Although Dunning acknowledges the heavy dependence of FDI on all three pillars of Eclectic theory, namely FSA, LSA and Internalization, he does not clearly specify their interdependencies, their inter-linkages, and the conditions under which these three pillars integrate to lead to successful FDI in general and in mining in particular. There are a host of factors add to, or reduce from, the objective attractiveness of the location-specific advantages. Governments or local authorities can further empower MNCs (or other

firms) or inhibit them with their actions (or inaction). The following is an attempt to highlight the importance of the role of government policy in utilizing the LSAs in the mineral sector of LDCs.³

Consider the simple FDI decision by a typical MNC as characterized by Dunning's three pillars of FDI:

The FSA. The choice and extent of using a particular factor or, a combination of factors, giving rise to that advantage, from the firm's broad portfolio of such factors (e.g., skills, expertise, proprietary knowledge, rights, etc.) is an *internal decision*. Although the details and composition of these factors must be set in conjunction with, or after a careful consideration of all other factors impacting the decisions (i.e., internal interdependencies), it is not dependent on LSAs, external market conditions, etc. In so doing, the firm does not need to secure extraneous rights or authorization. All rights and authorization for empowering the firm to use all aspects of its FSAs are, by definition, in the firm's *internal domain* of decision making. The operating unit may have to appropriate them; but that should be a mechanical and internal matter.

Regarding an LSA, three aspects distinguish it from an FSA:

i) It is obviously specific to a given location. In the case of mining, mines, and subsoil resources, all associated advantages are only available at the specific mine site or resource location. While an FSA is mobile, an LSA is not.

ii) Such LSAs are under the control of the authorities with jurisdiction over that specific location (e.g., the government, land owner, license or right holder, etc.).

iii) An entity wanting to exploit the benefits of a particular LSA must secure authorization to exploit from the appropriate authorities. Such authorization is not usually issued automatically to applicants. Certain preconditions must be met, a set of

³ This section was developed through discussions with Professor Hamid Etemad of the Faculty of Management, McGill University, in an attempt to expand the FDI Eclectic theory to the mineral sector.

operating restrictions/conditions are attached to or imposed on them, and they are not usually free. An example of such authorization is “the right to mine” in the case of mining. The country or local authority in charge of the specific LSA may call for a bid by other companies, offer a partial or time-based authorization (e.g., the right to mine in a portion of the given geographical location for a certain time period) with certain limitations, and even favour certain firms based on their set of firm-specific expertise (as a part of the preconditions). Naturally, without such authorization, the specific LSA is of no use to the firm, regardless of the value of the resource or the associated advantage that the firm can produce from that LSA in light of its own FSAs. Furthermore, the restriction imposed by the authority may make the LSA less favourable than expected (e.g., limited access, favouring one firm over another, or imposing certain costs on the potential operator). Such impositions may, for example, favour a local firm with relatively lower FSAs than a typical MNC. Stated differently, the intrinsic value of a LSA, and its usefulness to an MNC, regardless of the strength of its own FSAs, is dependent both on the Location-Specific Resource (LSR) and the intentions, if not the actions, of the local authorities, mostly outside of the MNC’s control.

Logically, there would be a specific total of all combined advantages for a given firm for a given location. This should serve as the basis to lead to that firm’s decision to submit a bid to invest and operate, or to withdraw from further participation. The critical point is that *it is not the absolute value of the location-specific advantage* (such as a very rich ore deposit, exploitable extremely economically) that allows a firm to decide in favour or against operating in that location. Rather, it is the nature of the authorization by local or national authorities that can *act as a multiplier*, from highly positive (e.g., set of incentives *increasing* the absolute value of the resource) to highly negative (e.g., high taxes, risks, and disincentives *reducing* the absolute value of the resource) that determines the actual value of the LSR and transforms it into an LSA or location-specific disadvantage. The actual (e.g., market) value of this LSA to a given firm may depend on its FSAs and its control over the market structure.

Therefore, it should not be difficult to visualize the combined value of FSAs with an LSA as a multiplicative function such as the simple one proposed below.

Total, or Grand Ultimate Advantage (GUA) = FSA x LSA

Where: i) LSA = Location Specific Resources (LSR) x Authorization Multiplier (AM)

ii) Authorization Multiplier (AM) ≥ 0.0

iii) FSA for a given LSA ≥ 1

Thus, GUA = FSA x (LSR x AM)

Alternatively, GUA = (LSR x AM) x FSA for a given firm.

Consider two examples with extreme cases:

Assuming LSR very high \Rightarrow LSR $\ggg 0$

Case i) If Authorization Multiplier is very high \Rightarrow AM $\ggg 0$, then for a given LSR, LSA \ggg LSR

Case ii) If Authorization Multiplier very low $\Rightarrow 0 \leq$ AM < 1 , then for a given LSR, LSA \lll LSR, or alternatively LSA \ll LSR < 1

Hence, GUA = FSA x LSA could take an extremely high or low value, *regardless of the strength of the FSAs* (e.g., the most adapted technology to exploit the LSR).

Thus, as can be seen from the above examples, the moderating effect of AM -- i.e., the impact of the local authority -- can enhance a weak case or reduce a very strong case above and beyond the firm's control. The overriding point of the above two cases is to show the *mitigating or moderating impact* of authorities. This impact manifests itself in a variety of instruments, such as the mining code of the country, taxation, royalty, rent, repatriation legislation, treatment of foreign capital (e.g., guarantees) and even in other unwritten, or soft, procedures by which investment is regulated. When and if such moderating impacts are enhancing, even mediocre mines may become attractive, and if taxing, rich mines may not turn much profit for the operating firm. These two implications impact mining decisions and operations. First, for arriving at a mining decision, not only the value of the resource must be assessed objectively, but also the

nature of local authority intentions, or actions, must be evaluated. Second, a critical distinction in the case of the mining industry must be made: that the local authority's decisions *moderate* locally-specific assets as if *they are an active partner in the mining decision* and operation. This fact is not recognized in most FDI theories. *The immediate implication* is that even passive local authorities -- those who do not seek equity participation and control -- impact total operation as if they were active partners. This *adds a new dimension* and transforms most FDI theories to a set of interactive decisions between the local authority (LA) and the MNC. Thus the local authority's relatively positive or negative actions can impact the eventual operation accordingly and thus entice or discourage MNC decisions. This aspect is not recognized/allowed in the general FSA/ LSA model. This implies that the decisions are made interactively (e.g., Australia) or sequentially by two, rather than one agent (e.g., the MNC). This is the case for most FDI decisions in mining. As discussed briefly in the historical review of mining policy transformation in the decades of the 60s, 70s, and 80s, the local behaviour of the governments changed dramatically. It initially favoured state-owned (local) enterprises in the 1960s and by implication discouraged FDI. The stock of FDI in developing countries declined consequently in the 60s and 70s. That trend reversed in the early 1980s and 90s. It began to favour MNCs, leading to a higher stock of FDI, although the actual state of some mines (LSR) had deteriorated relative to those in the 60s and 70s. In other words, the local government reacted to MNC reluctance and subsequently enhanced their moderating impact (i.e., AM for 1980s > AM for 1970s) to make it more enticing for MNCs. This sequence of events can be viewed as a set of *sequential adjustments* in terms of time.

In the truly interactive case, the government(s) and the investing firm(s) agree on a set of regulations jointly, based on the particulars of the mining projects at the early stages. Their jointly agreed principles govern the operation subsequently. The Australian approach is an example of such an interactive case. It allows both parties to change their positions interactively and in a reasonably short period of time. This is analogous to a joint effort to maximize, through variations in LSR, AM and FSA, the absolute value of

benefits (i.e., $GUA = LSR \times AM \times FSA$) first, and then decide on each party's fair share of benefits.

In the sequential approach, the regulatory restrictions set by the government limit the LSA. MNCs are then forced to evaluate location-specific benefits as characterized by the mining code, mining regulations, tax regimes, foreign exchange and repatriation parameters, before deciding to invest or ignore. The historical experience of developing countries rendered their regulatory and operating environments unwelcoming, if not hostile, to potential investors. As a result, many decided against mining investments in developing countries. Faced with these results, developing countries reformed their operating environments through progressive revisions of their mining code, fiscal regime and policy on foreign investment during the late 1970s and 1980s. They however lost the potential benefits of those investments, as they fled elsewhere (mainly to the developed countries). The reforms in the 1980s, in a sense, increased the magnitude of AM and reduced the inhibiting/taxing impact of their regulations. Faced with more conducive operating environments, MNCs began to reinvest in LDCs.

One critical question is how and why should LDC governments increase the efficacy of their authorization to allow for higher exploitation of their mine resources (i.e., increase the value of the AM)? The why part of the question can be answered simply. In light of the transparency of operations and the abundance of information in the context of an exceedingly globalized environment, less competitive LSAs will be ignored. The opportunity costs of such glanced-over resources will quickly rise to much higher values than the actual value of the resource, mainly due to the secondary and tertiary value-adding activities associated with primary operations such as mining. Thus, a reform of the mining code, fiscal regime and foreign investment policy may even provide direct subsidies to a particular LSR to ensure the accrual of other value-adding benefits.

The how part, once the justification is in place, can be partly achieved by the reform of

these codes as most LDCs had done in the late 1980s and 1990s⁴. The next critical question is whether or not MNCs have perceived “reforms” as enhancing or still, relative to other opportunities, inhibiting. The examination of that perception is one of the main objectives of the survey amongst the international mining companies, the results of which are presented in chapter 9.

4.5 POLICIES TO ATTRACT FOREIGN INVESTMENT

Due to the non-renewable nature of mineral resources, along with time-consuming exploration and costly development stages, the mineral industry is a long-term oriented industry requiring long-term investment. Mineral investment is also considered to be risky. The main risks associated with mining in LDCs can be categorized as political, implementational, operational and environmental.

- i. *Political risk*, includes instability in the political situation and existing laws, regulations, agreements, etc. The investors’ concern is that if any changes take place during the implementation period, this may have a disastrous impact on a project and consequently on their investments.
- ii. *Implementation risks*, include inadequate design or processes, technical failure, poor labour relations, capital cost overruns due to foreign exchange fluctuations, financial failure of contracts, mismanagement, governmental interference, and completion delays.
- iii. *Operational risk*, includes such aspects as errors in reserve estimation, inadequate essential inputs, uncertainties in future prices of mineral products, and underestimation of operating costs.
- iv. *Environmental risks* refer to environmental policies and regulations, which have to be met by the mining industry. These may be very rigid and costly in some

⁴ According to Eggert (1997), some 90 countries have revised their mining codes during the 1980s and 1990s, or are now considering major changes to attract local and foreign investment.

countries. Although some of these risks are not unique to the mining industry, the amount of risk associated with mining projects is often higher than that in other industries.

The foreign investment climate embodies a series of factors likely to affect the stability and profitability of mining. These factors include political, economic and currency stability, mineral endowment, attitude of the host country towards private and foreign investment, position of balance of payment, the extent of controls on imports, price, foreign exchange rate, local participation, and legal and administrative arrangements for investments and contractual agreements (Eggert, 1997, Strongman, 1994, United Nations [selected papers], 1993). Countries with a comparatively strong bargaining power resulting from a favorable mix of the above factors generally obtain better terms under contractual arrangements with MNCs. However, countries with liberal investment incentives do not necessarily attract such investment.

The major mining companies look for specific targets. almost without exception mineral deposits with substantial lives. Such companies invest in basic grass-roots exploration and delineation, and have the necessary motivation, experience, knowledge and access to capital resources. Apart from the major international mining companies, there is a growing group of "junior" mining companies and venture capitalists. Although these groups are generally less well capitalized, they are willing to take higher risks in finding and developing smaller deposits. Many junior mining companies have excellent technical capabilities and have become a major force in international mining.

Many reports, such as Strongman (1994), World Bank Technical Paper No.181, United Nations [selected papers] (1993), and Engineering & Mining Journal (May 1993), have discussed the requirements needed to attract foreign investment from various sources. These include:

4.5.1 Fiscal Terms

- i. Fair and stable tax system;
- ii. The right to repatriate profits to the company's home nation;
- iii. Access to foreign exchange;
- iv. Reduction in taxes, royalties, and other fees; and
- v. Financial assistance incentives.

4.5.2 Mining Rights

- i. Simplified administrative procedures;
- ii. Well established Mining Code, allowing trade of mining rights;
- iii. Guaranteed mining rights (e.g., security of tenure) prior to exploration;
- iv. Contractual stability;
- v. Elimination of prior foreign ownership restrictions;
- vi. Open public lands for exploration; and
- vii. Reduced barriers to entry.

4.5.3 Information

- i. Improvements in government-funded basic geological surveys and information gathering; and
- ii. Legislative, economic, and fiscal data.

4.5.4 Modification of Investment Laws

To maximize national benefits and attract foreign investment, most LDCs have introduced attractive investment codes. Others have created Ministries of Mines and

Geological Survey Departments in order to promote the development of their mineral resources. Having said this, these efforts seemingly create little interest from the part of MNCs if the host countries are not in a position to mobilize internal or external funds.

4.5.5 Changes in Infrastructure

Infrastructure provides the necessary basis for industrial development and manufacturing of local products. Countries normally benefit from mineral activities mainly in terms of availability of infrastructural facilities.

The availability of physical infrastructure is important to the mining industry, in that it provides a nation with the capacity to import, distribute, and export mineral goods. Normally, the transport cost of bulk commodities such as iron, steel, coal, manganese and chromium make up more than 50% of the product's delivery cost (C.I.F. price). Thus, the quality, capacity and nature of transport facilities have definitive effects on the viability of any mining project.

4.5.6 Other Recommended Actions

LDCs need to reduce their noncommercial risks in order to attract additional foreign investment. One major step towards this objective from LDCs is to commit commercial disputes to international arbitration, which increases their leverage in attracting foreign investment.

LDCs should also enhance South-South cooperation and provide a better legal framework to encourage cooperation amongst themselves. Other factors that help form better opportunities for foreign investment are political stability, an improved investment environment, and improved credit availability.

4.6 MNC INVESTMENT IN LDCs: AREAS OF CONFLICTS

In general, the interests of the MNCs in the mineral sector are not always identical to those of the host countries. The issues that have led to disagreements between the LDCs and the MNCs are related to economic and financial matters such as royalties, taxes, new investments, transfer of funds, pricing, profit sharing, marketing, etc., as well as to legal issues and management policies (Salmasi, Bilodeau and Momoh, 1998; Frecker and Sharwood, 1993; Johnson and Pintz, 1985; Brower, 1987; Legoux, 1981; and UN ESCAP, 1980). The conflicts are either related to “post formation” problems, such as lack of commitment by partners, or originate at the creation or formation stage of mining development agreements (Selassie, 1995).

The LDCs and MNCs both have objectives and expectations from developing mineral resources. The government's main expectations include revenue and foreign exchange benefits, ownership and control, technology transfer, employment and training, linkages between mining projects and national development, and other political-legal objectives (issues such as sovereignty over natural resources, paramountcy of national law, and procedures for settling disputes) (Zorn, 1981). Beyond these common objectives of many LDCs, are further objectives related to the stabilization of commodity prices or fiscal flows, the maximization of domestic value added, the development of physical infrastructure, and localization programs (Johnson and Pintz, 1985).

MNC objectives include higher profits on lower-cost operations, geographic diversification, redirection of economic and political risks, discovery of new rich resources, capturing new markets, etc. (Brower, 1985). Certain issues cause problems within the area of general interest common to both sides. The following section briefly describes the various issues, which have given rise to conflict and the mechanisms and strategies, which have been suggested or used to resolve the differences.

4.6.1 Government Revenues

Taxation: Mineral production can be a major source of revenue for LDCs with a limited tax base. In pursuing their revenue objectives, host governments use a range of fiscal instruments including royalties, income tax, additional profits tax (known as APT), severance or export taxes, dividend remittance taxes, the dividend from direct equity participation, and usage charges for the infrastructure. Usually, problems in the fiscal relations between MNCs and host governments relate to the transnational nature of MNCs, where issues such as the taxation of repatriated dividends and tax jurisdictional issues relating to offshore transfer prices become sensitive fiscal matters.

A main concern of MNCs is increased taxation, as an unanticipated increase in taxes may have a serious negative impact on profitability. The MNCs, therefore, often try to insist on a clause exempting them from new taxes, which is usually unacceptable to the LDCs. In most cases, this problem is solved by the host government assuring the company that it will be treated in the same manner as other important companies in other sectors (Brower, 1987, Legoux, 1981).

Another mechanism used by some countries, such as Chile, is that foreign companies might choose to pay tax on their profits either at the same rate as local companies or at a fixed rate (higher than the current rate) which is guaranteed to remain unchanged for ten years. (Price Waterhouse, 1993, World Bank Technical Paper No. 181, 1992).

Royalties: Typically, royalty is a fixed percentage of the value of mineral production collected by the owner/seller of mineral rights. Since royalty is paid regardless of profits, most MNCs dislike them, but governments favour them because they assure a certain level of income, regardless of the profitability of the mining operation. MNCs generally prefer royalties based on production value, where there is a link to market prices. If prices drop, the royalty burden drops (Brower and Legoux, Ibid.). Unit-of-production-based royalties are less desirable to MNCs, as they have no relationship with the market value of the minerals.

Foreign Exchange Earnings: It is important for governments to maximize and effectively control foreign exchange earnings from mining operations. With respect to the control of foreign exchange earnings, there is a real conflict between MNCs and host governments. There may be government restrictions on the amount of foreign currency earnings that can be repatriated. However, an MNC needs to control its stream of revenue in order to generate sufficient funds for meeting its internal financial obligations, as well as the payment of dividends to its shareholders in the home country. This may be unacceptable to governments, as all the foreign exchange earned from its minerals would never stay in the country.

A common solution has been the use of a "trustee account," in a bank designated as the trustee. The sales revenues from the mining operation are paid into the trustee account and the trustee, operating under limited powers agreed to by both sides, pays first the loan obligations followed by other obligations as agreed, and remits the rest to the company operations in the host country (Zorn, 1981).

Rate of Return (ROR): Although MNCs usually have short-term objectives and require an accelerated return of capital, governments have much longer term planning horizons, and prefer a secure revenue in the long run, in addition to all the benefits inherent in long-term investments. However, there is always pressure on governments by the public to show early benefits from mineral development. Both the host government and the MNC usually avoid conflict in their contrary objectives regarding ROR by negotiating a compromise rate of return: a situation that is partly optimal for both parties.

4.6.2 Local Processing

The LDCs usually prefer home-based processing of their mineral products with its advantages of reduced costs, cheap labour and energy, expanded GNP, and the creation of employment and forward linkages (Radetzki, 1977). In contrast, MNCs are not always willing to locate their processing facilities in host countries due to a lack of adequate

infrastructure, unfavourable tariff structures (which are often biased against mineral processing), unfamiliarity with the social and economic environment of LDCs, and the “political, social and economic risk” inherent in investing in LDCs (Ibid.). A compromise might involve a requirement that, should a local processing facility be constructed, the mining project make available sufficient raw material to enable it to operate at international prices (Zorn, 1981).

4.6.3 Transfer Pricing

Transfer pricing is a mechanism by which MNCs can transfer away profits and tax revenues from host countries by interactions with affiliated companies, thereby lowering foreign exchange accumulations, transferring tax liabilities to a country where fiscal impositions are more favorable, and/or lowering recorded profits for taxation purposes. Several solutions have been found or advanced to mitigate the conflict arising from this problem.

Host governments have examined possible solutions involving regulations and equity sharing. Governments usually include a clause in agreements requiring that MNCs report all transactions with affiliated companies. Another mechanism, employed by tax departments, is to use “arms’-length” prices in determining assessable income. When used by host governments, equity participation enables them to be involved in management and key decision-making, and provides them with access to products which they can sell on their own, thus allowing a check on prices (Walde, 1988; Legoux, 1981, and Zorn, 1981).

It has been suggested that governments could hire expert technical and accounting advice from overseas if necessary. The effectiveness of these measures, however, depends on how much relevant information can be made available. Sims (1985) suggests that the UN or other organization could arrange international tax assessors for the LDCs; however, this may be difficult to implement, due to differences in tax regimes among LDCs.

4.6.4 Marketing

The minerals market may prove daunting to enter, as a debutant. The MNCs fear that host governments, due to their poor mineral market knowledge and experience, may be taken advantage of in the marketing process. The extent to which the host governments can make marketing arrangements on their own will enable them to free themselves of dependence on corporations, and possibly gain more benefits. A further long-term possibility is the development of an organization for joint marketing.

4.6.5 Managerial Control

A common feature of new mineral agreements is training and an eventual phase-in of local managers and technicians in the operations of MNCs. This is desirable for three reasons: national pride and international credibility, the high cost of foreign training and assurance that the project is being run in the best interests of the country and not those of the MNC (Brower, 1987).

In general, the fact that some local participation in management is necessary is widely recognized and accepted by MNCs. Disagreement occurs over the extent of local management and the rate at which the phase-in occurs. Thus, provision for managerial control is still a key issue to both host governments and MNCs (Walde, 1988).

4.6.6 Technology Transfer and Training

One of the main objectives of a host government is to acquire both specific and generalized technical expertise from foreign firms in the mining sector. However, LDCs must ensure that the price paid to foreign firms for technical services and know-how is not overly high. This issue is becoming more important, as more LDCs employ MNCs under service and management contracts.

4.6.7 Infrastructure Requirements

Mining projects have certain infrastructural requirements (roads, electricity and water supply, etc.) which are important to both parties. To the host government, this accelerates and facilitates regional development. To the MNCs, it is an essential component to their reasons for being there, and, to the inhabitants of the affected area, it opens up communication and trade with neighbors. The major issue here is who should pay for the infrastructure?

As infrastructure may cost as much as the mine itself, the government may want the MNCs to provide this. However, if the MNC involved rejects this idea, the project might not get implemented at all. If the company requires the host government to provide the infrastructure, the government simply may not have the funds, and moreover, could be accused of providing facilities at public expense for the benefit of a private company.

It is commonly accepted that infrastructure costs must be shared by the company, the government, and the inhabitants. There are a variety of sharing arrangements, as well as a variety of financing schemes. In any case, the solution will depend on a mix of factors such as project profitability, size of the infrastructure investment, specific technical requirements, availability of funds to the government, and politics (Brower, 1987).

4.6.8 Legal-Political Issues

No matter what type of government is in power in the LDCs, national sovereignty is often forcefully expressed over matters related to natural resources. The issues involved do not often favour foreign investment, and this is of great concern to the MNCs. Some of the most important of these issues are sanctity of agreement, nationalization and dispute settlement.

Sanctity of Agreement: Sanctity of Agreement refers to how permanent and binding an agreement should be in the face of changing conditions. In the case of large mineral

projects, both sides agree that the stability of the agreement is necessary for long-term project viability.

Through experience and economic strategy, the MNCs often require the host LDC governments to sign permanent and binding agreements over the exploitation of mineral resources, even in the face of changing political conditions in the host country. This may raise problems for the host government, since it wants the freedom to change its own laws and regulations from time to time (e.g., taxes, duties, and foreign exchange controls). Exemption of a MNC from such changes could result in severe consequences for the country.

By threats of refusal to invest, if the host country does not agree to such terms, the MNCs usually seek exemptions from possible changes to agreements which may result from political changes in the host country, even if the government may find them difficult to grant. According to Walde (1988) and Brower (1987), a partial remedy to this problem is the formation of an agreement that allows a compensating change in one area to offset the financial cost of an unavoidable change in a different area. This amounts to a guarantee that the project's economic health will remain sound.

Nationalization: Nationalization of mineral projects in which MNCs have invested financial and technological resources has always been a source of conflict. As there are many examples of mining operations that have been nationalized in LDCs (and in Developing Countries as well), provision against nationalization in agreements seems to be meaningless.

The MNCs, however, have adopted some strategies to deal with this issue. Broadly, these include the use of sanctions by governments of the MNCs' home countries, a shift to management and service contract arrangements to reduce corporate risk, the execution of mining projects through joint ventures involving several MNCs from different countries, and the multilateralization of financing for mining projects (Sims, 1985).

Dispute Settlement and Arbitration: Disputes between the MNCs and LDCs relating to mineral projects are common even in contracts that have been successfully negotiated many years ago. Some disputes, such as those relating to money matters or to changed conditions, which make the contract unfair to one side under prevailing circumstances, are often quickly resolved by negotiations between the two parties. Disputes involving the project versus local laws and citizens are usually resolved under the laws of the land.

However, disputes of an international nature are more difficult to resolve by their very nature of involving at least two jurisdictions. In such cases, one solution involves international courts, which are often costly and unsuitable for urgent disputes. Another, more efficacious solution is by binding arbitration, wherein both sides present their arguments to an impartial judge or panel and agree to abide by its decision. Among such agencies are the International Center for Settlement of Investment Disputes (ICSID) affiliated with the World Bank, the Court of Arbitration of the International Chamber of Commerce, and the International Court of Justice for disputes between nations and national agencies. Another method is using *ad hoc* arbitration, in which the contract provides the means and process for arbitration (Frecker and Sharwood, 1993. Brower, 1987. Walde, 1988, and Legoux, 1981). Nonetheless, the necessity of neutral arbitration is widely recognized and commonly accepted in transnational agreements.

4.7 EXAMPLES OF MINE DEVELOPMENT AGREEMENTS

Examples of three countries -- one with a developed economy, Australia, and two developing countries, Indonesia and Papua New Guinea -- are given which show the different ways in which countries deal with the legal and policy issues relating to state participation and foreign investment in mining projects⁵.

⁵ The main reference for this part is Frecker and Sharwood (1993).

4.7.1 Australia

Australia is a federation comprising six states and two territories. With few exceptions, all minerals in Australia are vested in the crown, with responsibility given to the individual states and territories. Exploration and mining are conducted under state and territorial laws, which are essentially similar in the provision of a range of exploration and production titles. The Australian model is one in which both the Federal and state governments obtain their share of the benefits of a mining project through taxation and royalties, with the federal government enjoying the greatest share of power due mainly to its central taxation power coupled with liberal judicial interpretation of the federal constitutional powers. The objective of State participation in the benefits of the mining industry is attained through the taxation and royalty systems. Taxes are levied by the federal government while royalties are imposed by the state and territory governments.

Foreign investment falls under a Federal Act which specifies the types of foreign investments allowed and the types of reviews they are subject to, under what the Act describes as "the national interest." The Act provides much scope for the federal government of the day to control foreign investment in the mining industry. The Mining Acts of the various states and territories impose a requirement for the approval of dealings in mining titles, but the grant of an exploration or production title is not always automatic. Once a mineral resource is defined, however, the inadequacy of the mining laws to deal with the development process is usually overcome by a unique approach in the form of development agreements or "franchise agreements" between the state governments and the project participants. Under these agreements, every single regulatory aspect governing the project is dealt with in a single document. It is then given the force of law by Parliament.

In this way, the state government facilitates desirable development by establishing a framework and a stable set of legal rules under which development can proceed. This procedure gives the project participants the assurance of legal backing for their

operations with clear obligations on both sides, although government obligations are always open to modification by subsequent legislative action. Thus, in Australia, the developer always faces some element of risk, which must be assessed according to the political climate prevailing or anticipated in the state concerned.

Australia also allows some principal taxation concessions in exploration and prospecting, capital cost of actual mining operations, and capital cost of transportation facilities where those facilities are used primarily and principally in transporting products within or away from the country. It also allows capital expenditure deductions for a host of services connected with mining. Although royalty is a state prerogative, this does not apply to minerals located offshore, beyond a three-kilometer zone. These are the responsibility of the federal government, which imposes and collects the royalties on minerals produced from these areas.

4.7.2 Indonesia⁶

The constitution of Indonesia vests land, water and the natural resources they contain to the state for the use of the people. The country's mineral resources are developed under a closely controlled regime, which cedes part of the resulting production to the mining companies in return. Foreign investment in the mining industry in Indonesia is governed by "Law No. 1 of 1967 concerning Foreign Investment" along with its amendments enacted by Presidential decree. Under this law, mining companies and individuals may conduct mining based on an authorization called "Kuasas Pertambangan" (KP). This permit can be in the form of a general survey permit, an exploration permit, an exploitation permit, a processing permit or a sale permit. These authorizations can only be issued to Indonesian companies or individuals (Strongman, 1994, Price Waterhouse, 1993). Foreign investors who are interested in developing mineral deposits can negotiate with Indonesian KP holders and/or the government to enter into a contract of work

⁶ The case of Indonesia will be elaborated in the case studies of chapter 7.

(COW). Contracts of work are contracts between the government or a state mining enterprise and the contractor (domestic, foreign or a joint venture) to carry out some or all stages of mining, from geological surveys to extraction and marketing. Although mining is generally permitted to foreigners, short-term policy may be to inhibit investment in, for example, gold and this policy is simply implemented by delaying or halting the processing of COW applications.

As mentioned, an Indonesian-incorporated company formed for the purpose of foreign investment in the country's mining sector must be owned in part by a local equity investor, unless the mine is located in a remote part of the country, in which case it can be 100% owned by the foreign investor. All COWs must be concluded between the special-purpose Indonesian-incorporated company and one of the three State-owned enterprises that carry out mining activities in the country.

Some of the provisions of the COW are as follow:

- i. The rights to exploration and exploitation granted under the COW are exclusive in relation to the specified minerals. Full management control and risk are vested in the COW holder who assumes responsibility for damage to the rights and property of the Government and third parties.
- ii. Activities described in the COW are agreed to be undertaken without suspension or interruption unless the Government otherwise agrees.
- iii. The COW may grant the right to export products mined, and require sales to be according to generally accepted international business practices so as to maximize returns, but subject to the overriding power of the government to prohibit exports in any particular case.
- iv. It is customary for the COW holder to give preference to Indonesian consumer needs, and to the fullest practicable extent, to utilize Indonesian manpower, services, raw materials and products manufactured in Indonesia, subject to their

availability on competitive time, cost and quality bases (Frecker and Sharwood, 1993).

4.7.3 Papua New Guinea

The legal system of Papua New Guinea is derived from an Anglo-Australian heritage, which has since been modified by the constitution after the country gained independence. By law, all minerals existing on or below the surface of any land in Papua New Guinea, including any minerals contained in any water lying on any land in Papua New Guinea, are the property of the State. The country thus carefully controls mining development with a combination of royalties, taxes and a direct equity participation.

The Mining Act makes extensive provision for the issue of tenements by the Head of State or the Minister responsible for Mining, to permit and control mineral exploration and development through the granting of exploration licenses, mining leases and other leases for activities ancillary to mining. These tenements can be granted over private land on the basis that they are for, or to facilitate the development of, minerals owned by the State beneath the land, but there are provisions for compensation in this case.

The State's financial benefit from mining projects comes in the form of taxes. The state imposes a higher corporate tax rate if the companies are not resident. However, expenditures on exploration and capital assets are deductible on a sliding scale. Furthermore, mining companies may be liable for an additional profits tax of 35% at the end of the investment recovery period. The State or its nominee may also take equity participation in a mining project.

Some of the provisions in a mining contract issued by the Head of State are as follows:

- i. The state undertakes to issue leases, licenses and other rights necessary for the companies to carry out the project in accordance with an approved development plan.

- ii. The mining companies undertake to install and provide the mining and associated facilities, and to continue operation without suspension except in special circumstances, which are specified in the contract.
- iii. The cost of all project-related infrastructure is borne and paid for by the companies as a project expense.
- iv. There are no export duties on mined products.
- v. The mining companies must comply with an environmental plan that is separately established with and approved by the Department of Environment and Conservation.
- vi. The mining companies must also comply with a training and localization program, providing training for Papua New Guinea nationals who are expected to replace expatriate staff.
- vii. The contract is governed by the laws of Papua New Guinea, but the parties acknowledge that the contract includes the rules of international law so far as they are relevant (Frecker and Sharwood, Ibid.).

4.8 CONCLUSIONS

In this chapter, first the theories of FDI relevant to mineral investment were reviewed. As briefly discussed, a host of factors add to, or reduce from, the attractiveness of location-specific resources. Governments or local authorities can further empower MNCs (or other firms) or inhibit them with their action (or inaction). Their actions, through legislation, regulation or even soft bureaucratic procedures can act as a *multiplier*. When their actions and policies are further enhancing and empowering, that multiplier is positive and greater than unity. In effect they have a magnifying effect. When they are restrictive, limiting and tax productivity, the multiplier becomes inhibitive (less than unity but still positive). When they become so restrictive that they are perceived to be hostile, the multiplier becomes very small, if not negative. In this case, prospective

investors no longer bother to evaluate the objective value (market value regardless of the operation) of location specific resources. That location loses its attractiveness regardless of the quality of its resources. It is the crucial importance of this factor that calls for potential investors to evaluate the environments of developing country as characterized by the mining code, fiscal regime, and treatment of foreign investment (including guarantees, repatriation of capital and profits, and access to foreign exchange).

Subsequently, the policies that have an important impact in attracting foreign investment were discussed. The chapter went on to outline some areas of concern and disagreement between LDCs and MNCs. As Brower (1987) states, "Most of the issues cannot be stated in simple terms of who is right and who is wrong, because the issues are shaped and influenced by the economic, legal, social, and political facts of the day and the experiences of the past." The disagreements between LDCs and MNCs can partly be resolved by hard bargaining and tough negotiations, which take into consideration the main factors of concern.

The mining agreement is, in fact, the outcome of the interaction among a large number of factors influencing the relative bargaining strengths of the two parties. The degree of political stability, the state of the economy and the efficiency and the skills of the administrators are fundamental elements in determining the success of a host government in its negotiations with an MNC.

The important factors influencing the political situation of the host country include the degree of independence, the stability and strength of the government, and the degree of foreign penetration and control in various productive sectors of the country. The economic considerations include the country's economic and financial dependency, its reliance on foreign exchange earnings from exports, the possibilities of export diversification, and the country's position in world production and reserves of its minerals.

Administrative factors include the quality (skills, efficiency, education and training, etc.) of the bureaucracy, experience in negotiating with MNCs, the availability of information regarding the nature of the mineral and the relevant industry, and the relationship of the MNC with its home government as well as its international standing. Legal aspects mainly concern the host country possessing a comprehensive set of laws pertaining to the various aspects of foreign investment. A host country with a strong tradition of political independence, a nationally stable economy and capable bureaucracy is likely to be in a much better bargaining position than another country which does not have the same attributes. This is one important area upon which LDCs can improve.

Smith (1981) suggests that it is time for "greater exposure of international business executives to the concerns of developing countries and the fostering of a greater sense of mutuality of interests." In addition, he suggests that governments of industrialized countries should pressure their companies to develop more "honest" and "open" relationships with LDCs.

Strongman (1994) states that the use of "model agreements" helps the MNCs familiarize themselves with LDC legal, regulatory and fiscal environments and form a clear picture of the nature of the deal with the LDCs, thus reducing the problem areas.

Finally, since most LDCs depend on mineral resources for their development, they need to look beyond negotiating successful investment agreements with MNCs: they should develop other forms of mineral development programs such as regional cooperation and "south-south" trade (Zorn, 1981).

CHAPTER 5

STATE OF THE MINERAL SECTOR IN IRAN

5.1 INTRODUCTION

In contrast to the oil sector in Iran, the solid minerals sector has not received adequate examination and review, and this, despite the tremendous amount of resources and great potential for growth and development which has been known for several thousands of years. The main objective of this chapter is to investigate the latest information about mineral reserves, mining activities and mineral policies in post-revolution Iran. This provides background knowledge on the current state of the mineral sector in Iran and how this sector has performed in the recent past.

In addition, to prepare the ground for the investigation of economic policies related to the mining industry, the chapter briefly reviews the Iranian economy and its development plans. After a short commentary on Iran's general economic situation, the focus narrows to the mining sector.

5.1.1 General Description of the Country

Iran has a land area of 1 648 000 square kilometers. The country is almost completely surrounded by high mountain ranges that cover approximately one-half of its total area. The topography of Iran consists of a plateau with an altitude that ranges from 914 to 1524 meters.

In the north, the country borders with Armenia, Azarbayjan, Uzbekistan and Tajikistan, in the east with Afghanistan and Pakistan, and in the west with Turkey and Iraq. The Persian Gulf and the Sea of Oman lie to the south of the country. In 1998, the population was approximately 61 million.

5.2 IRAN'S ECONOMIC POLICIES

5.2.1 Background

Traditionally, the Iranian government has relied upon revenues generated from petroleum and natural gas exports to fund most of the country's development expenditures. As mentioned in chapter 1, the country has undergone a rapid process of industrialization since the early 1960s, especially following the first oil price boom in October 1973. The government's strategy towards the economy since that period has included direct investment in large-scale infrastructure projects and in heavy industries, as well as the use of new labour-saving technology and foreign experts to manage the development of those projects. There was, however, a lack of innovative projects both for agriculture and small-scale industrial entrepreneurship (Meghji, 1982).

Fiscal policies created a free environment for firms to set up assembly operations, to import capital and intermediate goods, and to produce finished consumer goods (Katouzian, 1981). The oil economy facilitated the rapid growth of domestic production. However, it caused major damages to the agricultural sector¹, and created high inflation. As stated in chapter 1, Soofi (1982) in his study of Iranian economic development strategies from 1930 to 1978, concluded that because of the one-crop nature of the economy and despite some degree of growth in the modern sectors, the main characteristics of the economy remained those of an underdeveloped economy.

¹For instance, exports of agricultural products represented 6.2% of total exports in 1970. This had reduced to 1.8% by 1980.

The significant growth in national income after the oil price boom did create considerable economic growth, and should have provided the country with sufficient power to shift its economy from an almost total dependence on oil to a diversified economic base. However, in this respect Iranian economic policy failed (Meghji, 1982).

Following the victory of the Islamic Revolution of Iran in 1979, the new government emphasized a diversified economy. Embracing the notion of a state-controlled economy, the revolutionary government took necessary measures in order to increase its control over the economy. For instance, in 1979, all the country's banks and major insurance companies were nationalized, and the government extended its control over the large industrial and mining companies. In the second year of the revolution, the country engaged in an Iraqi-imposed war.

The war itself caused a significant increase in government intervention in the economy, with an inevitable adverse impact on efficiency. During the war years, the government was forced to re-allocate the country's resources to make up for the damage caused by the war and meet the basic needs of the population. The war, coupled with a drastic decline in oil income, caused major economic problems and put the economy into a period of recession.

These economic problems were associated with the disparity between government revenues and expenses (the budget deficit), the gap between the supply and the demand for money (the cash imbalance), the disparity between investment levels and savings (the financial imbalance), inequalities in imports and exports (the trade imbalance), the poor performance of the non-oil sectors of the economy, and rising unemployment. The war, in its own way, prevented the government's ambitious endeavor to make use of the country's potential and recast the national economy.

After the cease-fire in 1988, the government imposed economic reforms based on five-year socio-economic development plans. During the course of the first plan, the government

relaxed state controls, changed from a multiple to a double exchange rate and balanced its budget (Rudnick, 1993). The plan, although resulting in a considerable foreign debt buildup, had significant success in terms of economic growth. Its aim was to reduce the role of oil in the economy. This role, however, is still critical, and, in spite of the substantial growth in non-oil exports in recent years, Iran remains a major exporter of unprocessed oil-based products (Economist Intelligence Unit (EIU), Country Profile - Iran, 1998). The following section discusses the five-year development plans in greater detail.

5.2.2 Five-Year Socio-economic Development Plans

5.2.2.1 First Five-Year Development Plan (1989-90 -- 1993-94)

Following a policy of nationalization during the war period, the First Five-Year Development Plan (FFYDP) espoused a market-oriented vision, providing for a number of measures to reduce government control and encourage the development of free enterprise. The main objectives of the First Development Plan were:

- i. Implementation of structural changes in the economy and establishment of equilibrium in different economic sectors, by measures such as: elimination of subsidies; transfer of ownership of portions of SOEs to private entities; increase in capital investment; strengthening of production capabilities in the country; unification of exchange rates at a market-related level, and better allocation of resources (such as money, manpower and technology) through the fulfillment of sound economic policies, and in particular, by decontrolling most domestic prices;
- ii. Reconstruction of war torn regions and major new investments in the country's infrastructure;
- iii. Streamlining government operations and controlling government expenditures by transferring non-strategic economic activities to the non-governmental sector (the private and cooperative sectors);

- iv. Diminishing state reliance on oil income through the encouragement of non-oil exports, in particular, fabricated products and services;
- v. Expansion of education and cultural activities; and
- vi. Reduction of the size of government and bureaucracy.

In particular, the plan allowed for foreign financing to the amount of \$27 billion, establishing four free trade zones, abolishing some import restrictions, removing many non-tariff trade barriers, raising public utility and liberalizing the exchange system.

A glimpse of the plan's performance shows that its programs, although not faultless in theory and in practice, were relatively successful at meeting many of its targets. The plan was able to chart a basic course for the growth and development of the country (Abedi, 1995; Azhini, 1995; Asre Ma, 1995; IRNA, 7/31/1995).

Among major achievements of the plan were:

- i. The GNP improved after the adoption of the plan and an average annual rate of growth of 7.3% was achieved during the period. This growth rate, which compares favourably with those of other oil-exporting developing countries, partly reflects the broad base of the Iranian economy (IMF, 1995).
- ii. Consequently, GNP per capita, which amounted to 58 900 Rials in 1988-89 (current prices) rose to 246 000 Rials by the end of the plan.
- iii. Production activities expanded in different sectors of the economy, and in particular, in the fields of agriculture, industry, mining, water, power, gas, petrochemicals and oil. General public services also were improved, especially in education and communication.
- iv. Revenues from taxation showed an annual growth rate of 41%. Also, the budget deficit that was about 50% of GDP at the end of the war (1988-89), was reduced to 1.7% of

GDP in 1993-94.

- v. Although export of non-oil products did not meet the Plan's targets, an annual growth rate of 26% was registered in this arena. During the FFYDP, \$12 billion was earned by the country from non-oil exports.
- vi. During the plan period, important steps were taken with respect to the development of the country's infrastructure and utilities.

However, despite the positive points mentioned above, the first plan was not without weaknesses. Some defects were inherent, some were due to impracticable forecasts and unrealistic expectations. Other problems resulted from the incomplete or arbitrary enforcement of policy.

The major problems and deficiencies of the plan can be summarized as follows.

- i. *Little Success in Increasing Private Investment:* Although some state-owned organizations and companies were privatized during the plan, no remarkable steps were taken in this direction. Some SOE shares were sold to organizations such as banks and municipalities, dislocating functions within the governmental body. Statistics show that during the plan period, no noticeable development occurred in private sector investment (Azhini, 1995). This was partly due to the high consumption of the private sector during the plan. This indicates that the plan failed in practice to change the private sector's consumption and fulfil the slogan of "reduced consumption, increased savings and investment" (Asre Ma, Biweekly, April 19, 1995).
- ii. *High Inflation Resulting from Escalation of Adjustment Programs:* The economic restructuring policies adopted during the plan resulted in high inflation rates and exerted pressure on people, in particular, those with fixed and lower incomes. To achieve the targeted 8.1% annual growth in GNP, larger investments were needed. However, macro investments resulted in raising liquidity. Since additional services or goods were not made available to the community parallel to the increasing level of

cash, the result was high inflation. Thus, regular fixed and low-income people lost their purchasing power and suffered from the escalating living expenses. It would have been better if, at the onset of the plan, specific mechanisms and procedures had been recommended to ease the burden of inflation on the lower classes. According to the IMF (1995), the average annual rate of inflation during the plan period was about 25%.

- iii. *Outstanding Foreign Debt:* In the first plan, foreign investment in various forms, e.g., FDI, foreign loans, short-term credit lines, barter arrangements and advanced sale of products were targeted at about \$27 billion. It was also determined that the loans would be paid off from the government's exchange income or the revenues derived from the commissioning of the projects. However, in actuality, the unpaid portion of foreign debt by the end of plan had accumulated to around \$9 billion. The government, therefore, was forced to reschedule debt-service agreements, defer some development projects and reduce imports of goods (Azhini, 1995).
- iv. *Little Success in Unification of the Official Exchange Rates:* One of the objectives of the FFYDP, as mentioned, was the unification of exchange rates at market prices. During the period of the plan three different exchange rates were practiced: the official rate of Rials 70 per US\$1, mainly for oil exports, essential imports, and government debt; a preferential rate of Rials 600 per US\$1, mostly for industrial imports and related services; and the free market rate for non-oil exports and most service transactions.

However, in March 1993, the final year of the plan, an official floating rate was introduced at about Rials 1600 per US\$1. Finally, given the highly inflationary environment, a more depreciated official rate of Rials 2345 per US\$1, applicable to non-oil exports, was introduced in May 1994.

In general, progress under the FFYDP was hampered by elements such as devastation from the war with Iraq, overestimated revenue and underestimated expenditure projections, political pressure from the international community, and overly expansionary financial

policies and the resulting macroeconomic imbalances. Also, natural disasters and influx of Afghan refugees fleeing their country's civil war added to Iran's economic problems (IMF, 1995, Amirahmadi, April 1995, Heydari-US Bureau of Mines, 1994, and Azhimi, 1995).

5.2.2.2 Second Five-Year Development Plan (1994-95 -- 1999-2000)

The second development plan continues the aforementioned economic adjustment policies. It aims to complete and solidify the achievements of the first plan. It is designed to moderate and improve the administrative and economic structures of the country. The plan's main policies and targets are as follows:

- i. Provide basic needs to the community such as housing, food, clothing, health and medicare, and educational and cultural development;
- ii. Expand employment opportunities;
- iii. Effectively protect the environment;
- iv. Promote non-oil exports through the establishment of *Export Credit Funds* and administrative support;
- v. Develop and expand the country's agriculture, animal husbandry, mineral and heavy industries; and
- vi. Work towards self-sufficiency in consumer goods and durables.

More specifically, the plan attempts to:

- i. Increase efficiency in the utilization of general resources at the public level by: applying strict financial discipline, and evaluating management on the basis of its efficiency and performance.
- ii. Insure sound socio-economic and cultural growth and development of the country through concentration on the inner strength of the economic system and the creation

of mechanisms aimed at reinforcing the strength of the internal economic system instead of relying on the inductive growth resulting from oil revenues.

- iii. Allocate sufficient resources to social affairs, such as culture, public education, health care, higher education and research, physical education, and general affairs. e.g., internal law and order and judicial matters.
- iv. Reduce inflation by controlling the money supply and increasing income taxes, thereby maintaining the deficit at zero.

Major quantitative objectives of the SFYDP are as follows:

- i. The annual growth of GDP in constant prices is projected at 5.8%.
- ii. The annual growth of investment in this period is projected at 11% on average. Thus, the ratio of investment to GDP will move from 14.1% in 1994-95 to 17.9% by the end of the second plan. A higher growth rate is expected in infrastructure facilities, such as water, gas, communications, electricity, roads and buildings.
- iii. The annual growth of private consumption is projected at 5.3% in constant prices.
- iv. The average annual inflation rate is predicted to drop to about 12%.

These objectives are to be achieved through economic adjustment measures such as: providing greater incentives for savings by rationalizing bank interest rates, establishing specialized development banks and encouraging the entry of the private sector into the financial market, preparing a new tax system with the aim of increasing government revenues and improving tax administration, revising of tax exemptions, and reducing subsidies in general while maintaining those to vulnerable groups (Ibid.).

5.2.2.3 Differences between the FFYDP and SFYDP

From an economic point of view, some determinants distinguish the second plan from the first plan. These are:

- i. *Slower Pace of Growth and Economic Adjustment:* As mentioned, the lower classes suffered from the inflation resulting from the adoption of structural policies such as the reduction of subsidies for essential goods during the FFYDP. In the second plan, the economic adjustment is more gradual. Therefore, the GNP growth is projected to be, on average, 5.1% per year, 3% lower than the target of the first plan.
- ii. *Special Attention to Social Justice:* The second plan devotes special attention to social justice and the protection of deprived and low-income families. Considerable funds have been allocated for the implementation of development projects in remote areas, educational and communication facilities, and the creation of employment. Other direct aid has also been planned to help low-income groups and families.
- iii. *More Participation of Non-governmental Sectors in the Economy:* The plan emphasizes further participation of non-governmental sectors in economic and non-strategic affairs of the country. In order to achieve this, the plan obligates the government to take more effective measures, such as amending privatization regulations and extending loans and other banking facilities to the private sector
- iv. *Timely Payments of Foreign Debt:* The plan obligates the government to draw a timetable for loan repayments. According to the plan, aggregate government debt and financial commitments should not exceed \$25 billion at the end of the second plan. Also, projects that use foreign funds are, nevertheless, obliged to arrange for reimbursement based on a prescribed schedule.
- v. *Reducing Consumption by the State and the Private Sector:* The plan emphasizes thrift in the public sector by the merging, liquidation, or consolidation of interrelated government departments and the transfer of non-critical duties and activities of the government body to the private sector. Also, adoption of methods and procedures that promote better utilization of existing resources and improve productivity are to be considered.

In summary, as Amirahmadi (Feb., 1995) states, three determinants distinguish the second plan from the first plan: the SFYDP is *more conservative*. Unrealistic assessments in the first plan showed that the government should approach economic growth with more caution. The second plan is economically a *more balanced* plan. It is also *more inward looking*, focusing on domestic resources. The plan also focuses on a reduced role for oil revenues, the development of human resources, and the confrontation of social problems.

5.3 CURRENT STATUS OF THE ECONOMY

5.3.1 Structure of the Economy, Economic Sectors and Trends in GDP

The Iranian economy can be described as a mixed economy. According to the Iranian Constitution (Article 44), the economy consists of three economic sectors: governmental, cooperative and private. The governmental sector includes oil, major industries and mines, foreign trade, large banks, insurance companies, etc. The cooperative sector includes firms and cooperatives, production and distribution companies that are active in agriculture, industry, mining and services. The private sector is supplemental to the governmental sector and is active in all production and service activities, except those which are reserved for the government. The government can transfer some of its activities to the cooperative and private sectors. At present, the private sector lacks a considerable managerial role in the capital and labour markets of the economy.

Energy and mineral resources, agriculture, manufacturing, and the service industries are the main economic activities. The GDP reached \$62.1 billion in 1995 at a market rate of Rials 3 000 per US \$1 (Central Bank of Iran, 1995, cf. <<http://www.salamiran.com>>). The average growth rate of the GDP in 1995-96 and 1996-97 was 4.5% and 5.8%, respectively, due in part to a rise in oil and gas exports. In 1996-97, the fiscal deficit dropped to 2.9% of GDP, even though expenditures rose to 29.8% (compared to 28.8% in 1995-96), and revenues approached 27%, compared to 25.2% in 1995-96 of the country's GDP (Persian Gulf News,

Jan. 24, 1998).

In the fiscal year ended March 20, 1998, the growth rate of the GDP was 2.9%. In the same year, the annual inflation rate was 17.3%, down from 23.2% in 1997 and 47.5% in 1996 (IRNA, September 23, 1998). The government has also succeeded in its debt servicing. This was achieved through policies aimed at *a tight fiscal and monetary policy* and the control of liquidity growth. However, these policies had *an adverse effect on non-oil exports*. Other economic problems include high inflation, despite being lowered during the past two years, high unemployment and underemployment, and low capital and labour productivity (EIU - Country Profile -Iran, 1999, and Amuzegar, 1997). The following table and figure show the trend in GDP in recent years.

Table 5.1: GDP Trend in Iran (Billion Rials)

Year*	1988-89	1989-90	1990-91	1991-92	1992-93
At current prices	22 304	27 787	36 645	50 107	66 463
At constant prices (1990)	31 742	32 793	36 645	40 839	43 178
Real change (%)	-8.7	3.3	11.7	11.4	5.7
Year*	1993-94	1994-95	1995-96	1996-97	1997-98
At current prices	93 610	128 382	178 875	232 742	278 970
At constant prices (1990)	43 865	44 190	46 044	48 780	50194**
Real change (%)	1.6	1.6	4.2	5.9	2.9*

Source: for years 1988-89 to 1992-93, *Economist Intelligence Unit (EIU)*, Country Profile-Iran, 1994, and EIU, Country Profile-Iran, 1996-7; for years 1993-94 to 1996-98, *EIU*, Country Profile-Iran, 1999.

*) IRNA, September 23, 1998, cf. Central Bank of Iran. **) Calculated based on real change.

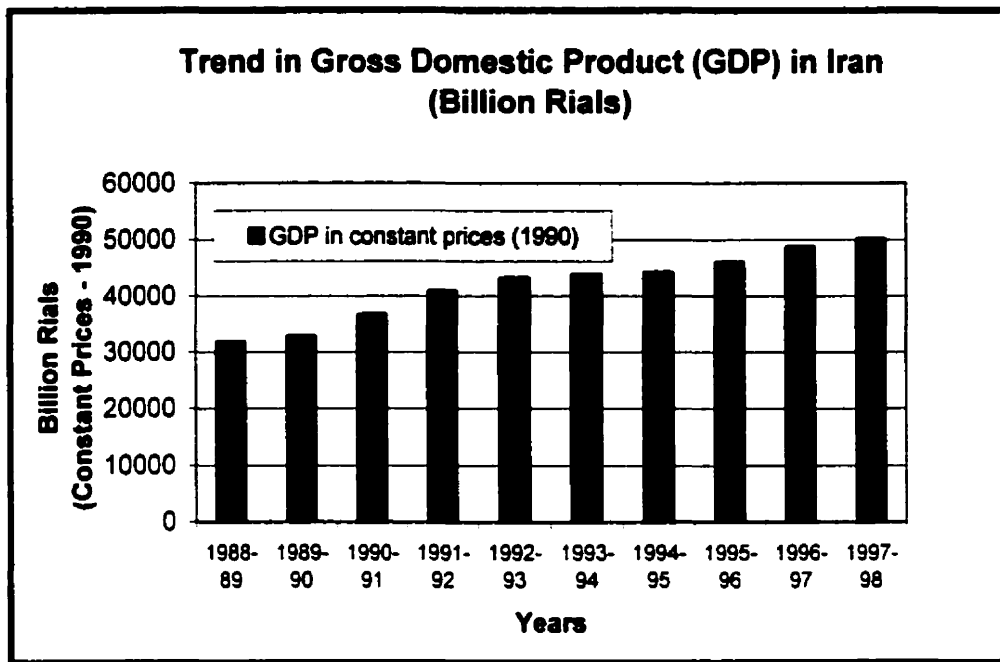


Figure 5.1: Trend in GDP... Source: see table 5-1.

Because of considerable government investment and an increase in the production of agricultural, industrial and mineral goods, the GDP has grown during the 1988-98 period. The real growth rate per capita, however, was less than growth in GDP. This is due to a high rate of population growth.

The following table and figure trace the sectoral origin of the GDP in selected years during the 1958-97 period.

Table 5.2: Sectoral Origin of GDP in Iran (% of total) in Selected Years

Year	Agriculture and Livestock	Oil and Natural Gas	Manufacturing and Construction	Power, Water, Construction, Transport, Commerce, and Others	Total
1958-59 (1)	26.3	10.6	16.9	46.0	100
1963-64 (2)	25.3	20.1	11.2	43.4	100
1968-69 (2)	21.3	25.1	10.6	43.1	100
1973-74 (3)	15.2	21.9	17.4	45.5	100
1974-75 (4)	9.8	45	10.2	35.0	100
1975-76 (5)	10	38.1	11.3	40.6	100
1979-80 (5)	11.6	24.6	9.0	54.8	100
1980-81 (5)	11.5	21	9.2	58.3	100
1981-82 (5)	15	8.0	9.8	67.2	100
1982-83 (6)	23.1	10.2	11	55.7	100
1991-92 (7)	23.1	8.2	14.5	54.2	100
1992-93 (7)	23.1	8.1	14	52.8	100
1993-94 (7)	20.8	17.6	14.2	47.4	100
1995-96 (7)	15.2	18.1	14.2	46.0	100
1995-96 (8)	26.5	18.1	16.3	39.1	100
1999-2000 (8)	21	17	17	40.1	100

Sources: 1) EIU, Annual Supplement - Iran, 1964, 2) EIU, Annual Supplement - Iran, 1970, 3) EIU, Annual Supplement - Iran, 1976, 4) EIU, Annual Supplement - Iran, 1977, 5) EIU, Annual Supplement - Iran, 1984, 6) EIU, Country Profile - Iran, 1994, 7) EIU, Country Profile - Iran, 1995-96, 8) EIU, Country Profile - Iran, 1999-2000.

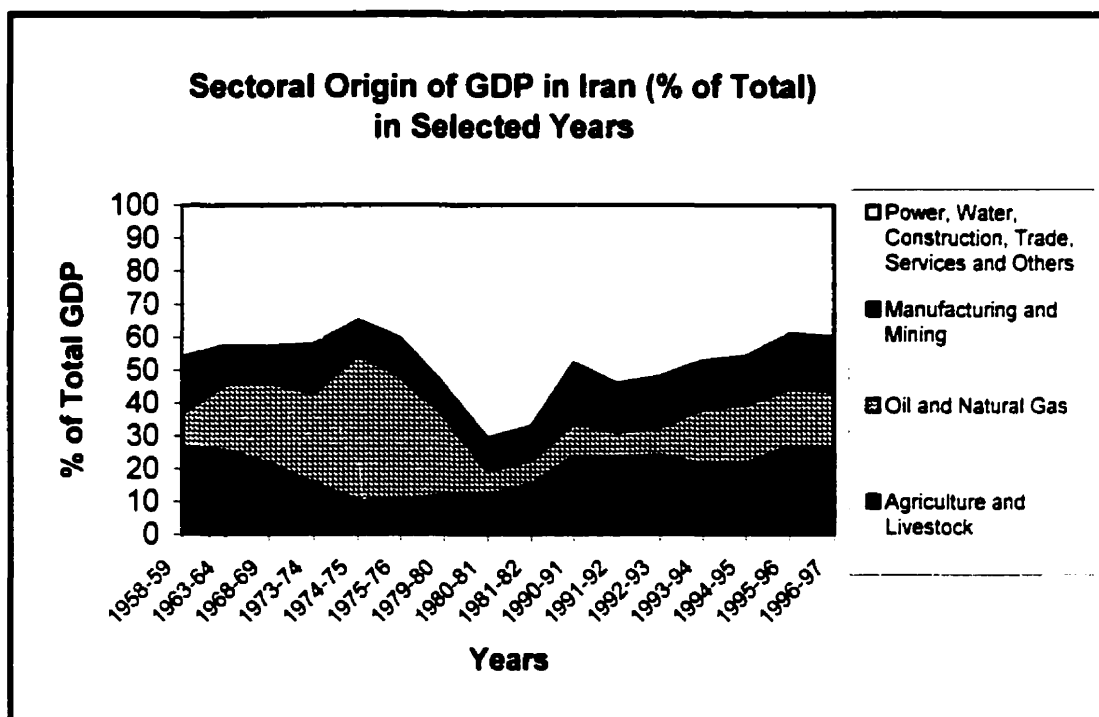


Figure 5.2: Sectoral Origin of GDP..., Sources: see table 5.2.

As can be seen, the role of the oil sector has been dominant, in particular after 1973 and prior to the revolution (1979). Since the beginning of the war in 1980, the contribution of the oil sector has declined significantly. However, from 1993 to 1997, because of an increase in oil exports and a decline in the share of some other sectors of the economy, the contribution of the oil sector has increased. An interesting observation here is the substantial fluctuations in the share of the oil sector in the GDP (see figure 5.3). As mentioned before, the oil economies become frequently subject to the effects of wide price fluctuations on the world market. The economy suffers when oil prices fall. Even when prices rise, market price fluctuations make it difficult for government to pursue development plans.

Due to the supporting policies of the government during the war (1980-88), the share of the agriculture, manufacturing and mining sectors have slightly increased, while those of the trade and service sectors have considerably increased. In the early years of the FFYDP, the share of the manufacturing and mining sectors again increased. However, during the 1991-94

period, the contribution of these sectors to the GDP of the country has been steady. The share of these sectors increased once again in the 1995-97 period, mainly due to an increase in the production of cars and household goods resulting from new industrial projects completed by the end of the FFYDP (1994).

In the 1992-96 period, the share of the construction, trade and service sectors decreased. As mentioned earlier, this was due to a government policy favoring the expansion of industrial and mining products. It is noteworthy that the shares of the construction and transport sectors have declined over the 1992-1994 period from 4% to 3.2%, and from 8.2% to 6.2%, respectively. These sectors were the main under-performers during the plan period. However, the share of both sectors increased over the 1994-95 to 1996-97 period (4.7% and 7.9% in 1996-97, respectively). The share of the trade sector has also decreased from 17.6% to 15.4% over the FFYDP period, and further decreased to 9.6% in 1996-97. The fluctuations in share of different economic sectors in the GDP are shown in the following figure.

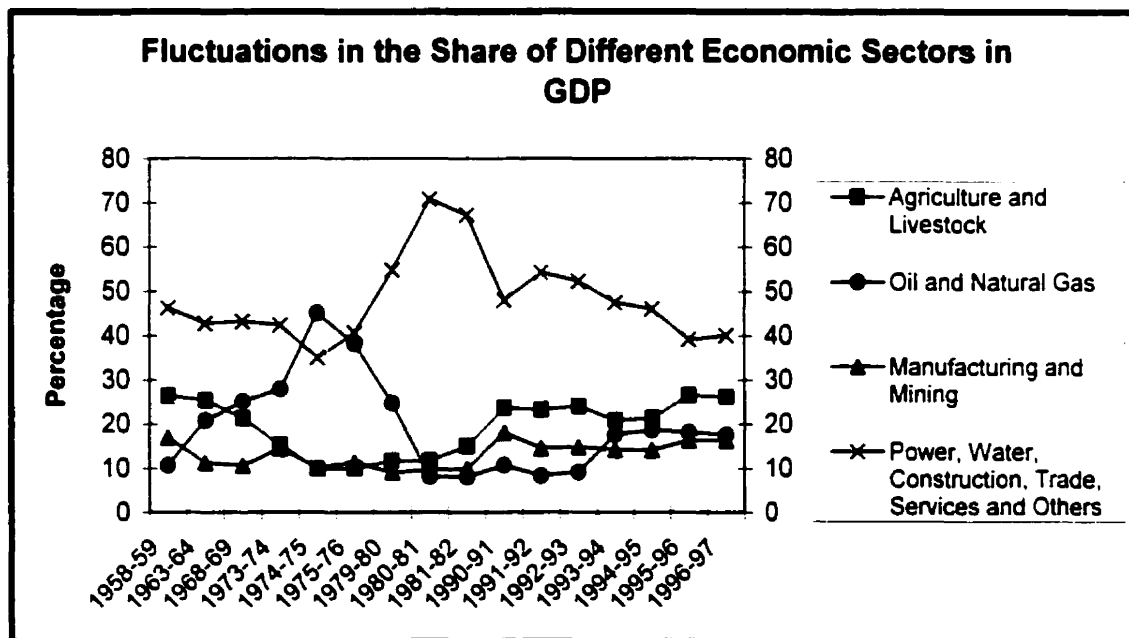


Figure 5.3: Fluctuations in the share..., Calculated from data given in table 5.2.

5.3.2 Oil and Non-Oil Exports

Iran's total export revenues over the 1988-98 period increased from \$US 10 242 million in 1988- 89 to \$US 18 400 million in 1997-98 (IRNA, September 23, 1998). The export value from the non-oil sector accounted for \$US 2.9 billion in 1997-98, down from \$US 3.2 billion in 1996-97 (Ibid., IRNA, and Hamshahri Daily, April 20, 1998).

In the arena of non-oil exports, a total of \$17 836 million had been projected for the FFYDP period. However, based on available data, the economy earned \$11 739 million from its non-oil exports over the period of the plan, achieving less than 70% of its target. Some economic characteristics of the country, i.e., a poorly diversified export base, limited integration into international capital markets, lack of capital flows into the country and public sector dominance in economic activities, have negatively influenced the non-oil exports. The following table and figure show the value of all non-oil exports during the 1989-98 period.

Table 5.3: Iran's Non-oil Exports

Year	Export Amount (million \$US)	Year	Export Amount (million \$US)
1989-90	1043.9	1994-95 [*]	4824.5
1990-91	3122.3	1995-96 [†]	3250.7
1991-92	2648.7	1996-97 [‡]	3166.0
1992-93	2817.1	1997-98	2900.0
1993-94	3746.8	1998-99 (Estimated)	3000.0

Source: EIU, Country Profile, Iran, 1995-96.

[†] EIU, Country Profile, Iran, 1999-2000.

^{*} IRNA, September 23, 1998, and Hamshahri Daily, April 20, 1997.

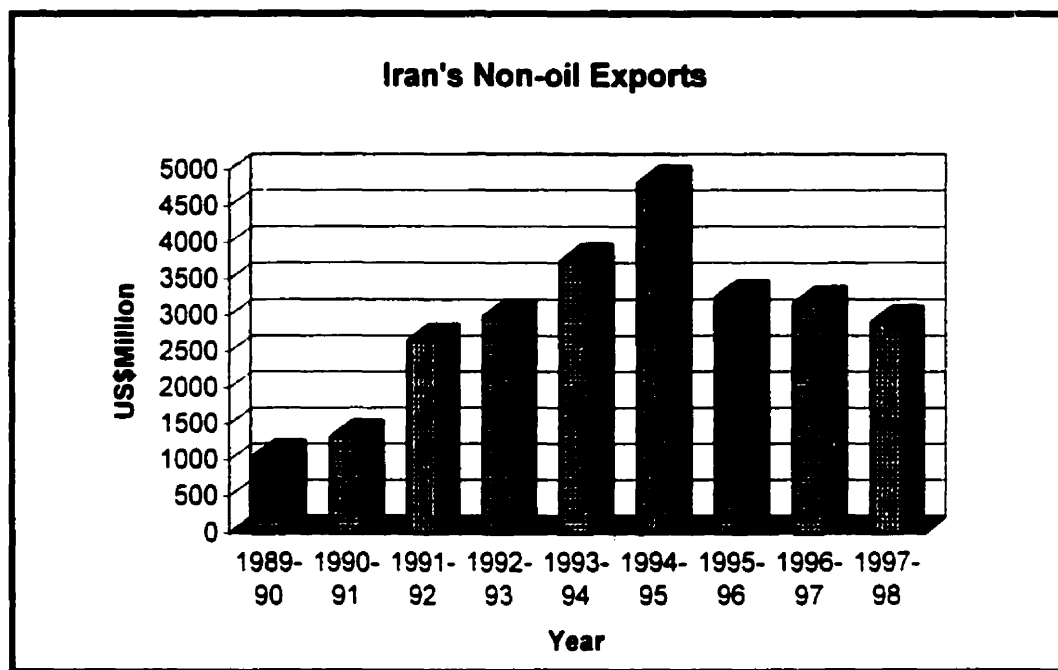


Figure 5.4: Iran's Non-oil Exports, Sources: See table 5.3

As shown in table 5.3, the value of Iran's non-oil exports increased from \$1044 million at the beginning of the FFYDP to \$3747 million at the end of the Plan, and further increased to \$4825 million in 1994-95. However, it decreased after 1995 and reached \$2900 million in 1997-98. The government, in its Second Five-Year Development Plan, has set an overall target of \$27.5 billion in non-oil exports. Therefore, \$5 billion's worth of non-oil products is to be exported each year on average (Sana'te HamI-o-Naghl, Transportation Industry Monthly, Oct. 1995). Given the value of non-oil exports over the past few years, this target does not look achievable. The problems of and comments regarding the non-oil exports will be discussed in chapters 6 and 8.

5.3.3 Inflation

Over the FFYDP, inflation rates were relatively high, averaging 19% per year for consumer prices (25% according to the IMF, 1995). In 1990, however, as is shown in the following

graph and table, inflation was relatively low due to considerable imports of durable goods and direct distribution policies. After the FFYDP, the inflation rate rose by 35% in 1994-95 and 50% in 1995-96. The overall high rate of inflation during the FFYDP was mainly due to the government's economic restructuring policies (elimination of government subsidies, free market measures), and partly because of fewer private investments in industries. In addition to the above-mentioned factors, expansionary fiscal policies after the FFYDP also caused very high inflation rates in 1994 and 1995.

To control this inflation, the government fixed a lower exchange rate, initiated controlling measures on imports, exports and distribution of goods in 1996. The tighter fiscal and monetary policies brought the inflation down to 23.2% in fiscal year 1996-97 and to 17.3% in 1997-98 (EIU-Country Profile- Iran, 1999; IRNA, September 23, 1998; Dow Jones News Wires, May 26, 1997, cf. PAYAM-MSG <payam-msg @froude.uwaterloo. ca>).

The following figure shows the trend in inflation rates in recent years.

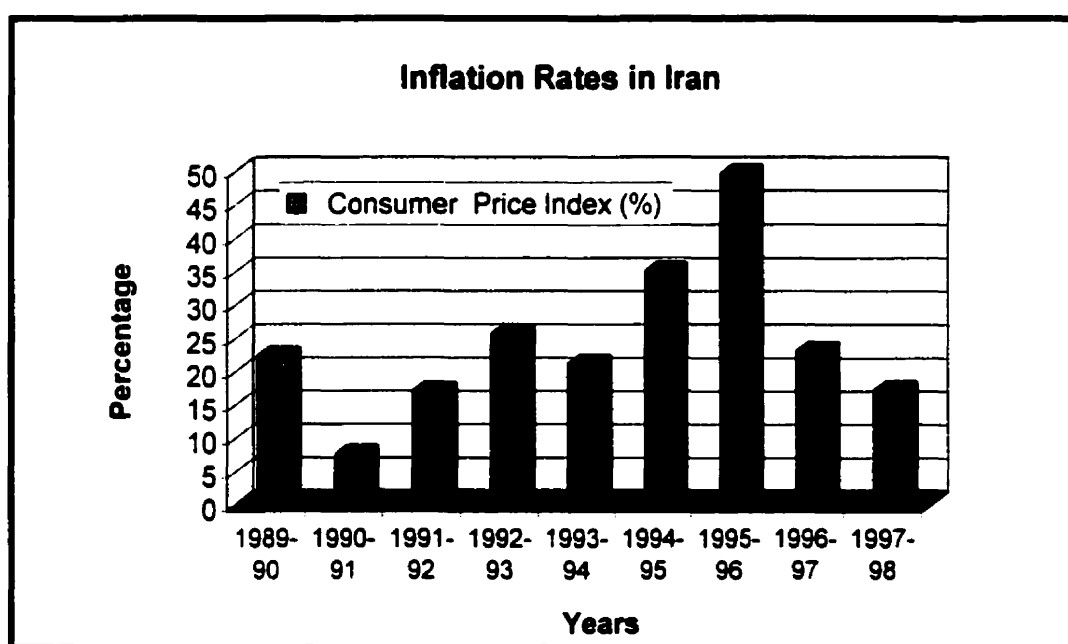


Figure 5.5: Inflation Rates...., Source: For years 1989-90 until 1993-94, EIU, Country Profile – Iran, 1995-96 and for years 1994-95 to 1997-98, IRNA, September 23, 1998. Year begins March 21.

5.3.4. Employment

The workforce has grown faster than total population in recent years. As more than 50% of the population is under the age of 16, this growth will be relevant for years to come. According to the Central Bank of Iran (1996), the total workforce in 1995 was 17.7 million, of which 15.8 million were active. Therefore, the unemployment rate was 11% (11.4% in 1994). The important issue in employment in Iran has been that in the past two decades the private sector has contributed to 30% of job creation, while the rest were created by the public and government sector, using petro-dollar investments (Iran Weekly Press Digest. cf. <http://www.netiran.com>, 1997). Also, it is predicted that the country will reach a population of 100 million in 2007-08, out of which 24 million will be in the work force. To meet these job requirements, around 600 000 new jobs have to be created each year, which require forward planning as well as a substantial amounts of new investments (Shaditalab, 1995). Apart from government investment, supporting industrial ownership among the people, through serious pursuit of privatization and the promotion of non-oil exports will create jobs and contribute to the reduction of the economy's dependency on oil currency income.

5.4 MINING AND MINERAL COMMODITIES

5.4.1 A Summary of the Geology of Iran

In order to characterize the different geological units in Iran, it may be convenient to visualise the country as comprising two marginal active belts, one in the north-eastern part (Kopeh Dagh) and the other in the south-western part (Zagros), resting on the Turanian "Hercynian" and Arabian Precambrian plates, respectively (Berberian, 1983). The other major units, which are referred to as Central Iran, Alborz, and Makran, are situated between those two main plates.

a) Zagros fold belt: The Zagros fold belt is located on the north-eastern margin of the Arabian plate and comprises a sedimentary succession consisting of limestones, sandstones,

and shales from a Paleozoic platform, miogeosynclinal limestones and shales of Middle Triassic to Miocene age, and synorogenic Plio-Pleistocene conglomerates (Berberian, 1976 and 1983). The Zagros region was folded during a Plio-Pleistocene orogenic episode. There has been no igneous or metamorphic activity in the fold belt since the late Precambrian.

b) Zagros thrust zone: The north-western margin of the Zagros fold belt terminates in the Zagros thrust and extends from eastern Turkey in the north-west to the Straits of Hormoz in southern Iran. The rocks in this zone represent the deepest part of the Zagros trough, and include upper Cretaceous ophiolites and Radiolarites. They are considerably compressed and were emplaced as klipper, which were thrust southeastward over the Mesozoic and Tertiary rocks of the Zagros fold belt. The Zagros thrust is considered to be the suture line that separates the Arabian platform from the Iranian platform.

c) Sanandaj-Sirjan Zone: This zone is located in the north-eastern part of the Zagros thrust zone, and is distinguished from the Central Iran Zone by the consistency of the Zagros trend, a near lack of Tertiary volcanism, and the generally poor development of Tertiary formations. Some authors believe that this zone is actually a part of the Central Iran Zone (Ricou, 1976). The most important characteristics of this zone are green schist facies metamorphisms of Paleozoic and lower Mesozoic rocks during the late Mesozoic, and magmatism during the early Tertiary, consisting of intrusions of granodiorite batholiths like that at Hamedan, and numerous laccoliths and stocks.

d) Central Iran Zone: The Central Iran Zone acted as a stable platform during the Paleozoic. It is separated from the Sanandaj-Sirjan Zone by a linear trend of depressions (back arc basins), notably Orumyeh lake, Gavkhoni, and Jaz Murian. Although this zone was stable during the Paleozoic, numerous "horsts" and "grabens" were created by late Triassic tectonic activity. During the creation of the horsts and grabens, most of the Precambrian crystalline basement and the Infra-Cambrian to Triassic platform cover rocks were preserved. The grabens consist of faulted and folded Jurassic-Cretaceous strata. The Sahand-Bazman

igneous (Tertiary volcanic, volcanoclastic and plutonic rocks) and a metallogenic belt, which contains two large porphyry copper deposits (Sarcheshmeh and Sungun) is considered to be part of this zone.

e) The Lut Block: The Lut block (Lower Triassic) is considered to be an old stable platform (Stöckline, 1977; Stöckline and Setudenia, 1972). This block is elongated north southward. It is overlain by a thick sequence of Mesozoic sedimentary rocks (thickness of more than 5000 m), dominantly sandstones and shale, and Tertiary volcanic rocks consisting of rhyolite, dacite, andesite, and tuff (with an average thickness of 3000 m). The units do not show any evidence of folding and faulting.

f) Alborz and Kopeh Dagh Zones: The Alborz and Kopeh Dagh zones are considered to mark the site of crustal compression of central Iran against Eurasia (Berberian, 1981). The Alborz mountains form an arcuate mountain range bordered by the southern coast of the Caspian sea. Deformation in the Alborz Mountains is characterized by thrust faulting. There is insufficient data to draw meaningful conclusions about the structural regime in the western part of the Alborz range. Most of the range is composed of Eocene volcanoclastic rocks, and the volume of these rocks increases towards the East.

g) The Eastern Iran and Makran Zones: The Eastern Iran and Makran Zones are post-Cretaceous flysch-mollasse belts which join each other in Southeast Iran and continue into the Pakistan-Baluchistan ranges (Berberian, 1983; Berberian, et al., 1981). Huber (1978) proposed that the flysch sediments were deposited on an Upper Cretaceous ophiolite-melange basement together with a basal conglomerate.

The following figure is a generalized geological map of Iran.



Figure 5.6. Generalized Geological Map of Iran

Source: Geological Survey of Iran, 1981.

5.4.2 History of Mining in Iran

Decorative and warfare metal tools and coins were discovered at ancient civilization centers in Iran including Lorestan, Khuzestan, Kerman, Sistan, Azarbayjan, and Kashan. Also, numerous ancient mineral diggings and metal melting furnaces indicate that mining in Iran goes back to more than 7 000 years (Resalat, Iranian Daily, May 27, 1995). Iranian people have been familiar with mines and mining for a long time and some historians have written that the Iranian people were among the first to exploit copper ore and use it for making dishes and other tools after melting it.

5.4.3 A Brief Review of Iran's Mineral Commodities²

5.4.3.1 Coal

There are 2000 million tonnes of recoverable coal reserves in Iran, half of it coking coal. Coal resources are located in the provinces of Kerman, Semnan, Khorasan and Mazandaran. About 65% of Iranian coal comes from the Babmizou and Pabdana coal mines near Kerman and the rest from other mines around Shahroud in the Alborz range. One of the important obstacles in the development of coal mines is that most of the country's coal is located in remote mountainous areas, on average 700 km from end-users. The high cost of coal transportation makes it costly to consumers (Granmayeh, 1994).

A major new underground coal mine at Tabas, 300 km north-east of Yazd, is under development. Current mine design includes three long-walls, each capable of producing 2.5 million tonnes per year with future expansion to five long-walls and a total production of 3.3 million tonnes per year. This project is expected to free Iran from having to import any coal.

² Frequently used sources for this part include: Ministry of Mines and Metals (MMM), Annual Reports, March 1997, March 1996, and June 1994, Mining Journal Annual Reports, 1992-98, and 1988, Michalski - US Geological Survey, 1995, Islamic Republic News Agency (IRNA), 1995-99, and US Bureau of Mines, 1994 and 1991.

In 1995, 41 coal mines were active in Iran (Statistics Iran, 1996). The total coal production increased from 1.45 million tonnes in 1988 to 2.1 and 2.5 million tonnes in 1995 and 1996 respectively (Ministry of Mines and Metals, March 1997).

5.4.3.2 Aluminium

Alunite, bauxite and nepheline syenite are the most important aluminium sources in Iran. The Arak aluminium smelter, run by the Iranian Aluminium Company (IRALCO), produced about 28 000 tonnes of the metal in 1989. Demonstrating a significant growth, production reached about 67 000 tonnes in 1990 and 110 000 tonnes in 1998 (IRNA, Aug. 25, 1999). The production from this plant is expected to increase to 200 000 tonnes/year as a result of plant expansion.

To further promote aluminium production, the Almahdi Aluminium Corp. constructed a smelter at the Persian Gulf port of Bandar Abbas, with a capacity of 110 000 tonnes of metal per year. It is expected to expand production to 220,000 tonnes/year. The first phase of this plant started in June 1997. This complex will be one of the largest aluminium producing plants in the region (Mining Annual Review, 1998; and IRNA, June 10, 1997).

Construction work also is underway on the Jajarm alumina plant, in north-east of Shahroud. This plant will produce 280 000 tonnes/year of alumina and will provide alumina to aluminium smelters at Arak and Bandar Abbas. According to the MMM, this plant will be completed by the end of 1999 (IRNA, August 25, 1999). The ore for this plant will be supplied from bauxite deposits near Jajarm, with estimated reserves of 19 million tonnes averaging 41% - 69% Al_2O_3 (Heydari, 1994). A ferro-chromium smelter near Bandar Abbas, with a combined production capacity of 35 000 tonnes per year was also completed in 1995. Ore is supplied by local mines. A ferro-chrome plant, with a 50 000 tonne/year capacity in the free trade zone of Qeshm is planned as well (MMM, March 1997). As recent as August 1999, the MMM announced that the target of the Ministry is to expand aluminium

production to 500 000 tonnes before the end of the third development plan -- 2005 (IRNA, Aug. 25, 1999).

5.4.3.3 Copper

According to Iran Exports & Imports, Economic Bimonthly (Nov., Dec., 1994), evidence found in the Sialk region, near Kashan, suggests that agriculture, animal husbandry and the use of metals first began in this region, earlier than anywhere else in the country. The oldest copper objects found in Sialk date back to 4100 BC.

According to the latest study (January 1998), known copper reserves in Iran amount to 26 billion tonnes containing 23 million tonnes of copper, 5% of world copper reserves (Commercial Review, January 1998). The first Iranian copper mine exploited on a large-scale was the Sarcheshmeh mine. It was discovered by an Iranian engineer. The construction of a large copper processing plant at this mine began in 1973 and was completed in 1981.

The Iranian National Copper Industries Co. (INCICO) is responsible for extracting, smelting, refining, selling and exporting Sarcheshmeh's copper. The proven and probable reserves of Sarcheshmeh are at least 1.2 billion tonnes of ore containing 8 million tonnes of copper at an average grade of 1.14%. The ore also contains 0.03 % molybdenum, as well as 3.9 grams of silver and 0.27 grams of gold per tonne (Commercial Review, January 1998, and Granmayeh, 1994).

An underground copper mine and concentrator in the south of Birjand is also operated by INCICO. This mine has about 1.8 million tonnes of sulfide ore, containing 2%-4% copper, 2 to 3 grams per tonne (g/t) of gold, and 15-20 g/t of silver. The concentrate is smelted in the Sarcheshmeh Complex (Heydari, 1994). Other reserves of copper ore are known at Meidouk in the Yazd province, Sungun in the East Azarbaijan province and Darre-zerehs in the Khorasan province.

The copper quarries of Meidouk in Shahr-e-Babak, Kerman Province, have a total proven reserves of 145 million tonnes (Commercial Review, January 1998). Mining at Meidouk, which has been described as "a mini-Sarcheshmeh" by Heydari (1991), operates as an open pit. The concentrator treats 3 to 5 million tonnes of ore per year grading about 1.1 % copper.

In 1996, the exploration of a large porphyry deposit in Sungun, near the city of Ahar, in East Azarbayjan Province was completed. Reserves in excess of 600 million tonnes of ore grading about 1% Cu have already been outlined. Work on this project, as well as the exploitation of the Darre-zereshk deposit with total copper reserves of 42 million tonnes with a purity of 0.72%, are planned to be completed by the end of Second Five Year Development Plan (Commercial Review, January 1998).

In August 1997, a contract was signed with a Japanese and two Australian companies (Tomen Corp. of Japan as well as BHP and MIM of Australia) for expansion of the smelting unit of the Sarcheshmeh copper complex. The expansion project will increase the production of cathode copper to 180 000 tonnes and that of anode copper to 250 000 tonnes (Commercial Review, January 1998, and Mining Annual Review, 1998).

In late 1997, a contract was signed with a Swedish company for expansion of the copper condensation unit of the complex. Once the work is completed, a total of 5.7 million tonnes of copper is expected to be extracted from the Sarcheshmeh mine. Under this contract, the Swedish company will carry out basic engineering and domestic consulting engineers will do complementary engineering. Also, the leaching plant of the Sarcheshmeh copper complex was inaugurated recently. The annual capacity of the plant is 14 000 tonnes of cathode copper sheet (Ibid.).

Copper ore production, which was 5.2 million tonnes in 1988, reached 9.2 million tonnes in 1992, 12.5 million tonnes in 1995, and 14.2 million tonnes in 1997. This corresponds to

an average annual growth rate of more than 13% over the period. Production of copper concentrate has also increased considerably, from 170 000 tonnes in 1988 to 354 000 tonnes in 1992, 370 000 tonnes in 1995 and 364 000 tonnes in 1996 (MMM, March 1997). The metal content of the ore has been 117 300 and 101 300 tonnes in 1997-98 and 1998-99, respectively (EIU, Country Profile, Iran, 1999).

According to the Minister of Mines and Metals, Iran, possessing 5% of the world's copper reserves, accounts for only 1% of world production (Commercial Review, January 1998). Therefore, The country's copper industry has great capability for growth and is potentially an excellent means of earning foreign currency. Large amounts of funds have already been invested in this sector and the MMM has committed itself to conduct extensive geological exploration programs and to expand the production capacity of Sarcheshmeh to 200 000 tonnes of copper per year.

However, Iran is still an importer of semi-manufactured copper goods. In order to satisfy the country's need for copper semi-manufactures, the variety of copper products needs to be expanded. This will also enable the country to export many copper products in the future.

5.4.3.4 Lead and Zinc

Iran reportedly has 24 lead and zinc mines (Najafi, 1994). The major deposits are in Angouran (the largest lead-zinc mine in the Middle East), Ahangaran, Douna, Emarat, Hankonh Kushk, Nakhlak, and Ravanj (Michalski, 1995). The country's lead and zinc reserves are estimated at 2.6 million tonnes and 7 million tonnes, respectively, and exploration is ongoing. A lead smelter with a capacity of 40 000 tonnes of metal per year began production in 1993 at Zanzan in northern Iran, and the construction of a zinc smelter with a capacity of 30 000 tonnes per year was completed in September 1999 according to IRNA (September 8, 1999).

Another zinc smelter, with a capacity of 28 000 tonnes per year is under the final stages of construction for the Kushk Mine near Yazd (the country's second largest lead and zinc mine) based on Iranian design in Zanjan. This plant is due to start production in a few months according to the MMM (Hamshahri, Aug. 23, 1999). Lead concentrate (56%-60% Pb) production reached 30 000 tonnes and zinc concentrate (50%-55% Zn) was 100 000 tonnes in 1995 (Michalski , 1995). Lead and zinc metal production were 18 200 and 76 500 tonnes in 1997 and 1998, respectively (EIU, Country Profile, Iran, 1999).

5.4.3.5 Gold

The extraction of gold by traditional methods has a long history in Iran. Modern methods have been employed since 1955. The occurrence of gold mineralisation near the surface has made it possible to extract ore grading 4 g/t gold by open-cast methods. Two gold mines in the Muteh region of the Isfahan province are now extracting 75 000 tonnes of ore per year. Proven reserves are about 5 million tonnes of sulphide ore grading approximately 4 g/t gold (Heydari; 1994, Mining Magazine; June 1993 and Najm, 1988).

A gold recovery plant at Muteh started production in 1992. There is also a precious-metals recovery plant at the Sarcheshmeh Copper Complex which treats the copper anode slimes and produces about 400 kg of by-product gold every year. This plant is targeted to produce about 800 kg of gold and 14 tonnes of silver per year. Gold exploration is underway in other parts of the country, namely in Zarkouh, east of Tehran, in Astaneh near Arak, as well as in Zareshuran and Aghdareh, in the West Azarbayjan province. Gold production was 640 and 684 kg in 1996 and 1997, respectively (Mining Annual Review, 1998).

5.4.3.6 Iron and Steel

There are major iron deposits, primarily in the form of magnetite and hematite, in Choghart and Chadormalu in the province of Yazd, Gol-e-Gohar in the province of Kerman, and

Sangan in the province of Khorasan. The iron reserves of the country are estimated at 4.7 billion tonnes (MMM, March 1997). The target figure for iron ore production by the end of first five-year plan was 5.4 million tonnes per year. At the beginning of the FFYDP, the country produced 2 million tonnes of iron ore per year. With an average annual growth rate of about 36%, production reached 6.84 million tonnes in 1994, the end of the FFYDP, and was 7 and 7.4 million tonnes in 1995 and 1996, respectively (Ibid., MMM, 1997).

The existing Isfahan blast furnace, operated by the National Iranian Steel Co. (NISCO), is fed with magnetite ore grading 56-62% Fe from the Choghart mine situated in Yazd province of central Iran. The mine has proven reserves of 480 million tonnes grading 62% iron (Najm, 1988). The mine's output is approximately 5 million tonnes of ore per year.

NISCO also operates three large iron ore projects. The first one, Gol-e-Gohar, 55 km south-west of Sirjan in the province of Kerman, started production in March 1994 and contains some 180 million tonnes of proven reserves. It produces 2.7 million tonnes of concentrate per year. Recently, the government allocated funds for the expansion of the Gol-e-Gohar concentrator to 5 million tonnes per year within the next three years.

A second large iron ore project is Chadormalu, located 125 km north-east of Yazd in the province of Yazd, with some 400 million tonnes of reserves (Heydari, 1994). It came on stream in March 1997 at an initial capacity of 5 million tonnes per year (t/y) of concentrate (Hamshahri Daily, March 12, 1997). Also, feasibility and pre-engineering studies for an iron ore project with an ore production capacity of 3.4 million t/y in Sangan, about 250 km south-east of Mashhad in the province of Khorasan, are currently under way. All of these projects will provide iron concentrate for steel plants at Mobarakeh, Isfahan and Ahwaz.

The major steel producer in Iran is the Mobarakeh Steel Complex (MSC), with an ultimate production capacity of 3.2 million tonnes per year of steel products. This plant, opened in

1992, produces direct-reduced iron (DRI). According to Heydari (1994), there are three different types of DRI processes: Midrex of the USA, HYL of Mexico, and Purofer of Germany. The Mobarakeh plant has five Midrex units, with a capacity of 3.2 million tonnes per year. The production of the Mobarakeh mill stood at 2.3 million tonnes in 1996. The products of this company have been exported to 22 countries around the world.

The first phase of an expansion plan at the Mobarakeh Steel Co. started in May 1996. The project will increase the nominal capacity of the mill to 4 million tonnes per year: in the second phase, production will rise from 4 million tonnes to 6 million tonnes per year (Iran Weekly Press Digest, 1996, cf. <<http://www.netiran.com>>). Another major steel producer is the Isfahan Steel complex (ESCO), with a capacity of 1.9 million tonnes per year (t/y). The third producer is the Ahwaz Steel Complex (ASCO), with a capacity of 1.7 million t/y of DRI. There are also other steel producers in the province of Khuzestan.

An increase in the production of saleable steel products was at the top of the MMM's agenda during the FFYDP. Tremendous efforts have been made to achieve this goal and major managerial improvements have also been achieved in this sector. The production of saleable steel products was 1.34 million tonnes in 1988. In 1993, production reached 3.9 million tonnes, and 5.8 and 6.3 million tonnes in 1996 and 1997, respectively. Iran, an importer of steel products at the beginning of the FFYDP, has shifted to being a steel exporter by the end of the plan³.

The expansion project at NISCO's Kavian plant in Ahwaz, which included building a strip

³ According to the International Iron and Steel Institute, the production of steel in Iran reached the third highest level of growth in the world in 1994. The total output was 22.5% more than it had been in 1993, while the output of iron and steel in 68 countries increased by only 2.8% (Iran News, 02/08/95, cf. "<http://www.netiran.com>"). The significant increase in the production of steel has partly been the result of improvements in management and productivity and the rapid implementation of steel projects (Ministry of Mines and Metals, 1996).

mill at the site, was completed in 1996. The expansion increased slab production at the plant from 270 000 t/y to 400 000 t/y and sheet and welded pipe production to 1.33 million t/y.

A new alloy and specially steels plant near Yazd, with an initial capacity of 140 000 t/y, began production in July 1997 (International Ettelaat, July 16, 1997). Capacity is scheduled to reach 260 000 t/y within 3 years. The ore to feed the plant comes from the nearby Chadormalu mine. Also, a new 25 000 t/y standard-grade ferro-silicon plant in Semnan, owned by a private company, started production in 1996 (MMM, March 1997).

Other new projects include: expansion of capacity at the existing Isfahan Steel Co. to 3.2 million t/y, by the addition of a line for nearly 800 000 t/y of flat products, as well as the construction of two other new mills, one in Neishabur, in Khorasan Province, and the other in Mianeh, in East Azarbayjan Province. The Khorasan steel mill, with an initial capacity of 600 000 t/y, is planned to eventually produce 1.8 million t/y of long steel products. The Mianeh mill is planned to produce 350 000 t/y of steel products, using imported slabs (MMM, March 1997, Michalski, 1995).

5.4.3.7 Ferro-Alloys

There are several ferro-alloy plants in Iran such as: the Isfahan ferro-manganese plant, with a capacity of 30 000 t/y; a 35 000 t/y ferro-manganese and ferro-chrome plant in Faryab; a ferro-molybdenum as well as two ferro-silica production plants. The latter two plants are located in the town of Azna in Lorestan province and the city of Semnan. The first plant was commissioned in 1993 and the second in 1995. Most Iranian ferro-alloy products are being exported to Far-East Countries.

5.4.3.8 Refractory Materials

Currently, the MMM is constructing a refractory plant in Yazd province. This plant will

supply 50 000 tonnes per year of refractory bricks and mortar mainly for use in steel plants. The expansion of IREFCO (Isfahan Refractory Company) to a 20 000 tonne-per-year capacity has also been completed. In 1995, a new refractory plant, owned by the private sector and with a capacity of 20 000 tonnes per year was commissioned at Gonabad, in Khorasan province. The magnesite material for these new plants is mainly supplied from the Iran Magnesia mineral processing plant located at Birjand, in Khorasan province.

5.4.3.9 Decorative and Dimension Stones

Iran is famed for its decorative and dimension stones. The main types found in Iran are: marble (in different colours), onyx marble, granites, travertine and other calcium carbonate rocks. They are compact, banded, and capable of being polished. Most extraction operations are situated in the provinces of Yazd, Isfahan and Kerman. The MMM has made efforts to promote the expansion of the production of decorative stone from these deposits.

Because of the considerable added value of the finished stone products, decorative stone producers purchased several modern stone processing plants during the FFYDP, mostly from Italian companies (Heydari, 1994). The number of decorative stones mines under exploitation is currently 450 (Hamshahri Daily, June 12, 1997). Other plants are also under construction. In 1996, the production of finished stone products was about 5.7 million tonnes.

5.4.3.10 Other Minerals

In addition to the above mentioned minerals and metals, Iran has other extensive mineral resources. Total mineral reserves are estimated to be around 24 billion tonnes (MMM, Feb. 1996). The most important available minerals and their estimated reserves are (in million tonnes): Phosphates (10), Magnesite (4), Alunite (1000), Potassium Feldspar (1), Titanium (2), Silica (2), Asbestos (5), Perlite (5), Chromite (8.5) (45% purity on average). Gypsum

(2400), and Limestone (4500). Other mineral commodities include kaolin, bentonite, fluorite, dolomite, mica, diatomite, cobalt, uranium, strontium, as well as construction materials.

5.4.4 Infrastructure

During the last few years, major efforts have been made to improve the overall infrastructure of the country. Below is a partial list of major infrastructure projects commissioned during the FFYDP.

Transportation:

- i. Loading and unloading facilities in two major ports in the south of Iran (Bandar Abbas and Bandar Emam Khomeini);
- ii. A 220 km rail extension to link the Chadormalu mine with the existing rail route running through Yazd to Isfahan;
- iii. A rail link from Kerman to Bandar Abbas;
- iv. A railroad in the northeast from Mashhad into Tajikistan to link the rail network of the central Asian republics to the Iranian network and the Persian Gulf; and
- v. As a longer-term project, a rail extension from Kerman to Zahedan to open trade to Pakistan and India is under development.

Power:

Several new power plants were connected to the national power grid; among these are:

- i. The coal-fired Neka plant close to the Caspian sea;
- ii. The Ramin plant in Ahwaz;
- iii. Two steam- and two gas-operated plants in Loshan near Zanzan, and a hydroelectric plant on the Sefid River, about 80 km north of Tehran;

- iv. A 2000-MW hydroelectric plant on the Karoon River in southwestern Iran; and
- v. The construction of a 1200-MW twin-reactor nuclear power plant near Bushehr is underway.

5.5 PRODUCTION, EXPORTS AND TECHNOLOGICAL PROGRESS

5.5.1 Production of Mineral Substances and Metals

In the early 1980s, mineral production was low due mainly to general constraints caused by the war and a lack of new investments. During the FFYDP, the total amount of ore extracted from mining operations increased from 44.7 million tonnes in 1988-89 to 71.4 million tonnes in 1993-94, representing an average growth rate of about 9.8% per year (Ministry of Mines and Metals, Feb. 1996). The production capacity, especially in iron and steel, copper, aluminium, coal, lead, zinc, chromium and decorative stones, increased significantly during the same period.

Currently, the number of active mines is 2450 (Ministry of Mines and Metals, March 1997). In 1996, Iran's mineral output was around 97 million tonnes of 40 different minerals, ranging from iron ore, through base metals, to coal, industrial minerals and a variety of building and decorative stones. The value of mineral output in 1996, according to international FOB⁴ prices, amounted to US \$4.5 billion (Ibid., MMM, 1997).

The following tables show mineral and metal production from 1988-89 to 1996-97.

⁴ Free On Board.

Table 5.4 Production of Major Minerals in Iran

Year	Unit	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97
Iron ore	M.T. **	1.85	2	2.65	4.39	7.2	8.65	6.84	7	7.4
Copper sulphide ore	M.T. **	52.5	51	69	92	92	121	133	125	137
Copper concentrate	T.T. **	170	173	221	370	354	363	399	370	364
Coal	M.T.	1.45	1.45	1.43	1.45	1.5	1.66	1.99	2.13	2.15
Other minerals	M.T.	44.7	46.7	51.7	60.1	65.9	71.4	73	76	87

* Year begins 21 March ** M.T. = million tonnes and T.T.= thousand tonnes
Source: Ministry of Mines and Metals of Iran, March 1997.

Table 5.5 Metals and Refractory Products in Iran

Year	Unit	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97
Steel Products	M.T. *	1.34	1.62	1.93	2.91	3.37	3.9	4.7	4.34	5.8
Copper (Anode)	T.T. **	58	76	92	126	125	101.5	136.2	122	135
Aluminium (Reduction)	T.T.	28	25.7	66.5	73.4	77	90.1	116.4	111	70
Refractory products (Bricks and Mortar)	T.T.	90	93	97.4	106	105	120	135	130	140
Ferro-alloy Products	T.T.	-	-	-	-	-	3.4	30	58	62

* Year begins 21 March ** M.T. = million tonnes and T.T.= thousand tonnes
Source: Ministry of Mines and Metals of Iran, March 1997.

5.5.2 Exports of Mineral Products and Metals

In recent years, the development of non-oil exports was one of the main strategies of the government, and accounted for an increasingly high proportion of total exports. The expansion of exports provides more foreign currency earnings necessary for financing the economic development of the country.

In the mineral export arena, it is believed that the export of mineral raw materials deprives

the country from value-added benefits and employment opportunities. Therefore, priority is given to those commodities which have the maximum value-added. Accordingly, many efforts are being made to increase the production of high value-added commodities and plans are pursued for the construction of more mineral processing and metallurgical plants for those commodities.

There has been a considerable increase in the export of steel products, as well as of copper, lead, zinc and chromite concentrate. A total of U.S. \$37 million of minerals and U.S. \$110 million of metals have been exported in 1988-89. Exports of minerals and metals had risen to U.S. \$59 million and U.S. \$462 million, respectively, by the end of 1993-94. However, due to the government's policy of giving priority to local market demands, and for other reasons to be discussed in the next chapter, the export of mineral substances and metals decreased during the 1994-95 to 1996-97 period.

Most metal exports are steel products. The significant increase in metals exports in the 1992-94 period was due to the growth in steel production after the start-up of the large steel production complex in Mobarakeh in 1992.

The main products exported include zinc concentrate, copper concentrate, lead concentrate, molybdenum concentrate, dolomite, barite, bentonite, feldspar, kaolin, fluorine, perlite, ferro-molybdenum, ferro-chromite, gypsum and decorative stones (Adapted from Mining Journal, 1994 and 1993; MMM., March 1997, June 1994, and Summer 1991). The following figure provides details.

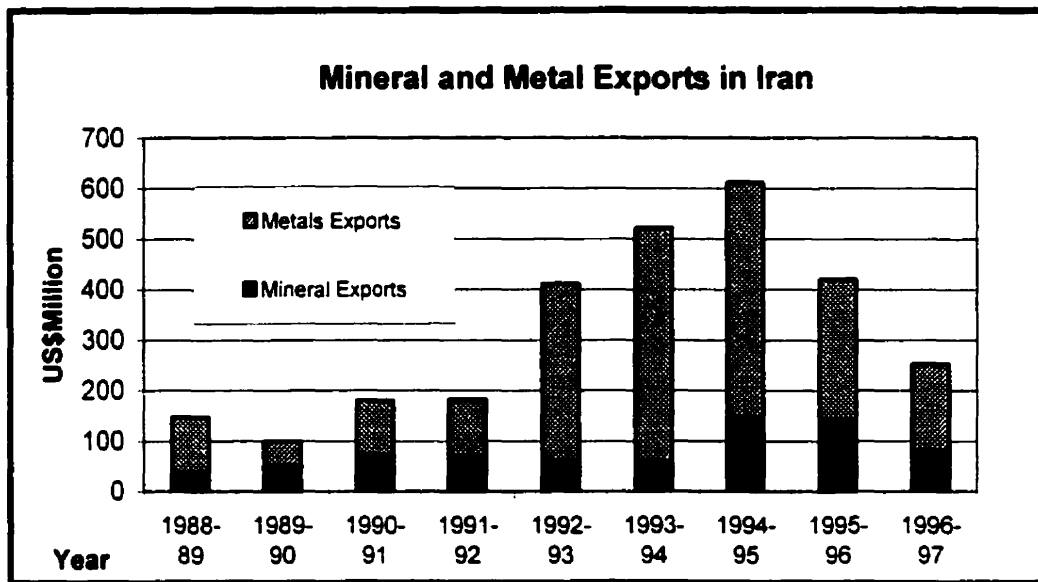


Figure 5.7: Mineral and Metal Exports..., Source: Ministry of Mines and Metals of Iran, March 1997.

5.5.3 Technological Improvements

As the steel industry's growth was the main concern of the MMM, remarkable technological progress has been achieved during the five-year development plans. The most important development was the design of a new steel making dry process named in honour of the twelfth Imam of Shiites, Ghaem (PBUH). The production of reducing gas by the Ghaem direct reduction process is similar to the Midrex process. It is designed by Mr. Sadeghi, an Iranian Engineer, and currently the Managing Director of the Isfahan Steel Complex. Based on this plan, a 600 000-tonne steel plant was designed and built in Iran, and was commissioned in 1996.

The basic flow sheet and the main elements of the Ghaem direct reduction process are shown below⁵.

⁵ For detailed information about the Ghaem direct reduction process see: 1) Towhidi, N. and Sadeghi, A., "Ghaem Direct Reduction", Proceedings of the International Direct Reduction Seminar, Milan, Italy, 1996, pp. 219-229; 2) Shirani, G., Covella, V., and Ghaffari, M., "Danieli-Ghaem DRI Process", Metal Bulletin's 10th International Mini-Mill Seminar, Malaysia, March 1997, p.16; and 3) The

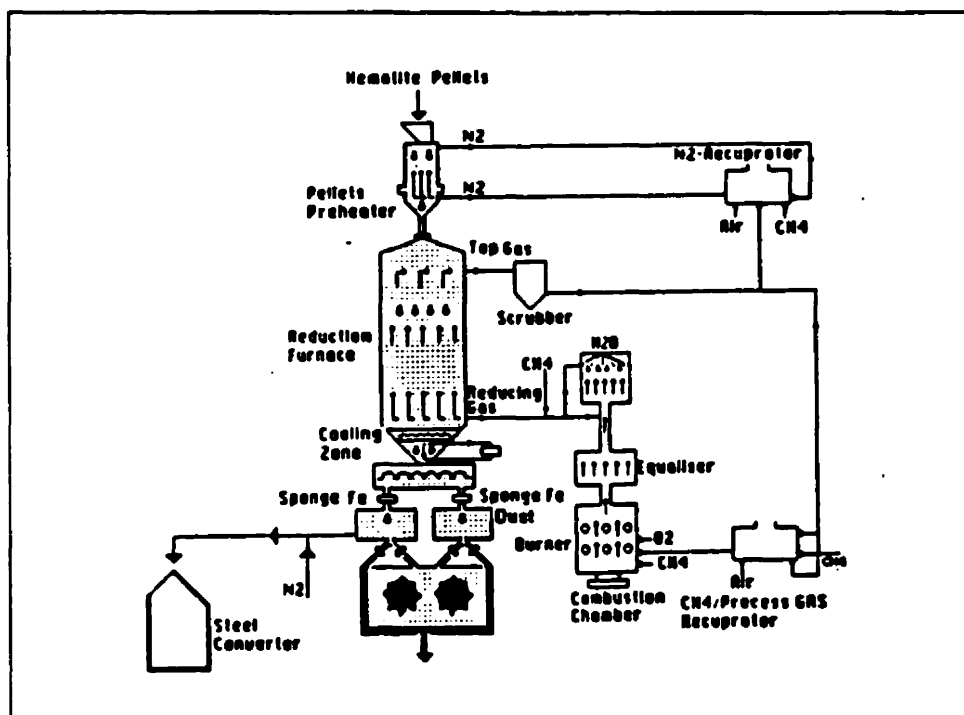


Figure 5.8: Basic Flow Sheet and Main Elements of the Ghaem Direct Reduction Process. Source: Towhidi, N. and Sadeghi, A., "Ghaem Direct Reduction", Proceedings of the International Direct Reduction Seminar, Milan, Italy, 1996, p. 223.

The key data for a Ghaem DRI unit is as follows

	Water (m ³ / t)		Fuel Consumption (Gcal / t)		Production (⁰ 000 tonnes)
	1.7		1.95		600

Source: The Ghaem Technology, Isfahan Steel Co, 1997, p. 4.

This process is claimed to require less initial investment and consumes less electricity and fuel per tonne compared to the well-known Midrex process (The Ghaem Technology, 1997). In February 1997, Danieli of Italy purchased the rights to market the DRI process: thus, the process is now named Danieli-Ghaem.

Ghaem Technology, Published by Isfahan Steel Co., 1997, p. 4.

Other technological progress included:

- i. Most spare parts -- mechanical and hydraulic, and electrical and electronic -- required for steel-making plants are now domestically produced (IRNA, April 1993).
- ii. Foreign exchange spent for each tonne of steel processed at the Isfahan Steel Mill and Ahwaz Steel Mill in 1990 was \$178 and \$180, respectively. These figures were reduced to \$60 and \$100 per tonne in 1994 (Iran News, March 16, 1995, cf. "<http://www.netiran.com>", and IRNA, September 8, 1997).

According to the Director General of the Industrial Research Unit at the Ministry of Mines and Metals, Iran is also collaborating with several central Asian republics and other members of the Economic Co-operation Organization (ECO), founded by Iran, Pakistan and Turkey. The 10-member ECO now groups Afghanistan and the republics of Kazakhstan, Turkmenistan, Tajikistan, Kyrgyzstan, Azarbayjan and Uzbekistan. for the purpose of mineral research (IRNA, November 4, 1995).

5.6 MINERAL POLICY

5.6.1 Background

Before the revolution of 1979, in particular after the oil price boom, the mineral sector was insignificant, and - except for certain cases - mining activities had been carried out without consideration of the basic industrial needs of the country. Statistics show that the share of the mineral sector in the GDP had been about 4% for the years prior to 1964. Since then, and up until 1974, this share increased slightly; but during the 1975-79 period, it declined to only 1%. This insignificant activity, except for non-industrial purposes such as construction materials, took mostly the form of raw materials and mineral concentrates for export (Ministry of Mines and Metals, Summer 1991).

After the revolution, the government emphasized the development of mineral activities as an essential approach in gaining economic independence and promoting industrial growth and development. On May 22, 1982, the new Mining Code was promulgated. Within the framework of the Mining Code, the Ministry of Mines and Metals (MMM) was formed in June 1984. This Ministry has the responsibility of planning and implementing both long and short-term plans associated with geological reconnaissance and exploration, mine development, and commercial production.

Other duties of the Ministry, as mentioned in the Mining Code and the law for the establishment of the Ministry of Mines and Metals, are: to provide raw materials and metal as well as non-metal ore to the industrial sector; and to develop and operate metallurgical industries aimed at national self-sufficiency and industrial independence. In an economic sense, the Ministry's task is to convert potential resources into marketable mineral commodities. This can be achieved through exploitation of mineral resources and effective employment of labour, thus creating added value.

5.6.2 Mining Sector and FFYDP

In 1988, a position of privilege was granted to the mineral sector in the five-year development plan. The plan placed high priority on the development of mineral resources and the government allocated nearly a quarter of the entire \$U.S. 30 billion investment budget to the minerals and metals sector.

With regards to the mineral sector, the various components of the plan were:

- i. Substantial investments in resource development;
- ii. Expansion of minerals and metals in the forms that provide the maximum value-added;
- iii. Satisfying the demand of domestic mineral markets and the needs of the metallurgical industry;

- iv. Achievement of a higher productivity;
- v. Production of more raw materials necessary for industries;
- vi. Privatization and joint-venturing;
- vii. Restructuring of the financial position of the State-owned Mining Enterprises (SMEs);
- viii. Decentralization and increase in contractor services;
- ix. Reduction of dependence on public funds; and
- x. Expansion of training activities and research facilities (Ashraf, 1992 and MMM. 1991).

The plan set a target of a 19.5% annual growth rate for the mineral sector. The target for added value, by the end of the Five-year plan, was 512 billion Rials (Ministry of Mines and Metals of Iran. Annual Report, 1989).

The performance of the mineral sector during the FFYDP will be discussed in detail in Chapter 6.

5.6.3 Current Mineral Policy

The mineral sector occupies an important place in the economy of Iran. Although this sector only represents a small proportion of the GNP, it is nonetheless important for the progress and industrialization of the country, and its contribution to economic development is substantial. As mentioned, the Iranian government's main goal over the FFYDP was to raise the mining sector's contribution to GNP to 5%. By 1994, it has reached 4% compared to less than 2% in 1988 (Ministry of Mines and Metals, July 1995). The target is to increase it up to 10% by the end of the second five-year Plan (Mining Journal, July 1994).

In accordance with the SFYDP, the following targets are planned for major mineral substances and metals products by 1999-2000.

- i. Finished steel products from 4 million tonnes in 1993-94 to 6.5 million tonnes;
- ii. Copper: 145 000 tonnes;
- iii. Iron ore: 10.5 million tonnes;
- iv. Copper concentrate: 510 000 tonnes;
- v. Concentrated coal: 1.11 million tonnes;
- vi. Construction materials: 55 million tonnes;
- vii. Share of industrial minerals in mining products from 54% to 59%.
- viii. Also, the productivity of labour in the mining sector is targeted at an average annual growth rate of 4%.

With regards to privatization, the MMM is planning to privatize all companies and industrial units under the National Steel Company, except Mobarakeh Steel Co., Isfahan Steel Mill and Ahwaz Steel Co. Up until 1997, no major privatization program had been initiated in the steel sector.

As far as exports are concerned, mining products are expected to reach a total of US\$300 million by the end of the second plan. According to the SFYDP, the MMM is obliged to complete all geological maps at the 1:100 000 scale for regions with mineral potential. Also, exploration for uranium, bauxite, lead and zinc, coal, and iron, as well as complementary exploration remaining from the FFYDP are planned to be completed.

With respect to new capital investment, budgets for completion of the following projects are or will be provided through development credits by the government.

- i. The Gol-e-Gohar and Chadormalou iron ore mining complexes;
- ii. Expansion of capacity at the Sarcheshmeh Copper Complex and Meidouk copper mine;

- iii. Required investment in coal mines to maintain current production of concentrated coal, with eventual increase to cover future domestic needs;
- iv. A 150 000-tonne plant to produce aluminium from bauxite.

With respect to training and research activities, the MMM arranged for technical personnel and managers to follow a short domestic training course for approximately 60 hours. Research is planned to expand until the level of applied mining research reaches 1% of the value of mining products.

5.6.4 Mining Code

The Mining Code was promulgated on May 22, 1983, to be subsequently modified on June 16, 1985. During the course of this study, the new Mining Code was promulgated on July 20, 1998. The new Mining Code consists of 36 articles and 12 notes. Based on Article 44 of the Iranian Constitution, the government has total sovereignty over the country's mineral resources. Article 1 of new mining code defines terms such as minerals, resources, reserves, exploration, exploitation, etc., as used in this law.

According to this law, exploration activities can be carried out directly by the Ministry or affiliated enterprises, or by mining co-operatives and the private sector (Article 5). Exploration can only be conducted by companies (state-owned, cooperative or private) and individuals after the granting of an "Exploration Permit" (Article 6). Exploration Permits are transferable to a third party within 1 year of the date of issuance with prior consent of the Ministry of Mines and Metals (Article 7).

For mining operations, Articles 8 and 9 stipulate that companies and individuals must be granted an "Exploitation Permit", issued by the Ministry of Mines and Metals. The exploitation (development) Permit is granted for a period of a maximum 25 years to an

exploration permit holder who applies within 1 year after issuance of an exploration permit. Otherwise, the holder of the exploration permit loses his/her priority in obtaining the development right (Articles 10).

Exploration and extraction of strategic minerals (petroleum, natural gas and radioactive materials) are carried out by the government. All other minerals may be mined by private entities, a co-operative, a company or an individual. According to Article 12, the Ministry of Mines and Metals determines the characteristics of "Large Mines" considering elements such as quantity of reserves, cut-off grade, value of minerals, investment, size of work force, and socio-political considerations. Activities associated with the operation of large mines, as defined in Article 12, can be conducted by the Ministry of Mines and Metals, a SME, or the private sector (with prior consent from the Cabinet of Ministers).

5.7 FOREIGN INVESTMENT POLICY

The Mining Act has specifically made provisions for Iranian nationals; but various problems, including the shortage of Iranian geologists and a lack of advanced technology and equipment, have made foreign participation inevitable.

The government policy, outlined in more detail in chapter 9, is based on attracting as many interested foreign companies as possible to the mineral sector. In this regard, The Ministry of Mines and Metals has already framed its related plans as follows:

- i. Contracts can be concluded for technology transfer, equipment supply and, if necessary, recruitment of exploration or mining experts. For the large mines, such contracts must be signed with government agencies;
- ii. Foreign firms may enter joint-venture contracts with Iranian companies. The latter would conclude the necessary contracts with the Ministry of Mines and Metals; and

- iii. FDI and partnerships in mineral processing projects and metallurgical industries are welcomed.

Foreign investment in the mineral sector during the FFYDP will be presented in chapter 6.

5.7.1 Foreign Investment Law

Foreign capital inflow in the form of either loans or direct investments comes under the "Law for the Attraction and Protection of Foreign Capital Investment" and the regulations issued thereunder. This law was promulgated on November 1955, with minor modifications in January 1966 and February 1972. The law covers private foreign investment in fields other than the oil sector.

Article 1 of this law states that capital may enter into Iran in the form of cash, factories, machinery and parts, patent rights and trademarks, and services. According to Article 3, capital entering Iran in accordance with the law, as well as profits gained from that investment, are subject to the legal protection of the government. This article adds that all rights, exemptions and facilities accorded to domestic enterprises shall also apply to foreign companies. According to the Article, the government also guarantees fair compensation in the event of expropriation. The law provides that any disputes between the foreign investor and the government arising in connection with expropriation are to be resolved by the Iranian courts.⁶

With respect to repatriation of earnings, the law states that foreign investors are allowed to repatriate their profits derived from investments in the same currency in which capital was

⁶ A clarification by the Council of Guardians (who interpret the laws and regulations based on Article 44 of the Constitution of the Islamic Republic of Iran) has opened the way to international arbitration (Timewell in Banker, Feb. 1992).

originally imported. The law provides that in the event of insufficient foreign exchange, permission will be granted to export authorized goods in amounts equal to the currency value of the approved profit to be repatriated.

Under Article 5 of the law, the original capital invested, together with gained profits, may be repatriated. However, the law specifies that at least 10 percent of the original capital must be retained in the country for six months to meet any contingent liabilities (Adapted from Ministry of Economic Affairs and Finance, 1992).

The process for approval of foreign investment consists of three phases. First, the foreign investor must submit an application to the "Organization for Investment and Economic Technical Assistance of Iran" (OIETAI), which is part of the Ministry of Economic Affairs and Finance. The application should contain pertinent information about the project, the proportion of foreign participation, the financing scheme, and the number of employees, etc.

The application is evaluated by the OIETAI, and a report on the proposed investment is prepared and referred to the "Foreign Investment Board" for consideration. The Foreign Investment Board co-ordinates the proposal with the relevant ministry (the ministry under whose jurisdiction the proposed investment will be made). Once the proposed investment is approved, it goes to the Cabinet of Ministers (Ibid., Ministry of Economic Affairs and Finance, 1992).

5.7.2 Investment Incentives and Restrictions

The government offers incentives for new investments including tax holidays and exemptions, duty exemptions and tariff protection. The tax holiday for new mining projects is 5 to 8 years. There are some restrictions for foreign investment. The state monopolies and major mines and industries are not open to foreign investment. There are three main sources of local partners: state-owned enterprises, government-controlled banks and the private

sector.

As mentioned earlier, the Organization for Investment and Economic and Technical Assistance of Iran is the main governmental agency with which the foreign investor must deal. Besides granting approval of the proposed investment, this organization approves work permits and repatriation of capital and profits. Other organizations include the Iranian Central Bank, controlling foreign exchange as well as import and export licenses, and the Ministry of Commerce, implementing the Commercial Code.

5.8 THE FUTURE OF THE MINERAL INDUSTRY IN IRAN

The mining sector currently accounts for about 4% of Iran's GDP. Rich geological formations, as mentioned, cover most parts of the country. Major deposits of copper, iron, lead, zinc, manganese and other mineral have already been discovered, placing Iran among the world's richest countries in terms of mineral resources. In addition, other rich resources have yet to be discovered.

The value of the minerals and metal produced based on international prices over the FFYDP amounted to about \$11 billion and this figure is expected to reach over \$20 billion in the Second Development Plan. By the end of the third development plan, with a solid mineral policy backing and well managed programs, the nation expects to become self-sufficient in most mining related industries as well as gain the ability to export considerable amounts of mineral commodities and metals.

The development of this industry is seen as a reliable way of boosting non-oil exports as well as providing the raw materials needed by many industries. With technological advancements in steel production, namely the Ghaem- Daniel process, the steel industry will also be able to earn foreign currency by providing technical, engineering, and construction services to

steel-producing plants in other countries of the region.

Iran has a number of comparative advantages in terms of steel production. Low labour costs, cheap energy and natural gas, sizable -- yet relatively low-grade -- iron ore deposits, and domestic supplies of coking coal and limestone capable of supporting the development of a world-class steel industry (Michalski, 1995). With a number of projects in the construction and commissioning phase, Iran is projected to become a major producer and exporter -- assuming it can compete with other low-cost producers such as South Africa, Turkey, and Eastern European countries -- of various types of steel in the next few years.

Due to the availability of rich reserves, there are a number of large basic industries such as the Mobarakeh Steel Complex, Isfahan Steel Co., the Iranian National Industrial Steel Group, Sarcheshmeh Copper Industries, Arak Aluminium Smelting Industries, etc. All are actively engaged in production. At present, given its importance, the mineral industry is being supported in tune with the country's macroeconomic objectives. However, the MMM should endeavour to update the sector's technology, develop export-oriented strategies and help with the timely completion of projects.

Opportunities for foreign and domestic companies/investors are abundant, as Iran requires know-how, equipment and investment in this sector. Expansion of the mineral industry can be expected to continue by encouraging a larger role for private enterprise at home and relying on financing from abroad. The industry should make necessary arrangements to minimize the financial burden of the country and act as a major foreign currency earner. In addition, privatization of SMEs and the setting of public joint-stock companies should be implemented. This will allow the inflow of financial resources to private entities.

In the future, the mineral industry can serve as a model for an economy that does not rely on oil exports. The mineral industry can bring greater economic growth and development by its

foreign currency revenues, other income earned through exports of technical and engineering services, and the reduction of import expenses of various industrial units that need raw materials.

5.9 CONCLUSIONS

Iran is wealthy in natural resources, labour, and entrepreneurial skills, with a relatively large GDP and population. It has made important economic reforms in recent years. Despite major accomplishments, however, Iran is yet to fully utilise its considerable economic capability. This is most evident in its low per capita income growth, under-exploited investment opportunities and inadequate economic diversification.

A review of the performance of the economy during 1989-98 shows a mixed picture. On one hand, the overall GDP has increased, domestic economic imbalances have been diminished, and budget deficits have been eliminated. Fiscal policies, financial institutions and exchange rate regimes have also been reformed⁷. On the other hand, high inflation, unemployment, underemployment, privatization and the improvement of state company efficiency have been inadequately dealt with. Despite some progress, domestic private saving is still low, hampering higher investment.

With these factors in mind, the country's policy-makers must focus on elements such as accelerating privatization programs and deregulating economic activities, reforming the quality of public expenditure programs in a way to strengthen their contribution to economic growth, improving the functioning of labour markets, enhancing domestic and foreign investments, and ensuring a supportive macroeconomic policy for small businesses, some

⁷ In 1996, an increase in oil revenues, along with better fund allocation policies and a series of bilateral rescheduling, have enabled Iran to fulfil all its foreign debt commitments and achieve a positive balance of payments, obtaining remarkable praise from the International Monetary Fund (Reuters, June 6, 1997).

of which have been addressed in the SFYDP.

The mineral industry, which faced a boom during the FFYDP, is presently registering an annual output of 97 million tonnes of some 40 different minerals. Most of the new mining projects are run by state-owned companies. Despite the government's policy toward attracting foreign investment to this sector, foreign investment was not been considerable. Such reasons as existing barriers to foreign capital inflow, restrictions in the mining code, limits on foreign exchange retention, import licences, prospects of working in an inflationary economy as well as investment risks in Iran are responsible for this.

Iran's diversified mineral endowment provides opportunities for self-sustained industrial and economic development. In addition, the development of mining activities in Iran has another important aspect: the production of intermediate commodities is not possible without mining activities to extract the necessary raw material.

Iran needs to establish appropriate mechanisms for screening, evaluating and approving local and foreign investment in the mineral sector. Clear-cut mineral policies and strategies aimed at achieving self-reliance and sustained diversified economic development are therefore necessary.

CHAPTER 6

PERFORMANCE OF THE MINERAL SECTOR OF IRAN DURING THE FIRST FIVE-YEAR DEVELOPMENT PLAN (1989-90 -- 1993-94)

6.1 INTRODUCTION

As stated in chapter 5, after the cease-fire in August 1988, the Iranian government decided to establish a program of economic reform and privatization to rebuild the country. To that end, the FFYDP emphasized the development of the country's natural resources, which were seen as an excellent venue for economic development and a substitute to oil. Therefore, a special mission was assigned to the mineral sector (see chapters 1 and 5). The FFYDP emphasized the improvement of the share of the mineral sector in the GDP, from the existing level of approximately 2% to 5%, and also set a target of around 19% in annual growth for the mineral sector (Ministry of Mines and Metals of Iran, Annual Report, 1989, and Mining Journal, June 1990).

The purpose of this chapter is to provide insights into the macro-economic measures taken by the mineral sector of Iran during the FFYDP, as well as to provide an analysis of the performance of the sector during this period. This chapter, in particular, intends to identify the areas in which the mineral sector has underachieved. This will set the agenda for the

analysis in the following chapters.

6.2 MAJOR QUANTITATIVE TARGETS OF THE MINERAL SECTOR DURING THE FFYDP

Major quantitative targets¹ of the FFYDP with regards to the mineral sector were:

Share in GDP and value of products:

- The share of the mineral sector in the GDP: from about 2% to 5%;
- Annual growth rate in the value of mineral products: 19%;
- Annual growth rate in the value of metals: 24.5%;

Foreign exchange use:

- Investment in new mine development projects: \$US 1.7 billion
- Investment in metals sector: \$US 5 billion

Export:

- Exports of mineral substances: \$US 1.3 billion;
- Exports of metals during the plan period: \$US 850 million

Geological maps:

- To complete 100% of the 1:250000 geological maps; and
- To complete 50% of the 1:100000 geological maps by the end of the plan.

Average annual growth rate in production:

- Iron ore: 24.2 %, copper concentrate: 16%, coal concentrate: 16.8%.
- Saleable steel products: 22%, copper (anode): 22%, aluminium (reduction): 18.5%

Employment:

To create 35 400 new jobs in the mineral sector, and to double the job growth rate in the mineral sector and related industries by the end of the second FYDP (MMM, March 1997. OPBI, July 1995, Mining Journal, July 1994, Ashraf, 1992, Moaden va Fellezzat (*Mines and Metals*), No. 40, Fall 1990).

¹ The various components of the FFYDP with regards to the mineral sector were discussed in chapter 5.

6.3 PERFORMANCE OF THE MINING SECTOR DURING THE PLAN

The following section describes the performance of the mineral sector of Iran during the FFYDP from several perspectives.

6.3.1 Gross Domestic Product Growth of the Mineral Sector

The annual GDP growth rate of the mineral sector was hoped to rise to 19.5% over the course of the FFYDP. The actual annual GDP growth rate for the mineral sector during the FFYDP was a disappointing 12.4% (Amirahmadi, 1995). The following table provides a yearly report.

Table 6.1 Annual Gross Domestic Product Growth Rates of the Mining Sector During the FFYDP (Planned vs. Actual)

1989-90*		1990-91		1991-92		1992-93		1993-94		FFYDP	
Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
15	13.6	30.3	23.1 [○]	18.5	11.5 [■]	21.2	8.4	13.5	6 [◇]	19.5	12.4

*) Years begin 21 March

Source: Amirahmadi, H., "An Evaluation of Iran's First Development Plan and Obstacles to the Second Development plan", Ettelaat-e Siasi Eghtesadi, Tehran, Vol. 9, No. 93-94, June-July 1995, p. 99.

○ According to the report of the MMM (March 1993, p. 1), actual GDP growth rate was 21.3% in 1990-91.

■ According to the report of the MMM (March 1993, p. 1), actual GDP growth rate was 13.1% in 1991-92.

◇ The actual GDP growth rate of 1993-94 is not found in the reports of the MMM. This figure is reported from Amirahmadi, 1995.

Concerning the sectoral distribution of the GDP, the following table provides an overview of the targeted growth rates and achievements of the various economic sectors by the end of the FFYDP.

Table 6.2 Projected & Actual Growth Rates for Selected Sectors during the FFYDP

Sector / Growth Rate	Plan	Actual	Sector / Growth Rate	Planned	Actual
Agriculture	6.1	5.9	Water, Electricity & Gas	9.1	12.7
Oil	9.5	11.1	Construction	14.5	5.2
Manufacturing	14.2	7.6	Services	6.7	7.4
Mining	19.5	12.4	GDP	8.1	7.2

Source: Amirahmadi, H., June-July 1995, p. 99

◊ The value added of metals is calculated under the manufacturing sector.

As can be seen, two sectors, namely water, electricity and gas, and mines, have had the highest growth rates, while the construction sector, with an achievement far less than the targeted growth rate, had the lowest. Overall, in terms of the annual growth rate of the GDP, nearly 85% of the targeted growth rate was achieved during the plan period (Amirahmadi, Ibid.).

6.3.2 Value Added of the Products

According to the MMM (March 1997), the average growth of annual value added of products (mineral substances) was 19% during the FFYDP, as set by the plan. The growth rate in the added value of metal products targeted at 24.3%, was 32.4% during the plan. This achievement is praiseworthy.

The annual values can be seen in the following figure.

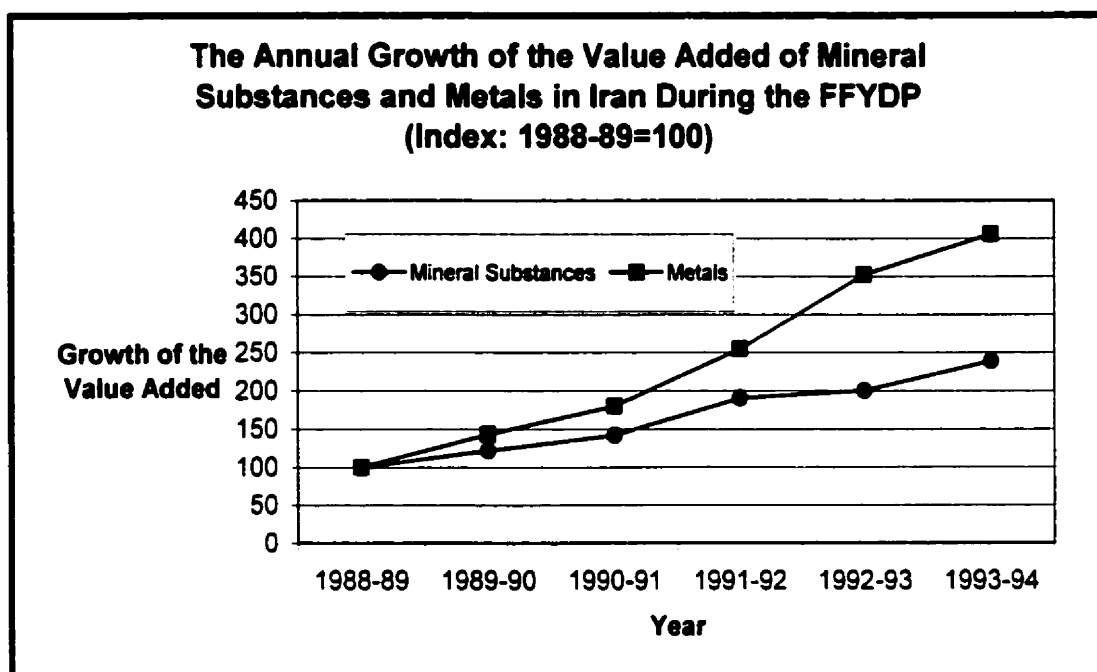


Figure 6.1: The Annual Growth..., Source: Ministry of Mines and Metals, "Outline of Activities: The First Five Year Plan", Feb.1996, p. 1.

6.3.3 Export of Mineral Substances and Metals

It was hoped that the export value of mineral substances would exceed \$1300 million by the end of FFYDP. Actually, the export value of minerals stood at \$307 million at the end of the plan. This represents 23.6% of the planned amount. However, the value of exported metallic products amounted to \$1083 million, which was 27.5% more than that of the plan's target (OPBI, 1995). The yearly results can be seen in the following tables and figures.

Table 6.3 Export of Mineral Substances During the FFYDP (SUS million)

	1989-90	1991-92	1993-94
Actual	40	280	420
Planned	51	69	55
Ratio	78.4%	406%	764%

Source: Organization of Planning and Budgeting of Iran (OPBI), *Statistical Results of Performance of Industries, Mines and Internal Trading Sectors During the FFYDP*, July 1995, p. 10 and Ministry of Mines and Metals (MMM), February 1996, p. 14.

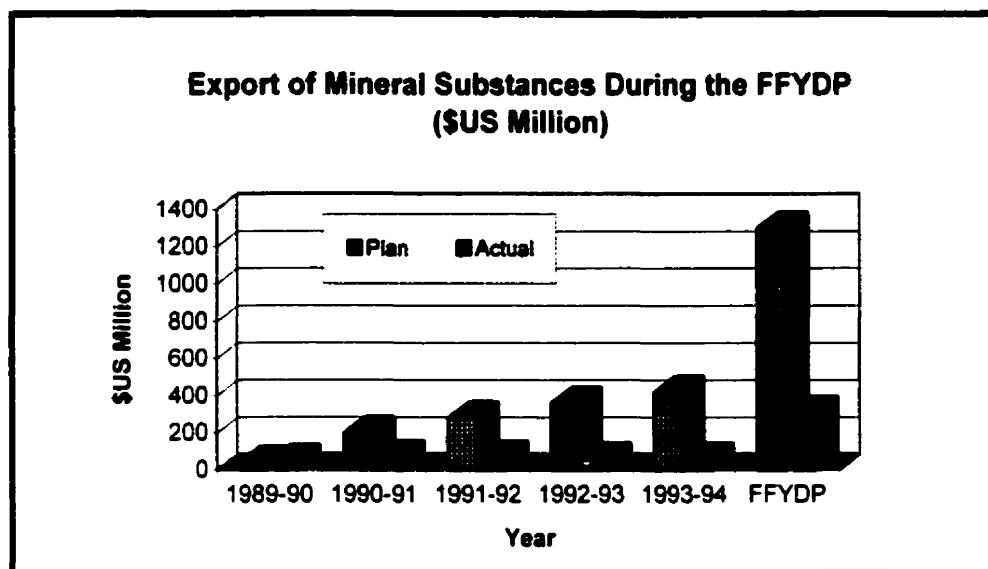


Figure 6. 2: Export of Mineral..., Source: see table 6.3.

Table 6.4 Export of Metals During the FFYDP (\$US million)

	1989-90	1991-92	1993-94	FFYDP
Plan	120	125	330	500
Actual	49.6	113.1	462	1034
Ratio	41.3	90.5	140	207

Source: OPBI, July 1995, p. 11, and Ministry of Mines and Metals (MMM), February 1996, p. 14.

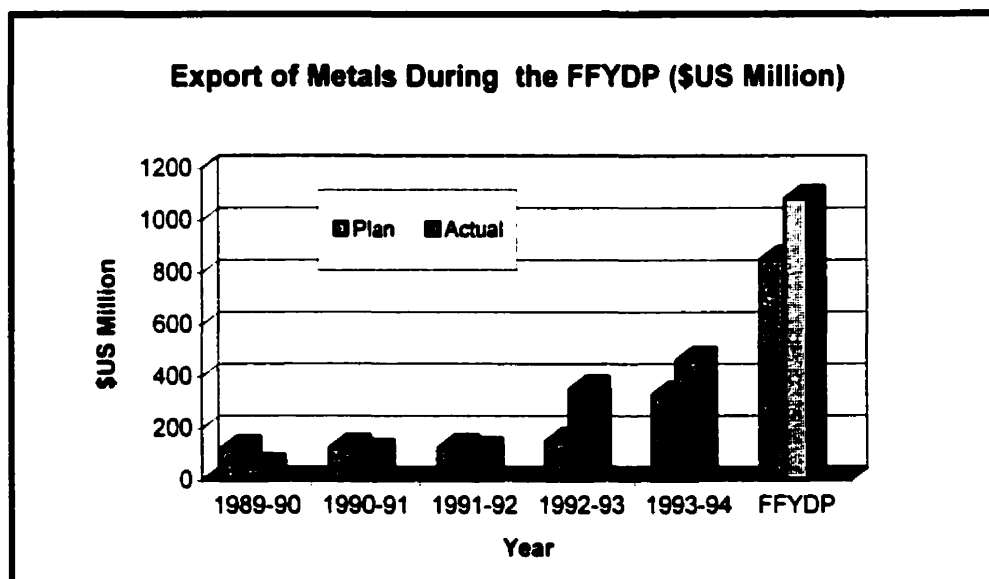


Figure 6.3: Export of Metals..., Source: see table 6.4.

Regarding the poor performance of mineral exports, the following is noteworthy.

According to the MMM's Annual Report (1996), the FFYDP's target was too optimistic given the inexperience of the mineral sector. Also, the policy to avoid the export of unprocessed commodities was another reason for the poor performance of mineral exports (Ibid., 1996). Other reasons for the poor performance of mineral exports can be summarized as²:

- i. Lack of observance of international standards in the quality, packaging, transportation and marketing of mineral exports. This has led to the loss of some markets, particularly in decorative stones;
- ii. Instability in government policies concerning import/export regulations, foreign currency, exchange rates, customs and other relevant rules and regulations;
- iii. Poor planning skills of exporters and bureaucratic procedures in non-oil exports;
- iv. Little cooperation between customs authorities and mineral exporters in the case of a problem;
- v. Inadequate transport facilities and the lack of enough docking facilities for the export of mineral commodities; and
- vi. Lack of adequate tax incentives for export.

Apart from the above reasons, the author believes that the government should seriously consider exporting non-oil products. There are numerous non-oil products that the country is capable of exporting. Furthermore, the government should refrain, as much as possible, from getting involved in the actual execution of commercial activities, such as exports, and should leave these tasks to the private sector. However, the government should take a proper role in guidance, programming, planning, support and supervision.

A good way of improving the export of mineral goods is to form joint export companies with countries who have expertise in producing/exporting particular commodities. Such joint

² This topic will be discussed in detail in chapter 8.

companies would then assume the role of marketing the products. A better strategy would be to form a joint venture with a foreign company and invest jointly in production and export projects for world markets³. The profit could then be shared proportionately.

6.3.4 Geological Survey Activities

The Iranian Geological Survey (IGS), established in February 1962 (EIU, 1964), is responsible for the assessment of the whole spectrum of mineral resources, except fossil fuels and radioactive minerals (Mining Magazine, 1992). One of the most important duties of the IGS is to provide geological maps of the country. According to the FFYDP, 100% of the 1:250000 maps were to be completed by the end of 1993-94. In fact, all of the 1:250000 maps were completed by the end of 1992. According to the plan, 50% of the 1:100000 maps were to be done by the end 1993-94. In reality, 55% of these were completed by the end of the plan. Details can be found in the following figure.

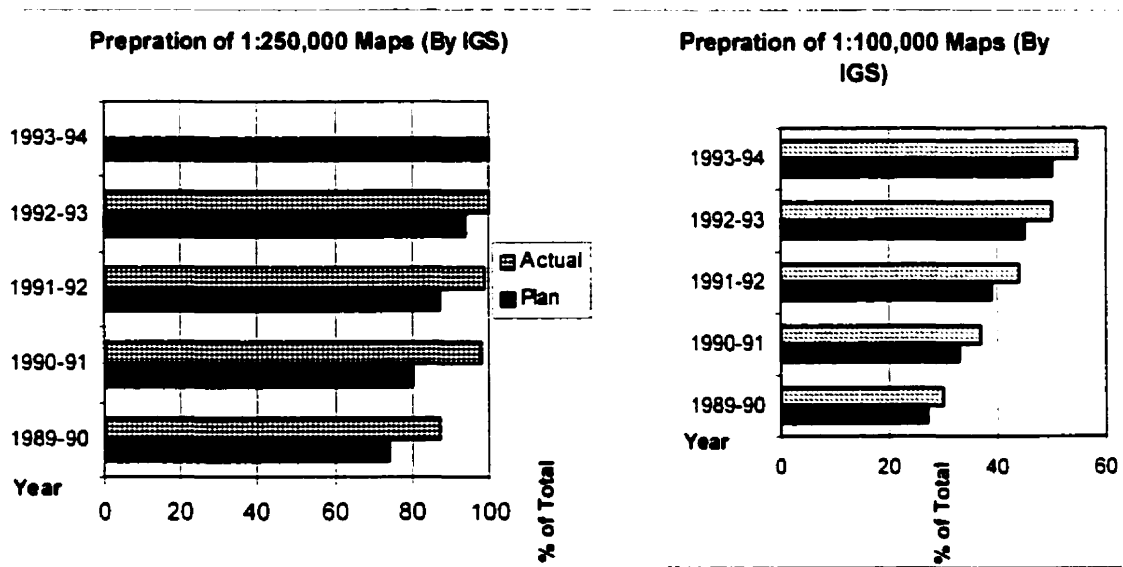


Figure 6.4: Geological Survey Scans During the FFYDP, Source: Organization of Planning and Budgeting of Iran (OPBI), July 1995, p. XI.

³ Recently, a joint production-export company has been established with Italy for exporting decorative stones.

6.3.5 Investment and Financing

To develop the large mineral resource base of the country, a substantial amount of investment is required. As mentioned previously, war conditions and the government policy favouring a state-run economy before the FFYDP resulted in very low levels of investment in that sector⁴. In accordance with the plan, investment by the government increased considerably during the FFYDP. Large investments were concentrated in the steel, iron, copper, aluminium and ferro-alloy industries. However, investment by the private sector was much lower than expected.

In this section, both investments in foreign currency and in local currency are discussed. Both sources are analyzed at two levels, namely investment in mine development projects and investment in metallurgical projects.

6.3.5.1 Investment in Foreign Currency for Mine Development

The FFYDP forecasted an investment of \$US 1.7 billion in new mine development projects over the plan period. Indeed, \$US 1.1 billion was invested in these projects, fulfilling 65% of the target⁵. As for foreign exchange used for current production in the mineral sector, a total amount of \$ 353 million was spent to keep production on track. Therefore, a total amount of nearly \$ 1.45 billion, provided by local sources, was spent on new projects and current production. The annual results can be seen in figure 6.5.

⁴ For instance, the capital invested in the mineral sector was only 3.2% of total government investments during the 14-year period from 1972 to 1986. 72% of such investments were allocated to provide coal and iron ore needed by the steel industry (MMM, 1991).

⁵ It should be noted that this amount was spent from the government's budget. According to the MMM (1996), a considerable amount was invested by state mining companies, which is not reflected in figure 6.5.

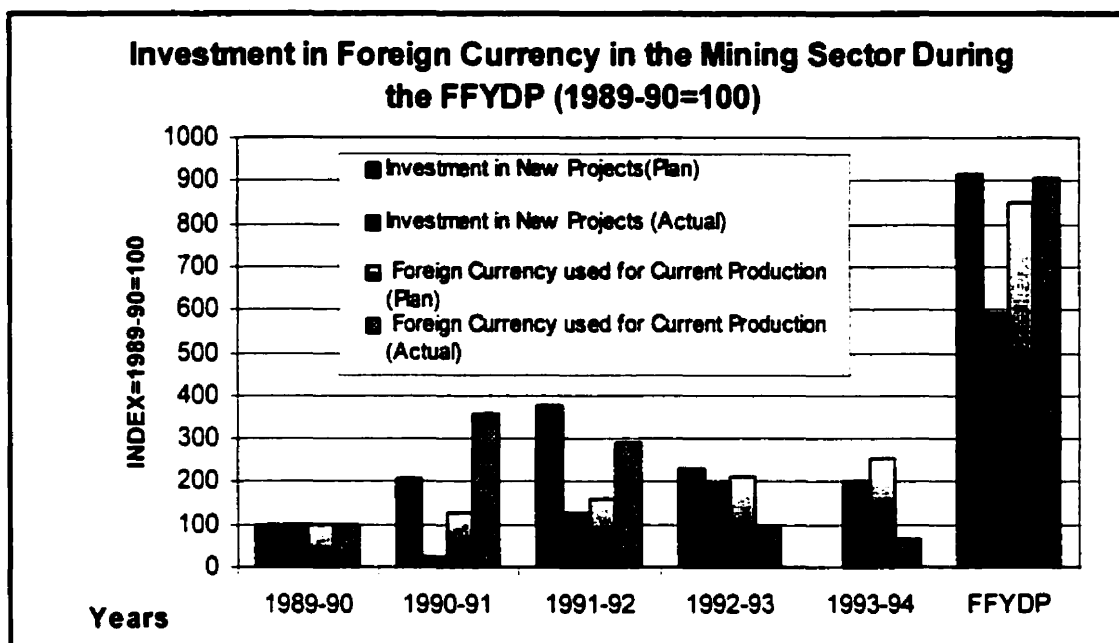


Figure 6.5: Investment in Foreign Currency..., Source: Ministry of Mines and Metals, December 1994, p. 10 and Organization of Planning and Budgeting, 1995, p. X.

6.3.5.2 Investment in Foreign Currency in the Metals Industries

According to the FFYDP, a total amount of nearly \$US 5 billion was to be invested in the metals sector. Actually, \$US 3.4 billion was invested in new projects, i.e. 70% of the plan's targeted investment was achieved. Nearly \$3 billion was spent for current production in the metals industry. Therefore, \$US 6.36 billion was invested in the metals industries during the FFYDP. The annual results are shown in the following figure.

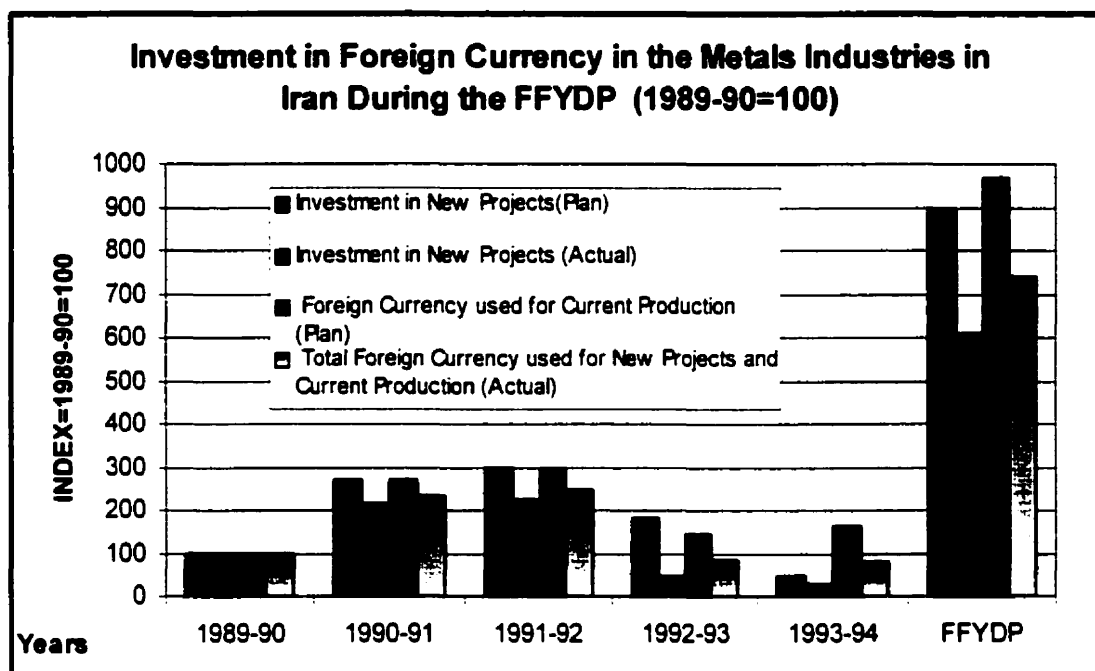


Figure 6.6: Investment in Foreign Currency..., Source: Ministry of Mines and Metals, December 1994, p. 4 and Organization of Planning and Budgeting, 1995, p. X.

From the analysis of information given above, the following facts are notable. Out of almost \$US 8 Billion invested in the mineral sector (mines and metals), nearly 58% was spent on new projects, of which 75% was invested in the metals industry and 25% in mine development. Out of \$ US 3.3 billion spent on production in current plants, 78% was used in the metals industry and the rest for mine development. In other words, the \$US 6.3 billion invested in the metals industry was almost equally divided between existing and new projects. However, in the mining sector, the amount spent on existing plants was only 1/3 of the total investment.

6.3.5.3 Investment in Local Currency in the Mineral Sector

A detailed comparison between the planned and actual investment, in local currency, provides a supplement to the analysis. The following figure gives details concerning the FFYDP's targets for local currency investments in new projects.

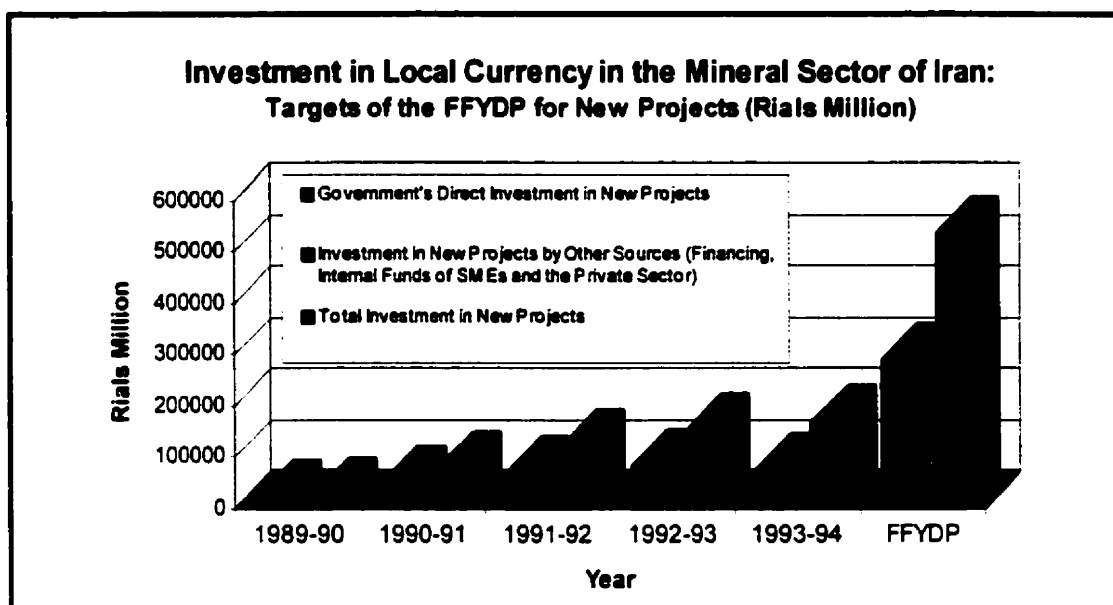


Figure 6.7: Investment in Local Currency..., Source: OPBI, 1995, p. X.

This can be compared with the actual investment in local currency. The detailed comparison between planned and actual investment in local currency is provided in the table below.

**Table 6.5 Comparison between Planned and Actual Investment
(in Local Currency) in the Mineral Sector of Iran During the FFYDP**

Investment Type	1989-90	1990-91	1991-92	1992-93	1993-94	FFYDP
Government's Direct Investment in New Projects						
Actual figures as a (%) of planned figures	118	96	184	117	173	144
Investment in Existing Projects						
As a (%) of Total Investment	12	14	15	15	10	36
New Investment in Exploration						
As a (%) of Total Investment	0.16	1.2	1.5	1.9	3	2
Investment in New Mineral Projects by						
The Private Sector as a (%) of Total	2	2	10	2	7	20

Calculated using data from OPBI 1995, pp. X-XI, and MMM 1996.

As can be seen, the private sector was responsible for about 20% of total investment in local currency. It is interesting to note the amount invested in exploration. During the plan only 2% of total investment was spent on exploration activities. This is the amount spent to

finance coded exploration projects by the OPBI. The SMEs, in particular, the National Iranian Steel Co. (NISCO), have regularly undertaken exploration activities in iron ore, coal and refractory materials. These investments are considered part of the SMEs' investment in new projects (second row in the table above).

A comparison between the planned and actual investment of local currency indicates that the government's investment in new projects during the FFYDP significantly exceeded the planned target (almost 145% of the planned investment). This shows that a part of the scheduled investment by the internal sources of SMEs and the private sector was directly undertaken by the government. This is noteworthy because as a principal, the government should have avoided using public funds in risky mineral projects as much as possible, except for very important structural investments. The ground should have been left for private investors. The MMM should have arranged for new investments, where feasible, to be made by mining companies using commercial loans. Furthermore, at present, it should be arranged that either the government funds are paid back within a reasonable time frame or the projects privatized where possible.

6.3.5.4 Remarks

As has been discussed, the government undertook a massive investment initiative in mining and metallurgical activities during the FFYDP. These investments were directed to increase industrial self-reliance. According to the statistics released by the Ministry of Mines and Metals (1994 and 1996), investments were concentrated in the steel, iron, copper, aluminium and ferro-alloy industries. The investments also targeted important non-metallic minerals and construction materials. Due to these investments, the production capacity, especially in iron and steel, has expanded substantially. Therefore, as shown in the previous chapter, the output of steel, copper, aluminium, coal, lead, zinc, and other products (such as decorative stones) has increased significantly during the FFYDP period.

Investment in existing plants absorbed almost 40% of all funds invested in the sector (in local currency) during the plan period. This investment was vital to modernize the existing plants and to keep them on track. However, despite a slightly increasing trend, investment in exploration was disappointing (see table 6.5). More exploration work is necessary for the long-term expansion of the sector. Also, more investment in exploration reflects that mining is a booming industry. This could stimulate private investment in the sector⁶.

Concerning investment by the private sector, one can conclude that during the plan, the overall contribution of the private sector to development of the mineral sector has not been significant, despite its increasing trend. Reasons for and comments on this issue will be discussed in chapter 8.

A final comment concerning the large projects implemented by the ministry is that generally those projects require substantial funds and a relatively long gestation period. Therefore, the viability of these projects is a major concern for each investor. To ensure the economic viability of the projects, the MMM should arrange that the feasibility of ongoing projects be assessed by banks and other financial institutions, and insist that a portion of the required funds be obtained from banks and other non-governmental sources. Also, the project operators should be held responsible for paying back government funds over a pre-specified time period after the start of production.

6.3.6 Production of Minerals and Metals

The value of the mineral and metallurgical products produced during the FFYDP amounted to approximately US\$ 11 billion and it is predicted that because of the investments made during the plan, this amount will exceed US\$ 20 billion by the end of the second five-year

⁶ The question of how the MMM can boost exploration activities was one of the author's concerns in the country-wide mining survey. Details about this will be discussed in chapter 8.

development plan (MMM, 1996). The average annual production of iron ore during the FFYDP has grown about 36.1%, almost 12% more than the forecasted growth of 24.2 %. During this period, the production of iron ore has increased from 1.85 million tonnes (Mt) in 1988-89 to 8.65 million tonnes in 1993-94. This was the result of the commissioning the large Gol-e-Gohar Iron Ore Complex with an annual capacity of 2.75 Mt of iron ore concentrate.

The extraction of copper sulphide ore has increased from 5.2 million tonnes in 1988-89 to 12.1 million tonnes in 1993-94, an annual growth rate of almost 19%. The production of copper concentrate has increased from 170 000 tonnes in 1988 to 363 000 tonnes in 1993-94. In this area, an annual growth rate of 16%, the target figure, was achieved. Coal concentrate production has increased from 758 000 tonnes in 1988-89 to 970 000 tonnes in 1993-94, an annual average growth rate of 5.1%, much less than 16.8% targeted growth rate.

In the metals sector, steel products during the FFYDP have experienced an average annual grow of 24.4%, 2.4% more than the forecasted growth of 22%. During this period, the production of steel products has increased from 1.34 million tonnes in 1988-89 to 3.9 million tonnes in 1993-94. This is partly the result of the commissioning of the Mobarakeh Steel Complex with an annual capacity of 2.4 Mt of steel products. Also, the annual production of copper (anode) during the FFYDP has grown at a rate of about 22.5%, as originally forecasted. The production of aluminium has increased from 28 000 tonnes in 1988-89 to 90 100 tonnes in 1993-94, with an annual growth rate of 10.5%, about 8% more than the forecasted growth of 18.5%.

The number of active mines in the country has increased from 1400 in 1988 to 2350 in 1994. The total production of all mines (excluding sand, gravel and clays) increased from 44.7 million tonnes in 1989 to 72 million tonnes in 1993-94, amounting to an average annual growth rate of 8.6% (OPBI, 1995; MMM, 1996, and Mining Journal, 1995).

The following figures detail actual production as a percentage of planned values during the FFYDP.

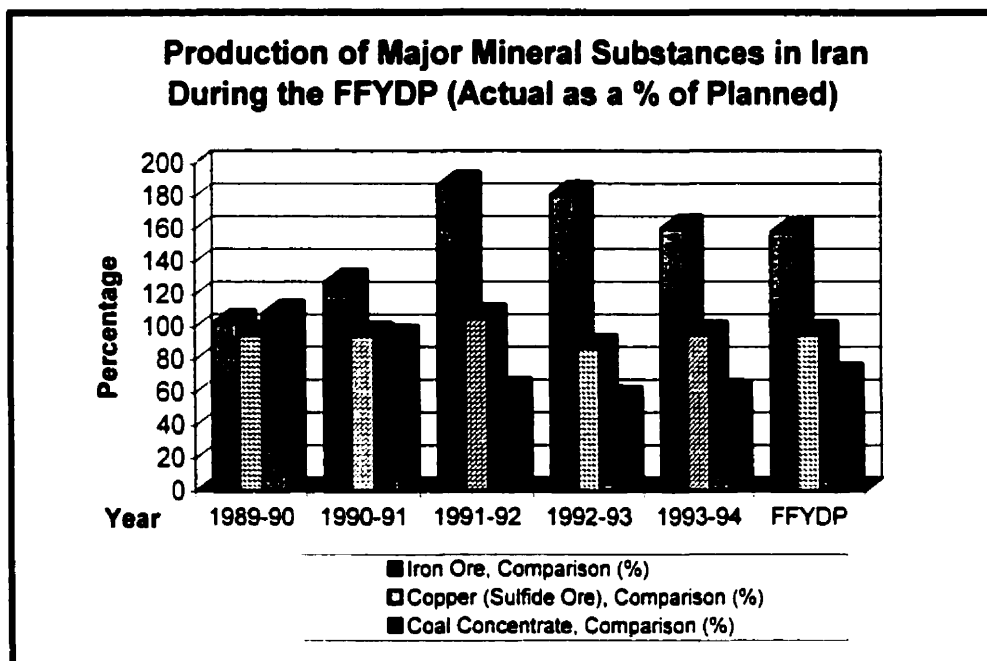


Figure 6.8: Production of Major Mineral..., Source: MMM, March 1997, p. 2 and OPBI. 1995. p. XI.

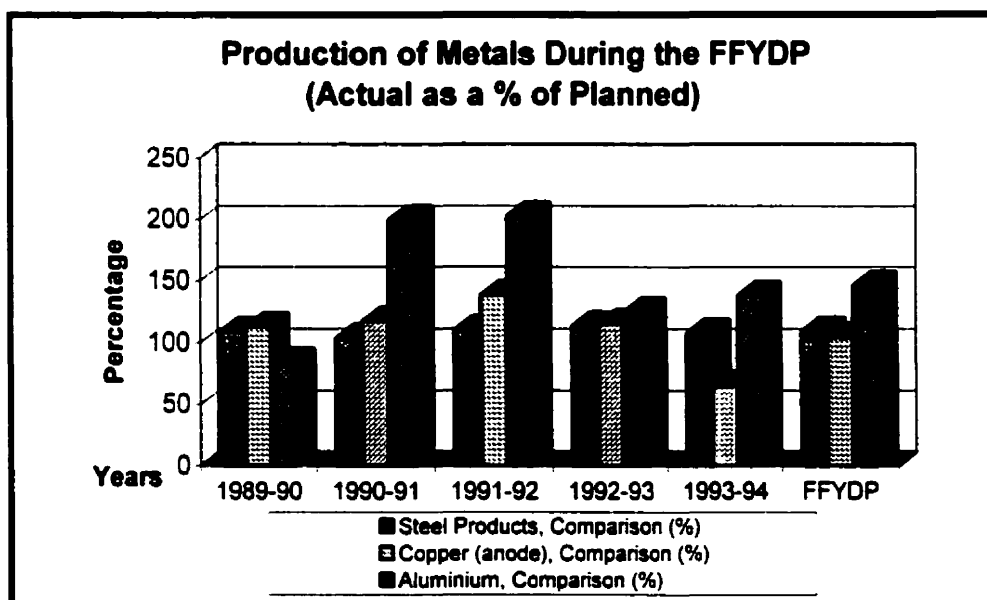


Figure 6.9: Production of Metals..., Source: MMM, March 1997, p. 1 and "Moaden va Fellezzat" (*Mines and Metals*), Scientific & Economic Quarterly, Winter 1992, pp. 32-35.

6.3.7 New Projects

To meet the objectives of the plan, tremendous efforts were put into completing existing large projects as well as the new ones, which had been planned in the framework of the FFYDP. Some of the major projects that were completed and commissioned during the period are listed below.

- i. Mobarakeh Steel Complex;
- ii. Ahwaz Steel Complex;
- iii. Kavian Heavy Rolling Mill in Ahwaz;
- iv. Renovation, modernization and expansion of National Iranian Steel Industries Group plants;
- v. Expansion of Arak Aluminium Plants (IRALCO)
- vi. Establishment of Zanzan Lead Smelting Plant;
- vii. Establishment of Azna Ferro Silicium Plant;
- viii. Establishment of Birjand Magnesite Production Plant;
- ix. Establishment of Pars Refractory Products Plant in Yazd;
- x. Construction and commissioning of Gol-e-Gohar Iron Ore Complex; and
- xi. Construction and commissioning of Muteh Gold Mine. (MMM, 1996, Mining Journal 1994-1995 and Ashraf, 1992).

6.3.8 Privatization of Mining Ventures

The private sector has played an insignificant role in the mining activities of Iran. In the early years of the revolution, as mentioned in chapter 5, the government nationalized some industries and mines because of their strategic importance, and also assumed the management or ownership of some privately-owned companies, including some mining

companies. During the 1980s, industrial investment declined, mainly due to the war and Iran's restrictive business structure. Therefore, in 1988, as part of the five-year development plan, the government committed itself to the privatization of state-owned enterprises.

Consequently, one of the principal policies of the MMM during the FFYDP was to encourage private investment in mineral development. Therefore, during the course of the plan, the mineral rights for private and cooperative mines were liberalized. In 1990, nearly 80% of mineral production originated from state-owned mining companies. According to the MMM (May 1995), the number of mines operated by the private sector and cooperatives increased from 514 at the beginning of the FFYDP to 1396 (exclusive of sand, gravel and clay mines) by the end of the program.

The following figure shows the number of mines run by various operators during the FFYDP.

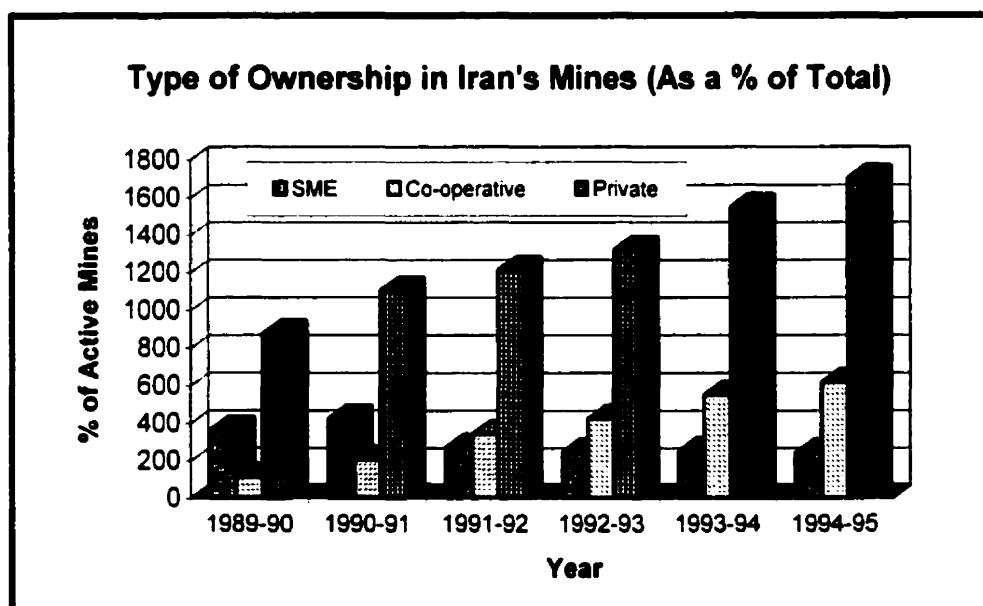


Figure 6.10: Type of Ownership ..., Source: Iran's Center for Statistics, *"Results of General Census of Industries and Mines, second Phase"*, April 1996, p. 138.

Despite the increasing trend of mine privatization, the share of the private sector in mining

activities is still far less than that of the public sector.

The following table shows the status of the private sector and other sectors in mining activities at the end of the FFYDP. These statistics are the result of the latest census of industries and mines, conducted in 1995.

Table 6.6 Basic Information about Active Iranian Mines in 1994

(Status of the Private Sector and Other Sectors in Mining Activities)

(In Percentage)

Ownership Situation	Number of Employees	Value of Production	Value -Added	Investment	Salaries Paid to Employees
Total (in %)	100%	100%	100%	100%	100%
Total Public Sector	63.5	66	66	75.5	73
SMEs	48.5	51.5	52.5	65.5	55
Others	15	14.5	13.5	10	18
Total Private Sector	36.5	34	34	24.5	27
Co-operatives	9	6	6	4.5	6
Individuals and Private Firms	27.5	28	28	20	21

Source: Iran's Centre for Statistics, "Results of General Census of Industries and Mines, Second Phase," April 1996, Tehran, p. 138.

As shown above, the private sector accounts for about 34% of the total value of mineral production and annual value-added, 36.5% of employment, and 25% of investment in 1994. Thus, the private sector has a relatively small role in mining activities, as it is mainly involved in medium and small-scale mining.

The number of mining investment permits issued to the private sector has increased in recent years. The following table shows the number of permits issued to establish private mineral enterprises, along with the value of the initial investments.

Table 6.7 Number of Mining Investment Permits and Associated Proposed Investment Given to the Private Sector During the FFYDP

Year	1982-91	1992-91	1991-92	1992-93	1993-94
Number of Permits	11	11	14	19	55
Proposed Investment	1800	2100	30 900	110 800	145 855

*) In million Rials. Source: MMM, June 1994.

To attract more private investment in mine development, the Ministry of Mines and Metals proposed four options, under which those companies engaged in exploration who discover a resource can:

- i. Receive compensation for expenses and a reward for the discovery, and turn the information and claims over to the MMM;
- ii. In the case of large deposits, form a partnership with state companies;
- iii. Form a cooperative with government companies and/or private entities for Group 2 minerals⁷, and
- iv. Obtain a five-year development and operating permit, extendable for another five years.⁸

As a result, ownership of about 250 mines and small operations run by SMEs throughout the country were turned over to the private sector during the FFYDP (Najafi, 1995).

During the 1991-92 period, the MMM also divided its regional mining companies into individual small companies and leased them to the private sector. In almost all cases, approximately 50% of shares were transferred to the employees of the holding companies.

⁷ Under the Mining Code of 1983, mines are divided into four groups. Group 2 consists of metals, such as iron, gold, lead, zinc, and copper (Mining Code of Iran, MMM, 1984).

⁸ In the new Mining Code (enacted in July 1998), this period is extended to 25 years.

As will be seen from the financial analyses documented in appendix 1, the regional mining companies were in dire financial difficulty and suffered from poor management. Therefore, it was quite necessary to break those companies up into small mines and privatize them. In fact, this action saved many small operations from complete closure.

The private sector also undertook some new mining projects during the plan period. Listed below are some projects commissioned by the private sector during the FFYDP.

- i. Copper alloy production project;
- ii. Aluminium ingot production project;
- iii. Lead concentrate production plant;
- iv. Sodium sulfate production plant;
- v. Silicium and Sandblast plant;
- vi. Ferro Silicium plant;
- vii. Dimensional stone producing plants;
- viii. Ferro Molybdenum plant; and
- ix. Refractory plant (MMM, 1996).

6.3.8.1 A Case Study of Privatization

As a case study of a privatized company, the Persian-language daily Abrar (February 20, 1995) referred to "Arak Aluminium Rolling Mill" which was established in 1972 and privatized in 1992. This factory started its work with the primary goal of manufacturing irrigation pipelines and was managed, after the victory of the Islamic revolution (1979), by the government. In 1992, 67% of the company's shares were sold to the private sector. This company is currently providing raw materials for some 1 200 domestic factories. Part of the company's products is also being exported to Turkey, Persian Gulf States, Italy, Britain, India

and Japan.

The production of this factory was 5 000 tonnes in 1992, and has currently reached 9 000 tonnes (February 1995). Production was expected to reach 20 000 tonnes by the end of 1999. Marketing and export activities have also been increased after the company was vested with the private sector in 1992.

The manager of the company referred to the fact that using *young and well-educated manpower* and conducting *exchanges of views with the modernized foreign counterparts* of the company were major causes for its progress. Also, officials of the factory thought of sending a number of their workers and experts to foreign countries to attend *advanced training courses* and become more acquainted with the latest progress and developments in similar foreign mills. Saving a remarkable amount of foreign currency was another example of the firm's progress, which is expected to continue in the future.

Officials of this firm added that they had faced some difficulties in the past due to problems which originated from outside of the company. Examples of such problems are:

- i. Shortage or delayed delivery of raw materials;
- ii. Lack of timely release of the materials from customs;
- iii. Lack of proper banks financing.
- iv. Lack of proper co-ordination between banks and the sector; and
- v. Existence of restricting commercial laws and regulations in the country.

To improve the private sector's achievements, the firm's officials added that speeding up the banking operations is a must for assisting the producers. If there had to be any assistance by the banking system, it should be done rapidly and in a timely fashion. The private sector would reach its goals only if it received all-out support of the government, said the Abrar

daily, adding that neglecting the recently privatized factories would result in a lower factory activity and growth rate.

Describing Arak's mill as an example of the success of the privatization policy, the daily concluded that vesting the industrial unit with the private sector was a sufficient and practical policy. The daily emphasized that the industrial units, including those vested with the private sector, were the national wealth of the country and any effort to solve their problems would pave the way to a flourishing national economy, which would finally lead to the prosperity of all Iranians (Daily Abrar, February 20, 1995, cf. IRNA, 02/21/95).

6.3.8.2 Remarks

Although the private sector share of mining activities has been expanding in recent years, more efforts and plans should be put in place to privatize large state-owned companies and/or encourage new private investment, in order to accelerate the private sector's involvement in mineral activities and reduce government participation in that sector.

To encourage private sector investment, the government must take necessary measures to speed up the trend of privatization. In the final year of the FFYDP, Iran's vice-president for economic affairs suggested that an organization and secretariat "in charge of enforcing the privatization policy" with more executive authority and control power were needed to closely follow and speed up the process of transferring companies to the private sector (IRNA, November 8, 1993). Economists also suggested that for enforcement of privatization plans, political reforms alongside economic reforms were needed (Reuters, June 6, 1997).

Meanwhile, in order to enhance the performance of the SMEs, the MMM must introduce more recent and efficient technology into some of the plants, take further measures to reduce its operational role, and decentralize management and production decisions. To accomplish this, the Ministry should modify its organizational chart, make use of consultants, and

provide staff training in a more effective way⁹.

6.3.9 Foreign Participation

Many factors, including a shortage of required capital, advanced technology and equipment, and a shortage in the number of Iranian geologists (only 2400 nationwide), have made foreign participation in the mineral sector inevitable (MMM, 1996). However, foreign investment during the plan period was not substantial.

According to the MMM, major foreign investments in the mineral and metallurgical sector during the plan included:

- i. A \$250 million joint-venture agreement with Kobe Steel of Japan for the construction of a steel manufacturing complex. The initial capacity of the plant is 1 million t/y and is expandable to 5 million t/y.
- ii. A \$1200 million aluminium project in Bandar Abbas with a capacity of 220 000 t/y. The foreign partner in this project is the International Development Company (IDC), with a 40% share (Ashraf, 1992).
- iii. A joint-venture with the Government of Guinea (51% Iran, 49% Guinea) to exploit bauxite reserves in Guinea and export part of it to Iran (Moaden va Fellezzat. Scientific & Economic Quarterly, Fall & Winter 1992)¹⁰.

In an attempt to identify the main reasons for the relatively low level of foreign investment in the mineral sector of Iran, the author conducted a survey among major international mining companies. In a part of the survey, companies were asked to mention main obstacles/problems that would discourage them from investing in the mineral sector of Iran.

⁹ These comments will be expanded in chapter 8.

¹⁰ During the plan period, some other foreign investments (for instance, by BHP Minerals of Australia, Danieli of Italy and Minorco of South Africa) were made. Details on these investments are not available to the author.

The results of the survey show that the main reasons are:

- i. Unstable policies concerning foreign trade and exchange rates;
- ii. Lack of required information about the mining code, foreign investment law and other relevant regulations;
- iii. Failure of local partners to meet payment/contract obligations;
- iv. Restrictive business structure; and
- v. Political risk.

To attract more foreign investment the government should spell out mining development plans and ensure the easy access by investors to geological and exploration data; allow transfer of permits and rights; stabilize tax structures; strengthen the performance of free trade zones; and guarantee access to foreign exchange. These issues will be discussed in greater detail in chapter 9.

6.3.10 Employment

The mining industry is capital-intensive, and its contribution to the direct employment of a country is low. However, it impacts indirect employment in related industries, within and outside of the mining sector, namely in construction, transportation, manufacturing and infrastructure projects. It is reported that each job in the mining industry creates more than two jobs in other sectors. In Australia, for instance, each job in the mining industry creates 2.7 jobs in other industries (Ritchie, 1994).

In 1995, 112 000 people were active in the extraction and production of metals in Iran (Resalat, Iranian Daily, May 27, 1995). As a result of massive new investments, 35 400 new jobs were to be created in the mineral sector by the end of the FFYDP. According to the OPBI (1995), the absolute amount of direct employment positions created in the sector was 6100 (excluding part-time jobs, and seasonal and temporary employment). This achievement

was far less than the target amount, although the employment target was somehow at odds with other targets of the plan, namely using new technologies and enhancing productivity in the sector.

6.3.11 Training and Research

The anticipated growth in mineral development and production will increase the need for well-trained professional personnel. The main goal of training programs during the FFYDP was to increase the number of expert engineers and specialists to 10% of the total labour force of the mineral sector by the end of the plan. To achieve this goal, 2% of the total sales of mining and metallurgical enterprises was to be allocated to educational and research programs.

Another objective of the plan was to train 400 individuals at the expert and skilled level. According to the MMM (1994), by the end of the plan, this goal had been achieved. Since the FFYDP, about 8 000 individuals have received short-term training at the expert level. As of 1993, 46 500 labourers in the sector had been trained as a whole. Also, during the period, two Mining and Metallurgical Colleges were established in Tehran, and three training centers in Isfahan, Ahwaz and Kerman were developed (MMM, Summer 1991, 1994 and 1996 and Ashraf, 1992).

With regards to research, the MMM conducted more than 140 applied research projects during the FFYDP. The ministry claims (MMM, 1997) that as a result of these research activities a minimum of \$ 252 million was saved, productivity of the production units increased and energy consumption decreased. The report (Ibid., 1997) adds that the success of construction and manufacturing activities in the steel and non-ferrous metals industries was the fruit of these research activities.

6.3.12 Administrative Reforms

During the FFYDP, the Ministry of Mines and Metals had introduced certain measures to promote mining activities in order to increase mine production as well as the export of processed minerals. These are a) transfer of authority to the Ministry's Provincial Offices to lease out mining properties to private and cooperative organizations; and b) transfer of exploitation rights of all limestone and gypsum mines to cement and gypsum manufacturing factories, in order to increase the production of cement and gypsum and expand exploration and mining activities (MMM, Summer 1991 and 1996).

However, according to the author's survey, most miners, while appreciating existing reform efforts, believed that there was room for further reform to ease the procedures required to develop a mine or to import/export mining equipment and/or products. Comments about the organization and duties of the MMM are presented in chapter 8.

6.4 CONCLUSIONS

During the FFYDP, the mineral sector had significantly increased its role in the Iranian economy. For instance, based on then current world prices, the total value of domestic products in the mining sector reached \$11 billion over the plan period. The value for the current (Second) FYDP is anticipated to surpass \$20 billion. The number of active mines in the country registered a considerable increase as a result of the FFYDP, jumping from 1 400 to 2 328. The increase in the number of operating quarries has been accompanied by an annual growth rate of 9.8 percent in the volume of materials mined, with the total of excavated materials reaching 72.8 million tonnes in 1995 (MMM, Annual Report, 1996).

The changes initiated in the FFYDP have accelerated the privatization process in the mineral sector. However, the private sector still plays a relatively small role in mining activities. This sector accounts for about one-third of the total value of mineral production and employment.

Its role in mineral processing activities is even smaller. Therefore, to promote the private sector's role in mining activities and reduce government participation, more efforts should be made and precise plans should be formulated to privatize large state-owned companies.

Although the value of exported metals was more than that of the plan's target, the value of exported minerals was about one-third of projected amounts. Reasons for the poor performance of mineral exports are discussed. Some suggested actions for improvement, such as the refrain of government from direct involvement in the export of non-oil goods, the overhaul of export regulations, and the formation of joint export companies with experienced foreign firms, are also presented.

The sector did not achieve projected targets in terms of private (local and foreign) investment. Important reasons for this are unstable policies concerning foreign trade and exchange rates, the lack of required information and a restrictive business structure. To attract more private investment, policies focusing on mine development strategies, indicating mining development plans, providing investors with geological and exploration data, allowing transfer of permits and rights, and easing access to foreign exchange will be helpful.

It is hoped that in the near future, the private mining sector will benefit from substantial investments from domestic and foreign companies who, encouraged by the results of the five-year development plans, will seek to take part in the development of Iran's natural resources.

CHAPTER 7

MINERAL POLICIES IN DEVELOPING COUNTRIES: CASE STUDIES

7.1 INTRODUCTION

As discussed in chapter 2, in several developing countries, the mineral sector makes a very important contribution to the economy. It is useful to examine how these countries deal with their mining sector and attract capital investment. In an attempt to shed some light on mineral policies that encourage private investment, case studies are conducted on mineral policy characteristics and their effect on mineral sector activities in three mineral-endowed developing countries.

The usefulness of case studies are multiple, a) they serve to classify strategic issues that impact the effectiveness of policies aimed at attracting foreign investment in developing countries, to assist in the design of a questionnaire for a more comprehensive survey in Iran and among foreign companies, b) they serve as a platform for comparison of Iran with the studied countries.

Case studies allow for the characterization of current practices in the mineral sector of

other LDCs. This characterization, given the many common features of developing countries, illustrates an environment in which a typical mining company works. Further insights should emerge in determining the anatomy of the working environment by characterizing both *permissive and prohibitive* elements in attracting mineral investment, to assist in establishing a proper framework for developing mineral policies aimed at accelerating private investment in Iran's mineral sector¹.

For the purpose of this study, Chile, Indonesia and Nigeria are studied. The reasons for their selection are outlined in chapter 1. The first two developing countries demonstrate, in different ways, the characteristics of an environment that is conducive to investment. Despite some reforms to attract capital in the mining sector, the third country, Nigeria, has a policy structure that has not been stable enough to reward its efforts. The rest of this chapter discusses the economic environment and mineral policy features of these countries.

7.2 STATE OF THE MINERAL SECTOR IN CHILE

7.2.1 General Description of the Country

(i) Geography: Chile lies along the West Coast of South America. It borders in the north with Peru, and in the east with Bolivia and Argentina. Southern Chile is an archipelago. It has a continental area of 764 000 square kilometers. The country's north-south length is about 4600 km, while its width averages only 160 km. In 1997, its population was approximately 14.5 million. The topography is mainly mountainous. There are five

¹ Iran is not isolated in the global business scene. Therefore, it should follow, taking into account its own peculiarities, the trend evidenced in those mineral-endowed countries which have been successful in their policies toward utilizing their mineral wealth. However, the author is not suggesting that Iran copy another country's mineral policy. Rather, the results of this chapter, combined with those of other chapters, will aim at drawing a more realistic and workable mineral policy for Iran.

distinct geographic regions: the northern deserts, the high Andean sector, the Central Valley, the southern Lake District, and the archipelago (Price Waterhouse, 1998).

(ii) Geopolitics: In October 1988, in a plebiscite that marks the beginning of the end of military rule, Chileans rejected General Pinochet's bid for another eight years as president. In December 1993, Mr. Frei was elected president for a six-year term. His coalition suffered only marginal losses in the congressional elections. Despite much effort, the government was unable to amend the Constitution to bring an end to the political influence of the Armed Forces.

7.2.2 Chile's Economy

(i) Background: Starting from the late 1960s and, in particular, during the 1970-1973 period, the Chilean economy was characterized by government intervention and control. The economic development plans were based on import-substitution strategies. These policies led to a strong state-controlled economy, with almost full price control and high import tariffs.

After the 1973 military coup, the new regime rapidly applied free-market-oriented economic policies. The government emphasized the private sector, liberalization of the external sector, and deregulation of the economy. From 1973 to 1976, the government carried out a very intense privatization program. In 1973, more than 590 companies and banks were controlled by the state (Lagos, 1997), most of which were later privatized². As another measure, the government quickly and almost completely removed the extensive price-control system that was in place at the time. The government also reduced public sector expenses, changed from a multiple exchange rate to a single exchange rate system, and eliminated trade barriers. The sudden elimination of price control significantly reduced the purchasing power of middle-income people, and the

²At the end of 1980, for instance, only around 14 firms and one bank remained in the public sector, the rest having been privatized.

liberalization of labour legislation caused substantial redundancies. In 1975, the country's GDP fell by some 13%, inflation was extremely high (379%), and unemployment increased to nearly 30%. Despite the *significant social costs of these changes*, the government continued the trend of liberalization and deregulation. By the end of 1976, the role of government and the public sector had decreased in importance, and that of the private sector had increased. The Chilean economy became a fully liberalized and free market economy (Price Waterhouse, 1995).

There was a rapid economic recovery from 1976 to 1981. During this period, as external finance was easily available, the government secured loans from international commercial banks to import consumer goods and expand the economy. The average annual GDP growth rate between 1976 and 1981 soared to 7.2%; however, the current account deficit doubled.

In 1982, a drastic drop in the international price of copper and the sudden discontinuation of foreign loans to Chile, partly due to the world economic recession, brought about an economic crisis. During the 1982-83 period, the GDP and production levels decreased, and unemployment, inflation and the budget deficit increased. Many explained this crisis by the "*bad timing and haste of the government liberalization policies*"³.

To overcome the crisis, the government intervened directly to reactivate the economy and create employment opportunities. The Chilean currency was devaluated and the exchange rate was brought to a level that made exports competitive. The government increased import tariffs and protected agriculture. It was also forced to defer foreign debt service and renegotiate its foreign debt repayment schedule in early 1983. These measures, coupled with improvements in the copper market, gradually reestablished economic growth. The government implemented adjustment policies suggested by the World Bank

³ Luders (1991) states that the economic and financial crisis in Chile was a consequence of the privatization modes used. He argues that the debt-led privatization within the weak regulatory system of the country did not ensure short-term government revenue maximization, and also created a highly unstable financial system.

and interventions were replaced by free market policies once again.

Because of growing economic activities, a favourable tax regime, and stable rules, private sector investment and income increased significantly from 1984 to 1990. During this period, GDP growth averaged 6.2% per year. The annual inflation fluctuated between 15% to 30%, and gross investment as a percent of GDP remained at an average of 15% (Lagos, 1997). One of the key elements in turning Chile into a country with highly profitable enterprises was the considerable reduction in payroll costs. This was established by “labour legislation” that allowed the hiring of strikebreakers and payroll cost reductions through redundancies. Another contributing factor was high copper prices. According to Lagos (1997), *low- and middle-income people were hit hard by the economic policies of government during the 1984-90 period and despite the economic growth, the standard of living in 1989 was still lower than in 1981. Therefore, the overall response of people, partly for economic reasons, was to vote for a return to democracy in 1990* (Compiled from Lagos, 1997; EIU, Country Profile-Chile, 1993; Ryser, 1993; and Meller, 1992).

(ii) Current Status: Chile's economy is an open and free market economy, in which the private enterprise is encouraged and state participation in economic activities is minimum. At present, Chile is probably the freest market in Latin America. The government's industrial policy is economic expansion of the country based on its natural resources and the promotion of exports. In light of a “stable legal and regulatory environment,” foreign investment and development of joint private sector ventures are encouraged. The law guarantees “non-discriminatory treatment of foreign investment”, and “simplified bureaucratic procedures” are in force.

Economic policies of the 1990s consisted of efforts to maintain economic growth, preserve the macroeconomic balance, and to increase public spending by introducing social policies favouring the poorer segment of the population. During the 1990-97 period, GDP growth stood at nearly 7%, exports were maintained at 30% of the GDP,

and investment spending averaged 26% of the GDP. According to Lagos (1997), two important factors contributing to economic growth are i) a steady increase in productivity since 1990, and ii) a steady increase in investment and savings since the mid 1980s.

The mineral sector is one of the principal sectors in the Chilean economy. The main export commodity is copper, which accounts for almost 37% of total exports. An important target of the government's current macro-economic policy is to maintain a 6% economic growth rate, low inflation and realistic foreign exchange rates. The government's view is that the market should be the most important regulator of economic activities. Both the government and the Central Bank want to tighten monetary policy in order to continue reductions in the level of inflation. The per-capita gross national product is up to nearly \$5000, and it is expected continue to grow by 3-4 % per year. (EIU-Country Profile, Chile, 1999; Lagos, 1997; Price Waterhouse, 1994; and Global Finance, May 1993).

The following table and figure show the sectoral origin of Chile's GDP in selected years from 1952 to 1995.

Table 7.1 Sectoral Origin of Gross Domestic Product in Chile (% of total)

Years	1952	1960	1970	1976	1990	1993	1995	1996	1997		
Agriculture, Forestry, and Fishing	31	30	24	7.9	7.2	9.6	9.4	8.3	8	8	7.5
Manufacturing	20.0	19.0	19.0	24.4	20.7	20.4	21.1	17.1	16.8	15.7	15.3
Trade, Services and Others	39	41	49	52	58	55	56	61.1	61.9	62.8	63.7

Source: EIU, Annual Supplement - Chile, 1971; EIU, Country Report - Chile, 1976 and 1990; EIU, Country Profile - Chile, 1993, 1995 and 1999, pp. 44-45.

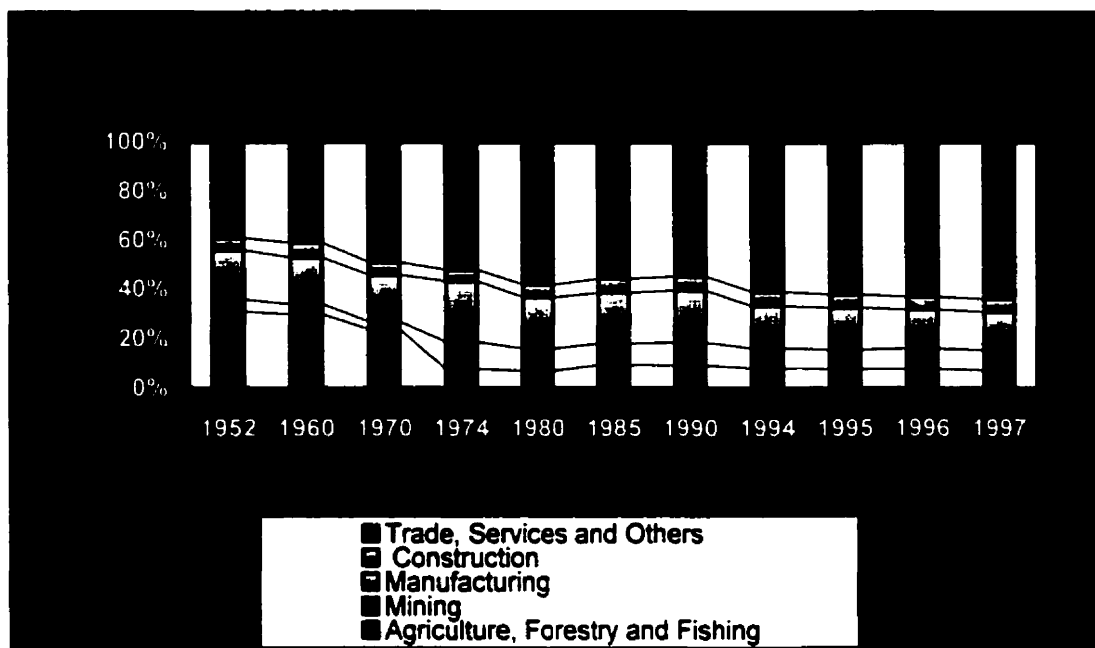


Figure 7.1 Sectoral..., Source: see table 7.1.

As can be seen, the share of the agriculture, forestry and fishing sectors has declined over time. The significant drop was in 1974, when the military government launched free-market-oriented policies. After 1974, the contribution of these sectors to GDP has always been less than 10%, compared with more than 24% in the 1950-1970 period. The share of the mining sector, however, has increased since 1974, particularly during the 1974-1980 period. The growth of the mining sector after 1974 is probably due to government policies towards privatization and foreign investment. The shares of the manufacturing and construction sectors have been somewhat steady during the entire period. The share of trade and services sector has increased over time, especially, after 1974.

7.2.3 Mineral Resources and Production

Chile is rich in mineral resources. During the 1980s and 1990s, mining has represented an average of 8.9% of Chile's GDP (Lagos, 1997). In 1998, mining accounted for 8.2% of GDP and 45% of exports (EIU, Country Profile-Chile, 1999). At present, large mineral deposits are under exploitation. Mineral production includes copper, molybdenum, iron

ore, nitrate, coal, gold, silver, barite, lithium and calcium. The mines (except for the El Teniente and Andina copper mines) are located mostly in the northern deserts.

It is estimated that Chile has almost 30 percent of the world's reserves of copper, rhenium and molybdenum (Price Waterhouse, 1994)⁴. The largest copper operation is the giant opencast Chuquibambilla mine. El Teniente, the world's largest underground mining operation, is the second most important producer, accounting for about a quarter of the output. These two mines are run by CODELCO (Chilean Copper Corporation). It is estimated that Chile will produce 40% of the world's copper by the year 2000.

Chile has a quarter of the world's known molybdenum reserves (3 million tonnes). Output of molybdenum has fallen in recent years due to low world demand and lower ore grades. Iron ore production also recently fell slightly. A plant has been set up to convert Chile's low-grade iron into high-grade pellets.

Gold and silver production has increased in recent years due to the opening of the Coipa mine. Gold production amounted to 49 500 kg in 1997 and silver output was 1083 tonnes. Chile possesses large reserves of coal as well, which support power-generating plants for the copper industry (Compiled from EIU, Country Profile - Chile, 1999; Mining Annual Review, 1998; and Price Waterhouse, 1994).

Table 7.2 shows production statistics for Chile's most important mineral substances.

⁴ According to EIU, Country profile - Chile, 1999, Chile is estimated to have one-quarter (111 million tonnes) of the world's 450 million tonnes of copper reserves.

Table 7.2 Production of Main Mineral Substances in Chile

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997
Base Metals ('000 tonnes)									
Copper	1628	1603	1855	1945	2116	2233	2510	3141	3510
Molybdenum	16.6	13.8	14.4	14.8	14.9	14.9	17.9	17.4	21.3
Manganese	43.8	39.7	43.8	52.0	63.4	63.0	70.4	62.9	62.8
Zinc	18.4	25.1	31.0	29.7	29.6	31	35.4	36	34.4
Lead	1.24	1.12	1.05	0.298	0.343	1.0	0.9	1.4	1.3
Precious Metals ('000 kg)									
Gold	23	28	29	30	34	38.8	44.6	53	49.5
Silver	545	654	676	1043	985	983	1041	1147	1083

Source: EIU, Country Profile - Chile, 1999, 1996 and 1993.

7.2.4 Mineral Policy

(i) Background: Traditionally, the mining legislation of Chile (mining code of 1932) had provided for a strict state control over all mining operations. However, mine ownership had been allowed under certain protective conditions. The Frei government, which lost office in 1970, negotiated some agreements with multinational companies and secured state equity ownership in the large mines. It also implemented a windfall tax on mining profits in 1969.

The Allende government (1971-1973) exercised domestication policies. The government declared that the state had an absolute and exclusive control over all mines. Therefore, private enterprises were no longer the owners. The government nationalized the multinational copper mines in 1971. Some big MNCs were nationalized without compensation. This is believed to have discouraged foreign investment throughout the economy, disturbed copper production, and significantly weakened the mining sector (Auty, 1993).

As mentioned, the new government launched a free market economic policy after the military coup in 1973. In the mineral sector, the government placed considerable emphasis on copper mining and the production of valuable by-products, such as molybdenum, cobalt, silver and gold.

In order to encourage development of the mining sector, some legal changes were made. The government allowed mining concessions, which gave legal rights to foreign and domestic enterprises to develop mines. These rights could be bought or sold in the market. Although the government kept control of its giant copper corporation, CODELCO, it encouraged foreign investors to take part in developing new copper mines, through “joint-ventures with private domestic companies.”

In 1976, through the Decree Law No. 1349, the Chilean Copper Committee was formed to evaluate foreign investment offers in exploration, production and commercialization of copper and its by-products. The government also negotiated a series of agreements with some major mining enterprises. In 1983, a new mining code was adopted that was designed to give security of tenure to companies that operated large projects. This code proved to be very effective in attracting foreign investment (EIU - Chile, 1993).

Combined with promising geological conditions, the free investment environment has significantly increased mining activities and investment during the last decade. The fruits of these policies include increased mineral production, exports and investment in the mineral sector (Compiled from Lagos, 1997; Salmasi and Todd, 1994; EIU, Country Profile-Chile, 1993; and Buchi Buc, 1993).

(ii) Mining Legislation: The constitution of 1980 stipulated that the state of Chile is the exclusive owner of mineral deposits of the country. The working conditions required under various forms of mineral title starting from prospector license or permit, acquisition of mining lands and title, and the retention of mineral rights and titles, can be found in the Diario Oficial of the Republic of Chile in Law No. 18097 entitled “Organic

Constitutional Law of Mining Concessions.”

Articles 1, 2, 10 and 11 clarify the notion of mining concession as follows: concessions may be granted for exploration or exploitation (article 1). Mining concessions are real property rights distinct and independent from the ownership of the surface property (article 2). An exploration concessionaire has the exclusive right to freely open exploratory perforations and undertake other exploratory activities (article 10), and a mining concessionaire has the exclusive right to freely explore and exploit the mines within the concession and to take title to all mineral substances extracted and for which concessions were granted (article 11).

What is important to note is the fact that the prospectors also have a guaranteed right to initiate judicial procedure to obtain a mining concession. Their preferential right to obtain a mining concession is established in the Mining Code. They can also take title to the minerals for which concessions were granted and extract those resulting from exploration and research activities. Mining concessionaires have to pay royalties every year in the amount established by the Mining Code (article 12). However, these are deductible from the amount due for income taxes.

According to this law, the exploration concession expires after 4 years and the exploitation concession is indefinite, provided an annual mining patent is paid. The law also establishes that indemnification in the case of expropriation by the state will be calculated based on the “net present value of future cash flows estimated at likely market prices” (Lagos, 1997).

(iii) Current Mineral Policy: Chile was the first country in South America that early on adopted a favourable mining policy hoping to attract foreign investors. The country has kept abreast of the changing needs and requirements of today's mining industry. The following summarizes the elements of Chile's current mineral policy.

State policy is to maintain a strong private sector. The only exception is the nationalized copper industry, which remains government-owned. However, certain copper mining projects owned by CODELCO have been developed jointly with the private sector. The government's policy has strongly focused on attracting foreign investment in mining ventures. Other elements of Chile's mineral policy include guarantee of security of tenure; elimination of foreign ownership restrictions; reductions of taxes, royalties, and other fees; opening of public lands for exploration; reduced barriers to entry; improvements in government-funded geological surveys and information gathering; and simplified administrative procedures. Two aspects of this policy differ from that applied during the 1984-1990 period, namely the emphasis on social projects and the importance attached to the environment (Lagos, 1997; Salmasi and Todd, 1994).

7.2.5 Investment in the Mineral Sector

In the early-1970s, during the severe economic and political crisis, Chile was economically isolated from the rest of the world. By 1973, the average import tariff was over 100% and other non-tariff barriers were imposed by the Central Bank. The largest investors were expropriated and for these reasons new investments were discouraged. By 1976, the country began a profound restructuring process in which foreign investment was to play an important role. Two factors in particular attracted foreign investment: a) a new economic policy which included free trade in goods, services and capital and b) clear and stable rules for foreign investment, including the protection of mining property.

Economic stability is crucial in attracting foreign investment, and Chile understood that a proper fiscal policy was essential in economic stabilization. Inflation was reduced and in order to increase investments and savings, government expenditures were reduced by almost 10% from 1980 to 1996. In addition to the changes explained above, the law allowed the creation of the mining concession, which gave the legal right to explore a certain area. The government released all the reserves it had on many of its properties to

encourage new field exploration.

The Foreign Investment Committee is the only institution authorized to approve foreign investments. This committee consists of the Minister of the Economy, the Minister of Finance, the Minister of Foreign Affairs, the Minister of National Planning, and for investments dealing with matters related to the ministers not represented, the corresponding minister. Investments by foreign governments, investments in social communications media, investments related to activities that normally are carried out in public services, and those exceeding a total value of US\$ 5 million, must be approved by this committee. Investments below this amount may be authorized by the Executive Secretary of the Committee with the consent of the Minister of the Economy (the committee's President).

Figure 7.2 shows foreign investment in the mineral sector of Chile as a percentage of total foreign investment in the country.

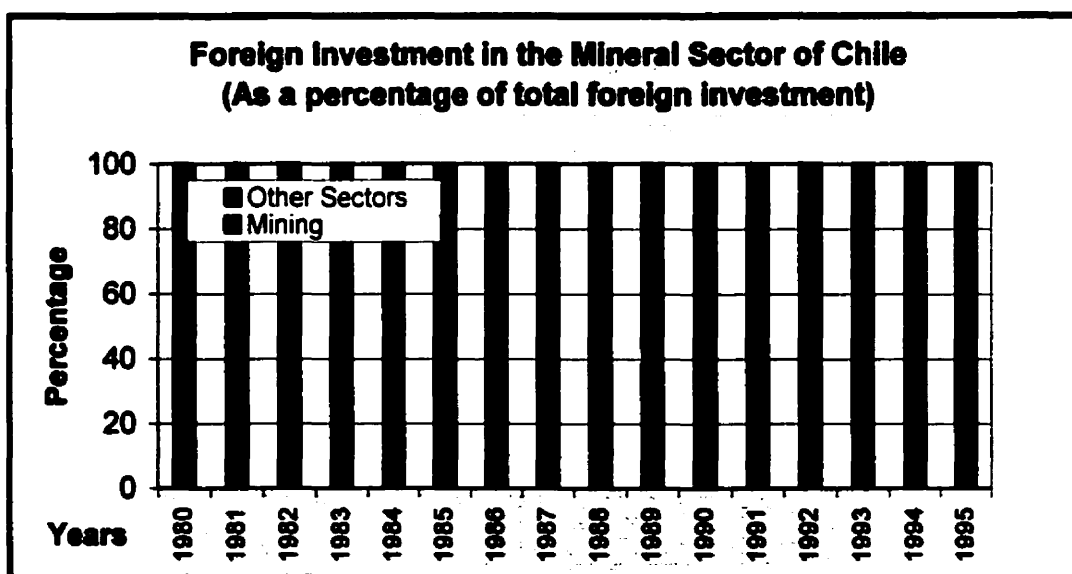


Figure 7.2: Foreign Investment ..., Source: Adapted from Lagos (1997), p. 55.

As seen, at the beginning of the 1980s, the dominant sector in terms of foreign investment was not the mineral sector. The mining boom started in 1985 with the

investment in the Escondida mine, and continued from then onwards. Therefore, the contribution of foreign investment in the mineral sector of Chile has been substantial. The trend shows that more than half of foreign investment has been in the mining sector. Foreign investment in mining has brought the most important international mining corporations to Chile and this has given rise to the copper mining boom and an increase in gold production.

In the second half of the 1990s, private investment in copper mines represented almost two-thirds of total mining investment in Chile. Indeed, during the 1990s, privately-owned copper mines increased their production by 62% while CODELCO grew only by about 15%. This diversification of mining investment in Chile is a positive phenomenon that strengthens both the mining sector and the country, as it mitigates risk, introduces different technology and management practices, and gives rise to greater competition. Total foreign investment reached US\$ 6.1 billion in 1997 and US\$ 6.5 billion in 1998 (EIU-Country Profile-Chile, 1999).

7.2.6 Foreign Investment Law

Decree Law No. 600 and Chapters 14 and 19 of the Summary of Foreign Exchange Regulations of the Central Bank, which govern foreign investment, are broad in scope. The main intent of the foreign investment law is not to discriminate between domestic and foreign investors. Foreigners may own up to 100% of a company.

According to this law, there is no ceiling on profit and capital remittances, except that the capital must remain in the country for one year before it may be remitted. Foreign exchange for profit and capital remittances is available under the same conditions as applicable to Chilean nationals. The law states that foreign investors have the same rights and obligations as Chileans. However, the law indicates that access to local credit will be limited at some future date. This restriction is not in force yet. The law also declares that foreign investment should be registered to secure access to the formal exchange market

for remittance of capital and profits. It guarantees that foreign investment is subject to the same legislation as local investment, and no discrimination is permitted (Lagos, 1997; Price Waterhouse, 1994, and Buchi Buc, 1993).

Investment Incentives and Restrictions: Legislation granting tax incentives was promulgated in 1975 to promote the economic development of certain regions of the country, especially those located in the extreme north and south. In addition, activities fundamental to the country's development, such as small-scale mining, are subject to special incentives.

7.2.7 Taxation Policy

Foreign investments receive the same treatment as domestic investments. There are no special tax incentives, except those for remote areas as mentioned above. The basic premise of the tax policy is that taxes are to be neutral, i.e., they should not attract or restrict foreign investment. The tax treatment of all commercial entities is uniform in Chile, and often the choice of the entity is guided by tax considerations in the home country.

With respect to corporate tax, foreign companies might choose to pay tax on their profits either at the same rate as local companies, or at a rate of 42%, which is guaranteed to remain unchanged for ten years, and up to 20 years in the case of large investment projects.

Tax on trade has been reduced over time and tax rebates are given to exporters. This is very important for mining projects because during the pre-production period, large amounts of capital are typically required and taxes are added to these amounts. Moreover, increased flexibility and the freedom to decide on labour conditions allow for a reduction in operating costs. As for current capital markets, they ensure corporate financing at reasonable rates and terms, and attract increased interest from potential foreign investors

by ensuring complementary financing and greater liquidity for investment projects (EIU, Country Profile, 1999; Lagos, 1997; Price Waterhouse, 1993; and World Bank Technical Paper No 181, 1992).

7.2.8 Concluding Remarks

Chile's economic success is attributed to policy reforms of the 1970s and 1980s that created a dynamic, export-led private sector and a stable economy. As a result, the Chilean economy is very open, with minimal regulations and few government subsidies. Most government-owned enterprises have been privatized. Foreign investment has been a dominant force in expanding mining activities in Chile. A set of conditions has led to increased foreign investment and consequently a copper boom: excellent mineral deposits, clear rules, open markets, political and economic stability, fair taxes and effective institutional systems. According to Lagos (1997), two studies in 1996 concluded that the overall effects of foreign investment in mining have been positive at both national and regional levels.

7.3 STATE OF THE MINERAL SECTOR IN INDONESIA

7.3.1 General Description of the Country

(i) Geography: Indonesia is the largest archipelago in the world. It has a total land area of about two million square kilometers. It consists of the main islands of Java, Sumatra and Sulawesi, Kalimantan and Irian Jaya, as well as about 30 smaller archipelagoes totaling 13 667 islands, of which about 6 000 are inhabited (Price Waterhouse, 1994). Indonesia is one of the most highly populated countries of the world, ranking fourth after China, India, and the U.S.A., with a population of about 200 million.

(ii) Geopolitics: In March 1966, the executive power was transferred to Major-General

Suharto. He became acting president in March 1967 and was elected for five further five-year terms in 1973, '78, '83, '88, and '93. The presidency is the highest executive office of the state and has great legislative powers. After a significant rise in political tensions, Suharto stepped down in April 1998 and Mr. Habibbi took over as the new president of the country.

7.3.2 Indonesia's Economy

(i) Background: Before 1966, Indonesia faced serious economic problems; there was high inflation and the economy was stagnant. Since then, as Indonesia has undertaken several economic reforms, inflation has been brought under control and the economy has grown. Indonesia's reforms have been market-oriented. These include removing the restrictions within the economy, diversifying the economy, and opening the domestic economy to foreign investment.

Indonesia's economic policy, like that of Iran, is based on a series of five-year development plans. In the latest five-year development plan, which began in 1994, priority was given to the development of the mining and energy sectors, as well as to certain areas of other sectors, such as manufacturing, agriculture, communications, and tourism. New massive investments are projected over the latest five-year period, with a 55% contribution from the private sector. Development expenditures in the mining and energy sectors are planned to absorb more than 10% of total investment.

The Indonesian economy has performed well in recent years. GDP growth in the 1970s averaged 7.5% per year. In 1982, however, due to the fall in oil prices and the world recession, the growth rate fell to 2.3%. In the past decade, real GDP growth has been between 4% and 6% per year.

(ii) Current Status: The oil and mineral sectors are critical to Indonesia's economic development and well-being. In 1997, these sectors contributed about 16.7% to the country's GDP and 45% of foreign exchange earnings (EIU, Country Profile-Indonesia,

1998-99). Table 7.3 and figure 7.3 below show the trend of oil and non-oil exports in recent years. In 1995, total exports increased to some US\$ 45.5 billion and the non-oil exports accounted for US\$ 35 billion. This shows that the country's efforts to increase earnings from the non-oil sectors and diversify its economy have been successful (Price Waterhouse, 1996).

Table 7.3 Oil and Non-Oil Exports of Indonesia

(FOB base & current U.S. million dollars)

Years	1987	1988	1989	1990	1991	1992	1993	1994	1995
Oil and Gas	8556	7681	8680	11071	10895	10671	9746	9693	10471
Non-Oil	8580	11537	13480	14604	18247	23296	27077	30360	34947
Total Exports	17136	19218	22160	25675	29142	33967	36823	40053	45418
Growth in Non-Oil Exports		34.4%	16.8%	8.33%	24.9%	27.6%	22.7%	12.1%	15.1%

Source: Price Waterhouse, 1996 and Economist Intelligence Unit (EIU), Country Profile -Indonesia, 1993.

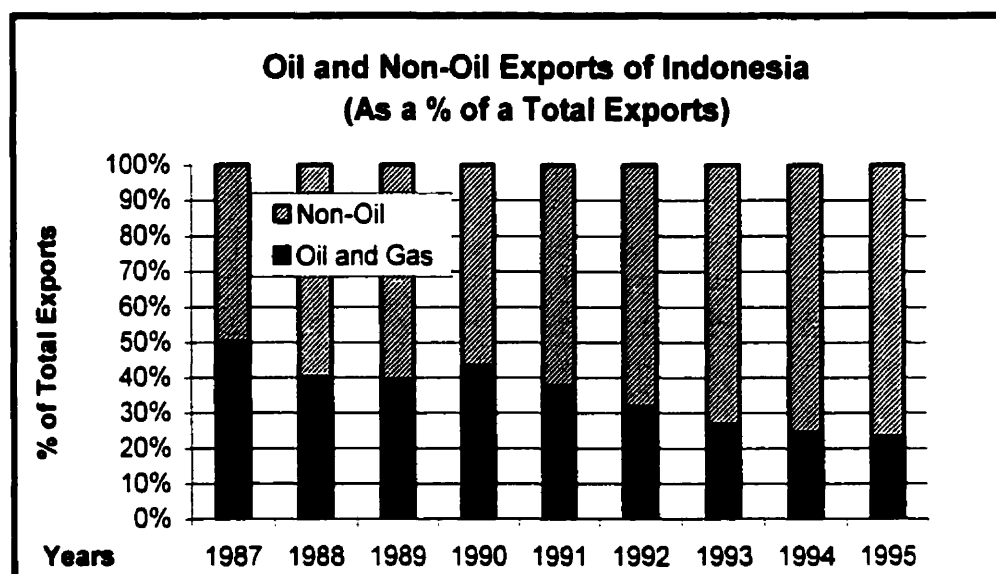


Figure 7.3: Oil and Non-oil ..., Source: see table 7.4.

The government has also committed itself to a process of privatization and deregulation. State-owned companies, however, are still sizable. During 1995-97 period, the

privatization process was accelerated. While the government encourages export-oriented manufacturing, many foreign companies have established manufacturing facilities only to supply the huge domestic consumer market. Local interest rates and inflation are relatively high. The labor force is considerable, wages are low and there is a lack of technical and managerial skills.

Real GDP growth averaged 8% per annum over the 1991-1996 period, but decreased to 5% in 1997. This growth was supported by large inflows of foreign capital, one factor influencing inflation, which in 1995 averaged 8.6% (EIU, Country Profile - Indonesia, 1998-99, 1996; and Price Waterhouse, 1996). In the past few months political events have heightened the tensions that have been building up in Indonesia for some time. So the political situation remains tense. The following table and figure trace the sectoral origin of the GDP in selected years from 1965 to 1997.

Table 7.4 Sectoral Origin of Gross Domestic Product of Indonesia (% of total)

Year	1965	1970	1975	1980	1985	1990	1994	1995	1996	1997
Agriculture	52.4	49.6	37.2	31.4	23.6	21.8	16.7	16.1	15.4	14.8
Manufacturing	8.3	9.2	11.1	14.3	13.5	19.5	23.3	23.8	24.7	25
Trade, Services and Others	33.9	33.5	36.1	39.1	41.4	39.0	33.7	34.5	34.5	35.4

Sources: EIU, Annual Supplement - Indonesia, 1971, 1972, 1977 and 1982; EIU, Country Profile - Indonesia, 1987, 1992, 1999.

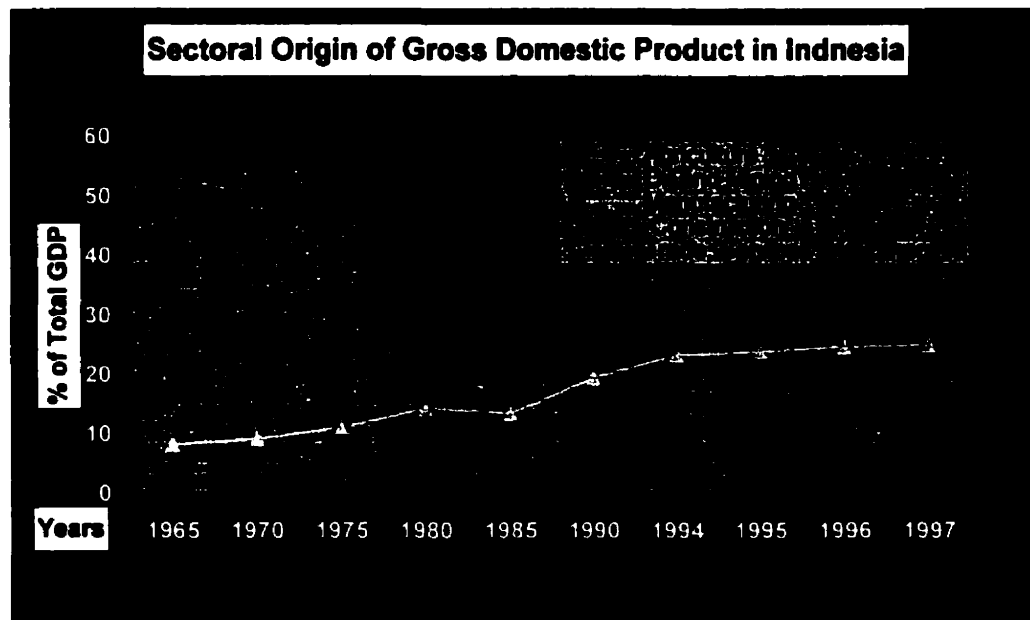


Figure 7.4: Sectoral Origin...., Source: see table 7.4.

As seen, the share of agriculture and forestry has declined significantly over time. This is perhaps because of the industrialization trend of the 1970s. Another important aspect is the growing share of the manufacturing sector during the entire period, and in particular, since 1980. The marked growth of the oil and mining sectors in 1975 was due to a significant increase in oil prices in October 1973. This is common to all oil producing countries. The policies of the government towards privatization and foreign investment as referred to in the literature could be another reason for the acceleration of growth in this sector during the 1980s and early 1990s. The share of construction, trade and services has been relatively stable over the period, except for a moderate increase in the 1980s.

7.3.3 Mineral Resources and Production

Large deposits of bauxite, coal, copper, gold, iron sand, nickel and tin are under exploitation in Indonesia. Indonesia is the world's third largest tin producer, with total reserves estimated at over 1 million tonnes. Some 80% of Indonesia's tin output is produced by PT. Timah, a state-owned company (EIU, Country Profile - Indonesia, 1998-

99). Reserves of bauxite are estimated at 500 million tonnes. Indonesia has been an important producer of copper. Most of the country's copper production is exported. Coal resources are estimated at about 25 billion tonnes. Coal production and exports have increased dramatically in recent years. More than half of the coal produced is exported.

Indonesia also has massive nickel deposits. Nickel production has increased in recent years with the exploitation of large deposits. In 1997, ore production was around 2.8 million tonnes. Gold and silver production has had a long history in Indonesia. Gold output has increased in recent years, especially because of the expansion of copper mines in Irian Jaya in the early 1990s. Gold production was around 90 tonnes in 1997. Small quantities of manganese, phosphate rock and sulfur are also produced (Adapted from EIU, Country Profile - Indonesia, 1998-99, 1995-96 and 1993; Simatupang, 1988; Mining Annual Review, 1994; and Bulletin of Indonesian Economic Studies, Nov. 1972).

The oil and mineral sectors have been the historical focus of foreign participation in the Indonesian economy. Non-oil minerals have had a resurgence of activity. Over the next five years, the strongest area of mineral growth will be in coal. Table 7.5 shows Indonesia's production of major minerals in recent years.

Table 7.5 Production of Main Mineral Substances in Indonesia

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997
Base Metals ('000 tonnes)									
Bauxite	862	1164	1385	804	1320	1342	899	842	809
Copper (conc.)	332	399	657	907	928	1065	1517	1759	1841
Nickel (ore)	2021	2179	2337	2509	1976	2311	2513	3427	2830
Tin (conc.)	31	31	30	30	30.4	31	38.4	51	55.2
Iron Sand (conc.)	143	142	173	288	341	335	348	N/A	N/A
Precious Metals ('000 kg)									
Gold	5.2	10.6	17	38	42.1	42.6	62.8	83.6	89.9
Silver	62.4	66.7	79.5	99.9	90.3	107	265.2	254.9	270.4

Source: EIU, Country Profile - Indonesia, 1998, 1996; Mining Journal, Annual Review, 1990-1994.

7.3.4 Mineral Policy

(i) Background: Indonesia declared its independence in August 1945. The initial years after independence were marred by political disturbances involving separatist movements. During this time not much has been accomplished in the mining sector. In 1957, with the worsening of the relationship between the Netherlands and Indonesia, the government announced the nationalization of all Dutch property in the country, including the Dutch-owned mining companies. Consequently, a government agency called BUPTAN (Bureau for State Mining Company Affairs) was established. All former Dutch-owned or Dutch-managed companies came under the control of BUPTAN.

In 1960, the first national mining law was proclaimed. This law imposed very rigid state control over mineral development. In 1961, the BUPTAN was abolished and three different "Badan Pimpinan Umum" (BPUs), or managing boards, were established for tin, coal and general mining. These BPUs controlled several state-owned mining enterprises. In 1962, the first production-sharing agreement was signed between Indonesia and a Japanese company for the development of a nickel mine.

In the period from 1962 to 1966, because of the general economic disorder, production of all major minerals, except nickel and bauxite, declined (Adapted from Simatupang, 1988). In 1967, the new mining law (Law No. 11) and the foreign capital investment law (Law No. 1) were announced. The Mining Law was derived from the philosophy of Article 33 of Indonesia's constitution. This article states that all natural resources of the country will be controlled by the state. Following the promulgation of the mining law, the government announced that its policy was not only to reform existing state mining companies and encourage domestic investment, but also to encourage foreign investment by creating a proper investment climate (Bulletin of Indonesian Economic Studies, Nov. 1972).

(ii) Current Mineral Policy: According to the Mining Law of Indonesia, all minerals in the form of natural deposits in the country are part of the national wealth of the people

and are controlled by the State. Therefore, only the state may hold exclusive mining rights. However, mining companies and individuals may conduct mining based on mining authorizations called "Kuasapertambangan" (KP).

A mining authorization (KP) is a permit from the government to undertake mining activities. This permit can be in the form of a general survey permit, an exploration permit, an exploitation permit, a processing permit or a sale permit. These authorizations can only be issued to Indonesian companies or individuals. Foreigners are not allowed to hold KPs. The holder of a KP does not have ownership of the land (Directorate General of Mines, Ministry of Mines and Energy of Indonesia, 1995; Price Waterhouse, 1993).

The Mining Law classifies minerals into three groups, namely strategic minerals, vital minerals, and other minerals. Mining of strategic minerals such as oil, tin, nickel, cobalt and radioactive substances can only be undertaken by a state-owned mining enterprise (SME) or a government agency. However, for economic and practical reasons, the Minister can designate certain deposits of strategic minerals of limited extent for mining by private national companies or cooperatives. Mining of vital minerals such as iron, manganese, titanium, bauxite, copper, lead, zinc, gold, silver and diamonds, and third-group minerals such as asbestos, kaolin, talc, mica, magnetite, marble, gypsum, granite, clay and bentonite, can be carried out by either state or private companies (Directorate General of Mines, Ministry of Mines and Energy of Indonesia, 1995).

7.3.5 Investment in the Mineral Sector

In the past few years, the government has made remarkable progress in the operation of state mining enterprises. Efforts to attract private domestic capital to the mining sector, however, have been less successful. The main reasons for weak local investment include lack of expertise, capital and management skills, and the high risks associated with mining projects.

Although the government wishes to encourage the development of the mining sector, it

does not offer any significant grants to private investors. However, there are some benefits and facilities for projects approved after 1 January 1984. These, for instance, include exemption from or reduction of import duties on machinery and equipment needed for the projects, exemptions from stamp duty, and reductions of import duties on some personal necessities for expert personnel. There are also exceptions such as foreign ownership up to 100% for projects located in remote regions. A joint-venture company can also be established with 100% foreign ownership if the operation is located in a bonded area and production is totally designated for export (Directorate General of Mines, Ministry of Mines and Energy of Indonesia, 1998).

7.3.6 The Contract of Work (COW)

Contracts of work are agreements between the government or an SME and the contractor (domestic, foreign or joint venture) to carry out some or all stages of mining, from geological surveys to extraction and marketing. The Mining Law does not specify the content of the COW. Responsibility lies with the Department of Mines for minerals other than coal, and with the state-owned company PT. Tambang Batubara for coal.

To execute the COWs, some SMEs have been established by the government within the mining sector. These enterprises include PT. Tambang Timah for the tin industry, PT. Tambang Batubara Bukit Asam for the coal industry, and PT. Aneka Tambang for the exploitation of bauxite, nickel, iron, diamonds, gold and silver. The COWs usually involve strategic or vital minerals. Private enterprises may also act as mining operators or contractors for a state enterprise. The contractors are required to bear all risks associated with the mining venture (EIU, 1993; Price Waterhouse, 1993; and Simatupang, 1988).

Generally, under the COW, a joint-venture company is first established between a SME and the contractor (known as the PMA/COW Company). Joint ventures are incorporated as limited liability companies known as Perseroan Terbatas PT. companies conduct all stages of operations, from the pre-feasibility study to marketing, as a contractor for the government or a SME. The PMA Company has control and management of all activities

under the COW and must assume all the risks associated with the operation. In general, five stages of work are stipulated in the COWs. These are general survey for usually one year, exploration for three years, evaluation for one year, construction for 3 years, and operation for 30 years.

During the period of a COW, the company is required to employ Indonesian personnel to the fullest extent possible and to undertake their training. Exemption may be obtained from import and other customs duties in relation to the importation of machinery, equipment and supplies needed for the project. The national and foreign companies can make their own arrangements concerning profits, conditions of work and other obligations. Such arrangements might be made as well for small-scale mining activities (Directorate General of Mines, Ministry of Mines and Energy of Indonesia, 1995).

Seven Generations of COWs: Until February 1998, seven generations of COWs have been implemented in the mineral sector of Indonesia. An examination of conditions and terms of agreements in various COWs shows the changes in policy of the Indonesian government regarding foreign investment in the mineral sector; this gives a good practical example of how foreign investment was planned and treated. This is important for Iran, in particular, because the mining law of Indonesia (exclusive right of the state over minerals driven from Islamic religious regulations, classification of minerals, a state-dominated mineral sector, . . .) is quite similar to that of Iran.

The first generation of COWs were introduced in April 1967 and led to the development of the first copper/gold mine in Irian Jaya. In the second generation of COWs, covering the period of 1968-1974, 16 COWs were signed of which 4 came to fruition. The third and fourth generation of COWs (covering the periods of 1976-1984 and 1985-1990) required the contractor to offer a share in the company to local enterprises, commencing with 5% in the third year of production, and increasing up to 15% by the 15th anniversary.

The fifth generation of COWs (1991-1994), also known as the *Frontier Contracts*, was aimed at attracting foreign investment in the remote areas of the eastern regions of Indonesia. More tax incentives were offered to foreign companies in this generation of COWs. The sixth generation of COWs (1994-1997) is primarily intended to accommodate the provisions of the new tax regime, which came into effect in January 1995. The new tax regime is more advantageous for investors. The seventh generation of COWs (1998), which was being issued recently, is very similar to the sixth generation contracts. However, it allows control on the contractor's performance throughout each stage of activity and provides certain incentives, such as flexibility with regard to the time frame for exploration and mine development. The following table indicates basic statistics relevant to COWs in the mineral sector of Indonesia.

Table 7.6 Contracts of Work (COWs) Progress in Indonesia

Generation	Period	# of contracts Signed	Completion Stage					
			Survey	Exploration	Feasibility Study	Construction	Production	Termination
I	1967	1						1
II	1968-75	16					4	12
III	1976-84	13			2		2	9
IV	1985-90	95	1	2	18	2	3	69
V	1991-94	7	3	2			1	1
VI	1994-97	65	65					
VII	1998-to date	38	38					
Total		235	107	4	20	2	10	92

Source: Directorate General of Mines, Ministry of Mines and Energy of Indonesia, 1998.

7.3.7 Foreign Investment Law

As mentioned, the usual path followed by foreign companies participating in mining

activities is mostly through a Contract of Work. The COW provides the investor with a clear definition of rights, obligations and protection against changes in the laws. It also deals with the licenses and permits which are different from mining regulations for national investments. That is to say that foreign investments are permitted only through an Indonesian-incorporated company since foreign investment cannot be in the form of equity-sharing in existing Indonesian companies. Moreover short-term policy may inhibit investment in some fields (gold for instance). The maximum investment in a PMA for foreigners is usually 85%. A prospecting concession is valid for one year, renewable for another year, and priority in applying for an exploration license is given to the holder of a COW. Contracts for coal mining are quite different from the COW because they are under production-sharing arrangements. Until now, all COWs have been fully respected by the government.

According to Law No. 1 of 1967, the owner of foreign capital bears the risk of the investment. Moreover, the law guarantees repatriation of profits. Profits can also be repatriated from foreign exchange available in the free market and sent abroad without restriction (Ernest & Young's Series, 1992).

7.3.8 Taxation Policy

All taxes and other charges are specified in detail in the contract, which locks in income and withholding taxes for the life of the agreement. Corporate tax is charged on the income of the venture, less deductible expenses, at the prevailing rates, and employee income is subject to personal income taxes. Mining companies operating under COWs are treated as follows (Directorate General of Mines, Ministry of Mines and Energy of Indonesia, 1998; Price Waterhouse, 1997):

- i. The COWs before 1984 (Generations I, II and III) usually contained income tax incentives in the form of reduced tax rates and investment allowances. In each case, the tax rates were agreed upon during negotiation of the project with the

government, and the agreed provisions were incorporated in the COW. The companies were not made subject to variations in tax rates during the term of their projects.

- ii. A COW signed after December 31, 1983 but before January 1, 1995, is subject to the provisions of the 1984 law. The normal corporate tax rates apply (35%), as well as a withholding tax of 20% for dividend payments to foreign shareholders. Reproduction costs and fixed assets are amortizable and depreciable. Losses can be carried forward for 8 years.
- iii. A COW signed after December 31, 1994 is treated in accordance with the new tax law (1995). In the new law, the government attempts to boost investment interest by introducing tax holidays for some investments (a ten-year tax holiday for firms making investments in certain sectors and regions).
- iv. Most of the new measures, and the cuts in income tax rates (from 35% to 30%) in particular, have been welcomed as being geared towards promoting the growth of corporate profitability which will encourage foreign investment (EIU, Country Profile-Indonesia, 1997).

7.3.9 Concluding Remarks

The process of simplifying the regulatory system that manages government contracts in Indonesia brought credibility to the capital market. The COW is an efficient system to regulate all aspects of mining in great detail. All aspects affecting the investments are set out in the COW at the outset and it, therefore, represents a convenient "*one-step*" foreign investment agreement with the government. Contract stability, together with the quality of natural resources, have positioned Indonesia to be one of the major arenas for mining investments.

7.4 STATE OF THE MINERAL SECTOR IN NIGERIA

7.4.1 General Description of the Country

(i) Geography: The Federal Republic of Nigeria is situated on the West Coast of Africa, and has a total area of about 923 768 square kilometers. The country is bordered to the north by the Republic of Niger, to the west by the Republic of Benin and to the east by the Republics of Cameroon and Chad. The south is bordered by the Atlantic Ocean. The population was estimated at over 110 million in 1998 (World Factbook. 1999).

(ii) Geopolitics: It is important to note that the Nigerian economy has been managed by a series of military governments for more than 22 out of the 33 years since 1960 (Managing Intellectual Property, Jan.- Feb., 1994). During this period, the economy is believed to be hobbled by political instability and poor macroeconomic management. Governments have failed to make significant progress in diversifying the economy away from over-dependence on the capital-intensive oil sector, which provides 95% of foreign exchange earnings, and about 70% of budgetary revenues. However, the 1996-1998 period represented a phase of consolidation for the country after years of strong ethnic tensions. In June 1998, the new head of state declared that the military would withdraw from politics henceforth and instituted a genuine transition program to civilian rule. This has led, in a period of less than one year, to the restoration of democratically elected assemblies in the three levels of governments - Local, State and Federal, and to the installation on May 29, 1999 of a civilian head of state.

7.4.2 The Nigerian Economy

Background: During the colonial era, the economy of Nigeria was based on traditional agricultural and trading. The main agricultural products included root crops, cereal, livestock, cocoa, sugar, rubber and palm oil. At the time of independence in 1960, agriculture accounted for about half of the GDP and was the main source of government

revenue and export earnings.

In the 1970s, the oil industry of Nigeria grew. The oil price boom in 1973 substantially increased government earnings from exports. The annual growth rate of the GDP was more than 29% over the 1974-78 period. However, revenues from oil exports were inconsistent and insufficient to meet the country's increasing needs for development. This eventually led to a serious foreign-exchange crisis in the early 1980s. This crisis has contributed to the political and economic upheavals that have occurred since 1982.

Total exports decreased from \$25 billion in 1980 to only \$6 billion in 1986. The GDP declined by 17% during the 1981-84 period. After a moderate growth in 1985, there were two years of slower growth due in part to a decline in oil prices. By 1987, the GDP, in real prices, was only 7.5% higher than it had been in 1973.

In an effort to stabilize the economy, the government adopted the Structural Adjustment Program (SAP) in mid-1986. This program was designed to restructure the economy, expand non-oil exports, achieve self-sufficiency in food, and give a larger role to the private sector (Adapted from EIU, Country Profile - Nigeria, 1994; and Izon, 1993). The program included introduction of free market policies, deregulation, trade liberalization, privatization of public enterprises and promotion of growth in the agricultural and manufacturing sectors (Harrison, 1993). As part of the SAP, the government planned to remove foreign investment barriers and to privatize or commercialize most of the state enterprises.

The process of privatization began in January 1988, when the government announced that 96 state-owned companies, including many in the manufacturing sector, would be privatized or commercialized. In July 1988, the decree enabling the government to proceed with the privatization plan was promulgated. Agro-industrial companies were among those in which the state offered its entire equity. The second group that was offered for partial privatization included Nigerian Airways (NA) and the Nigerian National Shipping Line. In the early 1990s, due to unexpected problems in the banking

industry, the government announced plans to privatize some of the country's commercial banks. In the mineral sector, the Nigerian Coal Co. announced privatization of coal production. The privatization trend of the mineral industry was slow to commence but has good long-term promise (Price Waterhouse, 1994).

As for foreign investment, import tariffs were lowered and companies were allowed to remit 100% of their profits. A foreign exchange policy was also announced to shift the exchange and interest rates closer to market value (Op cit., Izon, 1993). Other reforms included the elimination of import licenses and export duties (Op cit., EIU, Country Profile - Nigeria, 1994).

Although the enforcement of the structural adjustment program created more incentives for foreign investors, it had no significant impact on the Nigerian economy⁵. The policies were *politically unpopular and caused hardships* for the citizens (Okoroafo, 1992).

In addition, the country's economic problems had been exacerbated by *the build-up of medium- and long-term debts*. During the 1980s, a series of payment rescheduling agreements were made with creditors. However, the situation worsened in the 1991-92 period, as negotiations with the IMF for payment rescheduling with official creditors reached a dilemma, and arrears began to accumulate again.

The growth in GDP declined from 8.6% in 1991 to 0.8% and 2.2% in 1992 and 1993, respectively (Op cit., EIU, Country Profile - Nigeria, 1994). In January 1994, the structural adjustment program was rejected in favor of a nationalist economic policy and regulatory controls re-imposed on key economic sectors (Wright, 1994). The growth in GDP at 1990 constant prices was 2.6% and 3.3% in 1995 and 1996, respectively (EIU, Country Profile - Nigeria, 1999).

(ii) Current Status: Nigeria has the second largest economy in sub-Saharan Africa, after

⁵ Foreign investment in Nigeria rose from \$723 million in 1986-90 to \$1.35 billion in 1991-95. It was \$1 billion in 1997, down from \$1.4 billion in 1996 (EIU, - Nigeria, 1999-2000, p. 31).

South Africa. The Nigerian economy is dominated by the oil sector in terms of contribution to the country's GDP, employment, and export earnings, and this country is Africa's largest crude oil producer as a member of OPEC. Agriculture is another principal economic sector. Nearly two-thirds of the active population is involved in agricultural activities.

Oil is the most important source of revenue for the country and the national policy is closely related to programs associated with oil export revenues. In 1997, the oil sector accounted for more than three-quarters of government revenue (82% in 1990) and about 95% of export earnings (97% in 1990).

Agriculture is the principal activity of the majority of Nigerians, accounting with livestock, forestry and fishing, for 39% of GDP in 1997. The manufacturing sector, employing 17% of the active population, contributes 6.3% to the GDP. The oil and mineral sectors employ less than 0.5 % of the labor-force, but produce about 14% of the GDP (EIU, Country Profile-Nigeria, 1999, 1997-98 and Mbendi Information Service, 1998). The following table and figure exhibit the sectoral origins of the GDP in selected years from 1956 to 1997.

Table 7.7 Sectoral Origins of GDP in Nigeria (% of total)

Year	1956	1969	1981	1984	1987	1990	1994	1997	1997
Agriculture	59.2	48.0	16.0	41.5	38.5	38.3	37.5	39	39.2
Oil and Minerals	0.2	0.1	1.1	2.2	2.2	2.2	10	13	13.6
Manufacturing	1.4	5.4	7	8.6	8.6	7.2	6.6	6.5	6.3
Construction	1.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.9
Trade, Services and Others	34.3	36.3	46	38.2	37.8	39.7	41	39.5	39

Sources: EIU, Annual Supplement - Nigeria, 1969, 1981; EIU, Country Profile - Nigeria, 1994, 1999.

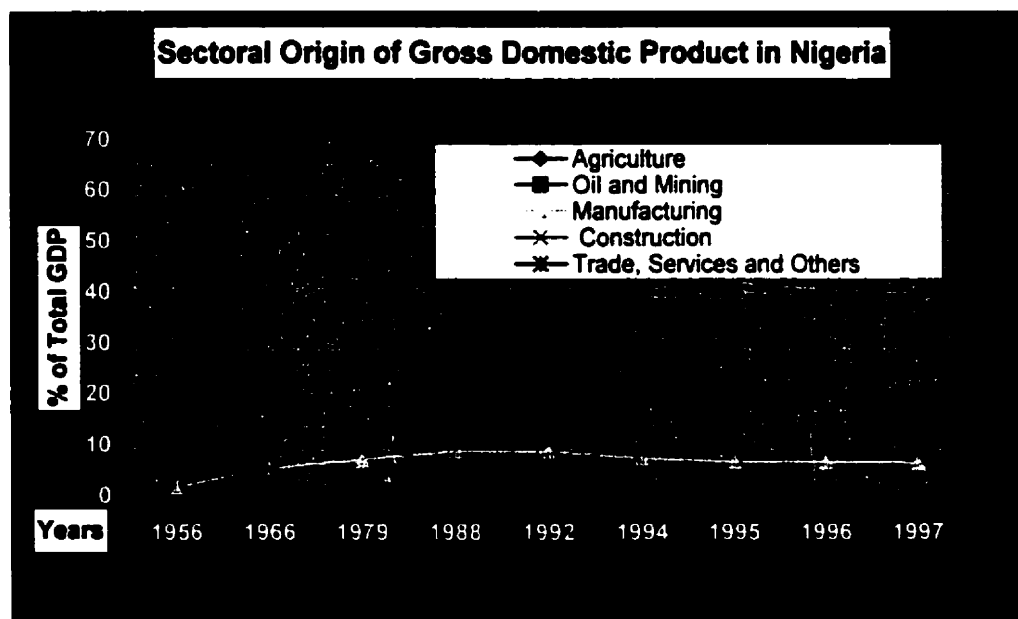


Figure 7.5: Sectoral Origin ..., Source: see table 7.7

As the above table and figure show, the Nigerian economy was dependent on the agricultural sector during the colonial era. In the late 1960s, the oil, mining and manufacturing industries were developed. In the economic crisis of the early 1980s, there was a significant reduction in agricultural output, while the oil and mining sector were booming. By the late 1980s, the agricultural sector had recovered, but the oil sector maintained its dominant role in the economy. The manufacturing and construction sectors were unable to increase their contribution to the GDP in the last decade.

Despite the lengthy periods of sluggish economic growth since the early 1980s, inflation has been a particular problem, averaging 23% per year in the 1980s and after a slowdown in 1990 and 1991, over 50% in 1992-94. The contributory factors included the persistent shortages of consumer goods resulting from foreign exchange scarcity, the high levels of monetary expansion to fund substantial federal government deficits, the periodic steep increases in the prices of electricity and petrol, and Naira depreciation. The average annual inflation rate was 54% in 1993 and 57% in 1994, reaching 72.8% in 1995. However, a more stable Naira and a much-improved budgetary position in 1996 have

resulted in a sharp reduction in annual inflation to 28% and 8.5% (the lowest rate since 1991) in 1996 and 1997, respectively (EIU Country Profile 1999, 1996-97).

The economic situation improved in 1996-97. The growth rate reached 3% and a relatively low inflation rate allowed the government to leave the contestable ceiling of interest rates fixed by the banks.

7.4.3 Mineral Resources and Production

Nigeria possesses considerable deposits of gold, tin, coal, columbite, iron ore, bauxite and about 26 other different minerals (MBendi Information Services, 1998). The following describes the mineral resources of Nigeria in more detail.

Iron Ore and Steel: There have been considerable iron deposits discovered recently east and west of the open pit mine at Itakpe near Okene. The government's intention is to develop these deposits as a basis for supplying the steel industry. Nigeria is in the process of developing a steel industry on the basis of two major projects and several steel mills located in different parts of the country. The major steel project is the Ajaokuta Steel plant, absorbing a government investment of \$3 billion. However, progress has been slow. Production at the National Iron Ore Mining Project (NIOMP) slumped by 69% to 239 300 tonnes in 1994, and by a further 30% in 1995, to only 168 300 tonnes, representing a mere 20% of installed capacity, and this against a rise in operational costs of 21.6% in 1994 and 16.4% in 1995.

Beyond dependency on imported raw materials, other problems of the steel industry in Nigeria include the lack of capital for proper funding of projects, and inadequate power supply and transport infrastructure. The Ajaokuta plant is criticized by the World Bank for being uneconomical (Mining Journal, July 1994; and Mining Journal, June 1992).

Coal: Coal deposits, with estimated reserves of 1294 million tonnes, are found in Enugu and Lafia. Production of coal is the responsibility of the Nigerian Coal Corporation

(NCC) and its subsidiary, the Eagle Mining Co. (a consortium of Nigerian, Greek and Danish firms). Further exploitation of coal reserves through joint-venture agreements with foreign companies is desired to improve coking properties and production. There is some limited foreign involvement in conjunction with the Nigerian Coal Corporation, which resumed coal exports in 1996.

Tin: Cassiterite is found in alluvial deposits. Tin ore is mined in association with columbite, tantalite, and tungsten minerals. Tin production had decreased in recent years. This is because the cassiterite deposits are located at a depth of about 70 meters, with difficult ground water conditions, which makes extraction very expensive. This condition, along with a fall in world tin prices and frequent flooding of the mines has caused production declines.

Other Minerals: Many gold occurrences are known in Nigeria. These have been explored by the Nigerian Mining Co. Lead, zinc and copper deposits also occur in the eastern part of the country. Recently developed gold mines are located in the Niger and Sokoto States. The government is considering inviting foreign mining companies to explore for gold. Deposits of galena and sphalerite, with accessory barite and fluorspar, are also found in the country. Although the mineral deposits of Nigeria are relatively insignificant in an economic sense, when compared to oil and gas, the country has the potential for diversified development of its mineral sector. At present, the mineral sector accounts for 1% of Nigeria's GDP (Mbendi, 1998).

While state-owned companies or agencies managed the extraction of important minerals (such as coal and tin) in the past, the exploitation of all mineral resources is now open to the private sector. Indeed, the Federal government realizes the great importance of the mineral industry in Nigeria and has created a special Ministry, called Ministry of Solid Minerals.

Table 7.8 shows the production of main minerals in recent years

Table 7.8 Production of Main Minerals in Nigeria (tonnes)

	1988	1989	1990	1991	1992
Cassiterite (tin ore)	238	350	314	246	149
Coal	82 489	80 882	77 520	137 658	86 658
Marble	5 445	1377	32 269	52 379	30 661

Source: EIU, Country Profile - Nigeria, 1994.

As seen, the production of minerals has decreased steadily in recent years. The reasons for this have been inadequate financing and insufficient demand, especially in the international market, as well as economic and political uncertainties in the country, especially in the early 1990s.

7.4.4 Mineral Policy

(i) Background: The Nigerian mining industry has been relegated to a back seat by the success of the Nigerian oil industry. However, concerned about country's excessive dependence on oil, the instability of oil prices and environmental problems in oil-producing areas, the government turned its attention to other minerals. The Solid Minerals Development Ministry regulates the mineral industry. Government policy is to attract private local and foreign parties to invest in the mineral (especially in iron, coal, lead, zinc and gold) and related downstream industries. It is argued that Nigeria could easily eliminate imports of lead and zinc; current import levels are 30 000 t/y of lead and 55 000 t/y of zinc.

In 1992, the government reduced the royalties payable on solid minerals. The royalty on controlled minerals was reduced from 15% to 10%, and that on uncontrolled minerals, from 12.5% to 7.5%. At present, the solid minerals sector accounts for 1% of Nigeria's

GDP. The government's plan is to raise this amount to 15% within the next five years (MBendi Information Services, 1998; Mining Journal, July 1994 and Izon, 1993).

In furtherance of its efforts to attract foreign investment to the mining sector, the Federal government in 1995/96 awarded a contract to a French/American consortium with a Nigerian counterpart to carry out a detailed inventory of the country's mineral resources and identify those that can be "moneterized" or capitalized. As at end of 1998, the Ministry of Solid Minerals announced that most of the phases of the contract had been achieved and that over 40 minerals have been identified in the country. A few obvious ones have been identified as moneterizable, namely, gold, bitumen, kaolin, coal and iron ore, with promise of more to come.

(ii) Current Mineral Policy: The old Minerals Act and Mining Regulations are being revamped to conform to government policy of attracting foreign as well as domestic investment into the industry. Some of the highlights of the new rules are summarized below.

a) Conditions for Entry into the Mining Industry

- i. A formal application to that effect, addressed to the Director of Mines. Abuja;
- ii. Submission of the name of a technically competent person - usually a Mining Engineer, Mining Technologist/Technician or Geologist;
- iii. Certificate of incorporation , Bank statement of the company to the tune of not less than N 100 000 (N = Nigerian currency called the Naira, with an exchange rate of about N100 = \$1US);
- iv. Copies of Tax Clearance Certificates.

b) Grant of a Prospecting Right (PR): This is usually given to an individual on behalf of a company or himself/herself, and confers upon the holder the right to enter land and prospect for the minerals stated thereon and within a specified area. The person must be

financially fit to incur any expenses that might occur in the form of compensation in the course of his/her duties.

c) Grant of an Exclusive Prospecting License (EPL):

- i. Applicant must be by the holder of a PR;
- ii. Application must be submitted at the Area Office in control of the area applied for;
- iii. Plan of the area drawn to a scale of 1:25 000 must accompany the application (ref. Sec. 83(a) of Mining Regulations);
- iv. Area applied for must not exceed 8 square kilometers.

d) Grant of a Mining Lease:

- i. This is issued to a holder of a PR or EPL who has beaconed the area over which the lease is applied for, to mine minerals as specified therein;
- ii. Specified number of years is 21 and is renewable;
- iii. There must be a technically competent person responsible;
- iv. The area should not exceed 200 acres (80 ha) except with the Minister's approval;
- v. All procedural reports, viz. Forestry, Surveys and Local Government must be in favour of the grant.

7.4.5 Foreign Investment

According to the decrees of 1972 and 1977, the amount of foreign investment is limited in various sectors of the economy. Retail trade, transport and distribution were completely reserved for Nigerians. Most other activities required 60% Nigerian ownership. Plantations, fertilizer production, hotels and some specialized manufacturing required only 40% Nigerian ownership.

To encourage greater foreign investment, the government modified the Nigerian

Enterprises Promotion Act - 1977 (NEPA) in December 1989. Under this act, foreign companies could hold 100% share in any new Nigerian venture except banking, petroleum prospecting, insurance and mining, in which the NEPA-1977 still applies. The new arrangements, however, do not apply to those companies registered under the previous decrees (EIU, Country Profile - Nigeria, 1995).

The new regulations render the risks associated with investment manageable. Attracted by the good investment opportunities in this country, some foreign companies have invested in Nigeria. Nigeria has an annual market of \$30 billion and it is the logical platform from which to sell into the regional West African markets (O'Connor, 1994 and Business Africa, April 1993).

Government policies tend towards the encouragement of foreign investment, especially in the manufacturing and high-technology sectors. Some incentives are in place for domestic and foreign investors. Incentives specifically aimed at attracting foreign investment include tax exemptions on interest paid on loans secured by foreign companies and on interest received on bank deposits in Nigeria by nonresidents.

The Federal Ministry of Finance is responsible for basic exchange control policy. The Central Bank is the principal administrator of foreign exchange regulations. This Bank has currently deregulated the foreign exchange market, aiming to make the Naira a convertible currency. In August 1995, a new investment promotion decree and foreign exchange decree were enacted. These decrees, allowing 100% foreign ownership in the solid minerals sector, are expected to stimulate investment in the mining sector (MBendi Information Services, 1998).

Despite the encouraging steps in 1995 and 1996, including the lowering of interest rates and the easing of restrictions on foreign exchange and foreign investment, there are major problems confronting Nigeria that can be solved only by a lengthy period of political stability supported by sound, market-based economic reforms, without which Nigeria will not receive fresh inflows of foreign investment. Among the reasons for the

reluctance of foreign investors are the high infrastructure costs (electricity, water, roads), a heavy bureaucratic presence with a high capacity for obstruction and delay, and the inconsistent and unpredictable nature of government policy (Forrest, 1995). The principal areas to be pursued are a further liberalization of the exchange rate⁶, an enhancement of budgetary transparency, the continuation of the campaign against corruption and unnecessary public spending, and a fresh privatization drive (EIU Country Profile 1997-98).

7.4.6 Concluding Remarks

Because Nigeria is very dependent on oil, instability of petroleum prices and environmental problems led the government to turn its attention to solid minerals. To this end, the "Solid Minerals Development Ministry" has been established. This Ministry has already unveiled plans, such as tax holidays, the establishment of a reliable geological data, and stringent controls over illegal mining, to boost mineral production and exports. Despite the encouraging steps in 1995 and 1996, Nigeria needs to pursue economic and administrative reforms, without which it will not receive fresh inflows of foreign non-oil investment.

7.5 SUMMARY OF LESSONS FROM CASE STUDIES

7.5.1 Special Features in Mining Investment

The special features of the mining industry (e.g., extremely capital-intensive, lengthy pre-production period, non-renewable nature of resources) have led many countries (like Chile, Indonesia and Nigeria) to provide for special tax treatment in the form of allowances and incentives (see tax sections of case studies). However, overlooking

⁶ In January 1998, the Ministry of Finance of Nigeria announced that the government intends to phase out the dual exchange rate (MBendi Information Services, 1998).

capital intensity and long pre-production periods in the mining industry is a serious mistake. Indeed, some risks, like the increasingly unpredictable future economic conditions often linked with the political stability of the country are totally uncontrollable by the investor. Another risk is that associated with inflation. The impact of high rates of inflation on project economics can be significant indeed. A country that has good control on inflation is more attractive to investors (see section 7.5.4).

Now, let us see how Chile, Indonesia and Nigeria managed with these constraints.

7.5.2 Taxation Policy

Because of its major importance in attracting foreign capital to the country, the tax treatment of foreign investment is particularly important for LDCs. Chile attracted a considerable amount of foreign investment to its mineral sector by adopting a very clear taxation policy: the tax law guarantees the repatriation of profits and capital of a foreign investor. Law also grants a guarantee against inconvertibility. Foreign investment receives the same treatment as domestic investment and the taxes are not overly high. As mentioned, another important feature of the Chilean taxation system is that it allows investors, through "stabilization agreements," to "lock-in" specified tax rates for a period of up to 20 years.

The Indonesian government attempts to boost investment by introducing tax holidays for some investments and lowering income tax rates (see COWs, generation 6, 7 and 8). Also, the COWs before 1984 usually contained income tax incentives in the form of reduced tax rates and investment allowances but the changes were less significant than in Chile.

In Nigeria the low revenue yield of taxation can be attributed to the fact that tax provisions are not properly enforced, mainly on account of the inability of the administration to cope with them. However, apart from this, in 1992, the government

reduced the royalties payable on solid minerals and provided some tax exemptions on interest.

7.5.3 Laws and Regulations

Transparent laws and contracts are prerequisites for the security of foreign investors. Chile and Indonesia demonstrate, in different ways, the economic characteristics capable of attracting foreign investors. These include a coherent body of laws and regulations, and effective state institutions to support the mining sector.

In Chile, structural macroeconomic reform was followed by reform of the mining law, regulations and institutions, which were brought about by relatively strong executive management. The process of mining legal reform has been enhanced in Chile by constitutional reforms and the strengthening of private property rights. Chile offered further assurances to foreign investors in the form of stabilization agreements. The response of foreign investors was very positive. The key features of Chilean economic development are the reliability of the mining cadastre, the security of title and unrestricted transferability of rights under the Mining Code, and constitutional guarantees of mining property rights (World Bank, Industry and Mining Division, 1995).

Indonesia has also attracted mining investors by initiating its Contract of Work (COW) procedures, assuring security of contracts (under COWs, the terms are not subject to undesirable modification) and showing credibility (COWs usually take a clear and complete form).

As for Nigeria, one result of the political incompetence and economic mismanagement was the hostility of large corporate business interests. The Central Bank became bogged down in complex regulations and control and could not play an effective policy and monitoring role.

With respect to the mining code and foreign investment law, table 7.9 shows the main features of the mining legislation for each country, and table 7.10 emphasizes the special regulations concerning foreign investment.

Table 7.9 Main Features of Mining Code (M.C.) for Studied Countries

Country	Indonesia	Philippines	Thailand
Date of Most Recent M.C.	1983	1976	1977 (Modified in 1995)
Exclusive Ownership of Mineral Deposits			
Minerals Classification	No Classification	Strategic, Vital and Group 3 (Others)	Strategic & Large and Others
Investment Encouraged		Strategic and Vital Minerals	Strategic and Large Minerals
Mining Permits	Exploration and Mining Rights	Mining Authorizations (KP=KUSA Pertambangan)	Prospecting Right Exclusive Prospecting License Mining Lease
Mining Permits are issued by	Ministry of Mines and Geology	Ministry of Mines and Geology	Ministry of Mines and Geology
Mining Investment Incentives	SSMs and Mining in Certain Areas (Extreme North & South)	Mining in Remote Areas	New Mining Projects Mining in Remote Areas
State Participation in Mineral Projects	Very Little	Production, through COWs and Private Companies	Massive Government Investment (Equity Sharing)

Table 7.10 Regulations Regarding Foreign Investments (F.I.) in Studied Countries

Date of the Most Recent Law	1977	1976	1995 (Investment Promotion Decree)
Foreign Investment Approval Authorities	Over \$5 million: F.I. Committee Below \$5 million: Executive Secretary of F.I. Committee	Capital Investment Coordinating Board	Ministry of Finance
Protection against Confiscation	Foreign Properties are Protected against Confiscation	Foreign Properties are Protected against Confiscation	Foreign Properties are Protected against Confiscation
Arbitration	International	International	International

7.5.4 Economic Stability and Inflation

Economic stability is crucial in attracting foreign investment and a proper fiscal and monetary policy is essential for economic stabilization. In Chile, both the government and the Central Bank have tightened monetary policy in order to continue reductions in the level of inflation. In 1997, the rate of inflation was 5%.

Indonesia has more difficulty in protecting the value of its local currency (Rupiah), because of political tensions and the volatile money markets in south-east Asia. It remains an important negative point for foreign investors.

Nigeria is still trying to reduce the level of inflation by the periodical introduction of new measures. The success of these efforts has been efficient in recent years.

Table 7.11 compares the different inflation rates for these countries.

Table 7.11 Inflation Rates (%)

	1997	1998	1999
Chile	9	8.2	6.6
Nigeria	57	72.8	28

Source: EUI - Country Profile, Chile 1999, Indonesia, 1998 and Nigeria, 1999.

7.5.5 Privatization

Privatization can have a decisive impact on the ownership distribution pattern in the development of capital markets. The privatization methods chosen and the quality of their implementation are of the greatest importance.

The Chilean experience of privatization, despite problems that have been created in the early years by massive privatization programs,⁷ determines the positive impact of privatization on government revenues and financial stability. Chile's economy is, in its most part, attributed to policy reforms of the 1970s and 1980s that created a dynamic.

⁷As mentioned earlier, Chile has experienced a severe economic crisis in the early 1980s. Many explained this crisis by the bad timing and haste of the government's liberalization policies. In general, the implementation of free-market policies which often requires elimination of price controls at early stages, reduces the purchasing power of people and creates severe inflation. Governments must take the necessary measures to handle economic difficulties during the stabilization period; otherwise, as seen in the case of Nigeria, these policies can fail.

export-led private sector. As a result, the Chilean economy is now open, with minimal regulations and few government interventions.

In Indonesia, despite a new process of privatization and deregulation, state-owned companies are still sizable and considerable bureaucratic procedures are continued. Foreign companies are required to form joint ventures with local partners. Therefore, a key success factor for foreign companies is the selection of a local business partner.

Nigeria also possesses a state-dominated economy. The privatization of the mineral industry is slow to commence; however, it is hoped that it has a good long-term promise.

7.6 CONCLUSIONS

The differences between the countries studies in terms of their ability to better use their endowment for economic growth, export diversification and structural change underline the role of government policy and regulations as a dominant factor controlling economic performance. As discussed, both Indonesia and Chile have been able to attract foreign mining investment at a rate at least commensurate with their perceived geological promise, and on terms and conditions generally favourable to the countries.

The positive response of foreign mineral investors demonstrates the efficacy of government policy in Chile. Chile has become already an example for the other nations. The Kyrgyz delegation to Vancouver, Canada, in the summer of 1995, is a prime example of the incentive to overcome inexperience and be amenable to new mining reforms in the Central Asian Region, based on the observations and lessons derived from Chile's experience.

Contract stability, predictability and credibility, together with the quality of natural resources are the keys that have made Indonesia successful as well. These qualities must be emphasized for the country to continue to build the future on its marketable past economic successes.

The Nigerian economy, despite massive oil revenues, has under performed. Factors such as high inflation, slow process of privatization and deregulation, and corruption, are responsible for weaknesses in the economy. However, the track record in recent years seems to show success in reducing uncertainties in investment. Like Iran, most of the government's funding is in the form of equity sharing. Thus, mining companies are neither burdened with debt service payments, nor face free market pressures. This policy resulted in lower efficiency. At present, a number of tax-related incentives are available equally to domestic and foreign investors.

CHAPTER 8

INVESTIGATION OF ISSUES IN THE MINERAL SECTOR OF IRAN: RESPONSE FROM INDUSTRY

8.1 INTRODUCTION

In previous chapters, Iran's mineral sector was characterised, and its performance during the first development plan was discussed. These discussions were based, to some degree, on a review of all the available data. However, statistics do not always provide a detailed picture. In order to gain further insight into the features of Iran's mineral sector and obtain the opinions of those directly involved, a country-wide survey was conducted. The survey covered those engaged in the country's mineral sector, from mineral policy makers in government to small miners. The survey followed a method is called *the participatory process* (Agarwala, Schwartz, and Ponchamni, 1994). To conduct this survey, the author travelled to Iran for the following three purposes:

- i. To conduct a survey in the form of a series of questionnaire-based interviews, in order to obtain views and comments of miners and managers of mining companies regarding current mineral policies, the mining code, foreign investment, and other issues relevant to mining activities in Iran;

- ii. To conduct personal open-ended interviews with key government officials responsible for the mineral sector, in order to define strategic components and other key issues relating to Iran's mineral policy; and,
- iii. To collect financial information (Balance Sheet, Income Statement, etc.) from mining companies of different sizes and different characteristics, in order to examine the economic performance and the financial position of these companies (especially large state-owned companies) during the FFYDP.

8.2 METHODOLOGY OF THE SURVEY

The overall methodology consisted of three phases. *Phase One*, was concerned with identifying the particular factors *critical to the health* of the mineral industry. First, the conceptual and theoretical issues germane to this study were identified from the literature review. The validity and relevance of these concepts or issues, especially for their place within the context of their respective environments, were further verified by a series of broad case studies. This phase formed the basis on which *Phase Two* of this methodology is based. The broad list of issues and concepts (from Phase One) was further reduced to *the most critical issues* of the industry. Critical was defined in relative terms and from the perspective of the three major operating entities in the mining industry: large state owned mining enterprises (LMEs), medium-sized, mostly private mining enterprises (MMEs), and the small-scale mining (SSMs) sector.

Data and information collection was the focus of *Phase Three*, which consisted of the following three steps:

- i. Developing an Interview Protocol. The data collection phase of the methodology allowed for and incorporated two strong cultural traits: the *oral history tradition* in Iran (as in many developing countries) and the *time-honored practice of selflessness* (i.e., most people prefer not to speak of their accomplishments or troubles, especially to

strangers). It was felt that engaging respondents (especially those from SSMs) in an informal discussion first would be much more fruitful than imposing on them a formal self-administered questionnaire. The former would be more conducive to collecting realistic and in-depth information. Respondents could easily shy away from the latter altogether.

- ii. Therefore, a questionnaire, the outline of which would be used initially as the *protocol* for questions and discussions and then as a formal questionnaire was designed.
- iii. To pilot test this protocol and the questionnaire, a series of open-ended, yet semi-structured, interviews were conducted with miners. Based on the issues raised at this level, some modifications to the protocol and the questionnaire structure were subsequently made.

The overall process of the survey involved a two-way exchange session that encouraged sincerity and openness. It was hoped that the face-to-face exchanges would allow for developing insights into what was actually "*on the ground*". Thus, although the survey caused considerable bureaucratic turbulence and required substantial financial resources, the hope was that it would go some ways in addressing the future planning of Iran's mineral policies.

The next stage involved selecting a number of individual and co-operative miners and mining companies who would be invited to participate. This was carried out using a *stratified sampling method*. Of the 24 provinces, the 10 most active in mining and metallurgical activities were selected. These provinces represented 71% of total mineral extraction, 69% of total value-added, 76% of total investment and 64% of employment in the mineral sector¹. Regarding the number of respondents, the survey involved some 143 individuals. As the views of various groups active in the mining sector may vary in some respects, four groups of respondents were surveyed in order to fully understand the different

¹ According to the 1995 census of industries and mines, conducted by the Iran Statistical Centre (1996).

perspectives of all those involved in mining activities:

- a) Small-Scale Mining (SSMs) sector. This group consisted of private miners active in mining co-operatives and small operations. They produce a variety of mineral substances, such as potash, asbestos, limestone and decorative stones.
- b) Medium-Size Mining Enterprises (MMEs). This group consisted of a mixture of some private mining companies and some mixed (private and state) mining companies. Two parameters distinguish this group from SSMs: the volume of annual sales in these companies is more than \$1 500 000, and the number of employees is more than 200.
- c) Large-scale Mining Enterprises (LMEs). This group consisted of totally state-controlled large mining companies active in exploration, mining and mineral processing of steel, copper, gold, lead and zinc.
- d) Government Administration for mining activities (ADMIN). This group consisted of government officials responsible for the mineral sector of Iran, mainly directors and specialists, from the MMM and its provincial offices²

For the purposes of representativeness, it was important to include sufficient numbers from each group in each province in the survey. For this purpose, all mining company managers

² Positions of some interviewees from this group are listed below:

Deputy Minister for Mining and Mineral Processing;
Deputy Minister, Administrative, Finance and Parliamentary Affairs;
Advisor to the Minister, Planning and Production Control;
Head, Planning and Programming Division;
Director General of Industries and Mines Department in the Iranian Organization for Planning and Budgeting;
Advisor, Non-ferrous Metals Industry Division;
Advisor, Ferrous Metals Industry Division;
Director General, Department of Exploration;
Director General, Department of Mining;
Director General, Department of Provincial Affairs;
Director General, Department of Administrative Affairs;
Director General, Office of Monitoring and Co-ordinating of Financial Affairs; and,
Director Generals and Heads of Exploration and Mining Sections in many provincial offices of the MMM.

were invited to take part in interviews held in the provincial offices of the MMM. In some instances, however, the author visited the companies and interviews took place on location. Since it was not feasible to interview all individuals or members of mining co-operatives, certain zones in each province were selected based on the information published by the MMM. These were subsequently visited. Thus, the interviews with small-scale and co-operative miners took place at their work site.

For increasing the reliability of the data collected and the efficiency of the time and effort involved in conducting the interviews, especially from remotely-located SSMs, the following three steps were taken sequentially: a) an informal, passive and exploratory discussion of issues guided by the protocol, b) a semi-structured interview, following the protocol and c) formal response to questionnaire by the respondent. Both the questionnaire responses and the notes taken during the discussions/interviews constitute the database on which this chapter is based³.

The following gives a summary of the survey respondents:

³ The interviews were video-taped on occasion, in order to provide a visual documentary of the trip.

Table 8.1 Summary of Information about Survey Respondents

Number of interviews and questionnaires:	Total	%
Number of persons who were only interviewed (mostly key persons in the MMM)	30	21
Number of persons who were interviewed and filled out the questionnaire	113	79
Total	143	100
Geographic Coverage:	10 Provinces	
Scope of activities of respondents:	Total	%
Direct mining activities (Exploration, Exploitation, Mineral processing, Marketing)	105	74
Research and Development	6	4
Training	7	5
Administration	25	17
Total	143	100
Size of the firms / mines:	Total	%
Small	54	38
Medium	24	17
Large	40	28
Administration	25	17
Total	143	100
Type of ownership:	Total	%
Private	61	43
State-Owned	40	28
Mixed	17	12
Government Agencies	25	17
Total	143	100

The remainder of this chapter provides an analysis of each of the items in the questionnaire⁴. This analysis takes the form of a short explanation of the issue concerned, a statistical examination of responses, a conceptual discussion and concluding remarks⁵.

8.3 MINERAL EXPLORATION

Exploration is generally the first step necessary to convert a speculative storehouse of minerals into resources. Mineral exploration is perceived as risky, because the location, quantity, and quality of mineral deposits are unknown and must be determined. When exploration activities in a country diminish, that country cannot be expected to sustain its current level of mineral production in the medium to long term. There is generally a long time lag between exploration and development of mineral deposits.

From the viewpoint of any mining company, there are three reasons for investing in exploration: first, new reserves must be found in order to survive in the mining business. Second, locating deposits that cost less to extract should increase profit margins. Third, some companies benefit from knowing how much of a particular mineral exists, as they can speculate on the price (Gilbert, 1979). However, the way in which exploration investment is made depends to some degree on how the process is regulated.

8.3.1 The Survey Question

In an attempt to determine the obstacles to investment in exploration activities, as well as to invite comments and suggestions concerning the removal of such obstacles, the following

⁴ All table results throughout this chapter are given in percent, unless otherwise mentioned. Also, the number and kind of respondents for all questions are as follows, unless otherwise mentioned: Respondents from SSMs: 54, respondents from MMEs: 24, respondents from LMEs: 40, respondents from ADMIN: 25, total number of respondents: 143.

⁵ All recommendations are based on a thorough analysis of responses free of prejudice.

question was asked from the various groups of respondents.

"Is the overall exploration process in the mineral sector of Iran technically sound?"

As can be seen from the table below, more than 55% of every group (67% of LMEs) responded "no" to this question. The group with the highest amount of "yes" responses was the MMEs (29%).

**Table 8.2 The Appropriateness of the Overall Exploration Process
In the Mineral Sector of Iran (values in %)**

Category	SSMs	MMEs	LMEs	ADMIN	MINSEC
Yes	9	29	13	16	15
No	36	52	67	36	52
No answer	35	17	20	28	26
Total	100	100	100	100	100

SSMs: Small-Scale Mining, MMEs: Medium-size Mining Enterprises, LMEs: Large Mining Enterprises, ADMIN: Administrative Respondents and MINSEC: the Mineral Sector of Iran (SSM+MME+LME+ADMIN).

Following on from this, the respondents were asked to give their comments and recommendations regarding the present situation of exploration and also on how Iran could enhance exploration investment. Their responses and *most frequently repeated* comments are presented below.

8.3.2 Comments on Exploration by Respondents

Comments on Exploration by SSMs

- i. The MMM does not provide explorers with sufficient geological and other information helpful for exploration;
- ii. In larger mining companies (ferrous, non-ferrous), exploration procedures are satisfactory. However, exploration activities of small mining companies and co-operatives leave a lot to be desired, mainly due to lack of equipment, expertise, and

capital;

- iii. If only qualified miners were awarded Exploration Permits (EPs), the exploration process would be more efficient. As the MMM issues EPs indiscriminately, one should not expect too much from the exploration efforts of SSMs;
- iv. The provision of long-term loans to qualified applicants will improve exploration activities;
- v. One year long Exploration Permits awarded to the co-operatives is not sufficient⁶. Exploration periods need to be at least three years long; and,
- vi. If the private sector is given sufficient resources for exploration, it will do a good job;

Comments on Exploration by MMEs

- i. In SMEs in general, and particularly in the Iranian National Steel Co. (INSCO), exploration is being done in a proper way, but exploration carried out by small enterprises is unsatisfactory;
- ii. A specific organization should be appointed to supervise exploration activities. I (the respondent) nominate the Iranian Geological Survey (IGS) to supervise all exploration efforts;
- iii. We should use foreign capital and expertise for exploration purposes. For the time being, we lack the required financial backing, expertise and equipment for efficient exploration;
- iv. The EPs awarded to the private sector should be extended. There is also the problem of the license holder extracting and selling minerals illegally. I (the respondent) suggest that the MMM should attempt to exercise greater control over the activities of explorers;
- v. The MMM should carry out the exploration and preparation activities of the mines and

⁶ This restriction was recently eliminated in the new mining code of Iran (see chapter 5).

subsequently put them in tender for development and production;

- vi. The MMM can monitor, supervise and even carry out exploration activities if its employees are financially motivated;
- vii. The MMM should offer technical assistance to private sector explorers, and banks should provide loans for exploration; and,
- viii. The MMM should carry out economic viability studies for the development of various mineral deposits, once discovered. This information should be made available to those who intend to develop mines.

Comments on Exploration by LMEs

- i. Satellite facilities should be used in exploration;
- ii. Exploration methods should be modernised by promoting more geophysical surveys, geo-engineering investigations and geo-statistical studies;
- iii. Systematic exploration should continuously be carried out by the Government in strategic and precious minerals over a sustained period of time;
- iv. Explorers should have the required knowledge and experience and/or exploration activities should be supervised by experts⁷;
- v. Exploration should be left to the private sector. This will improve the quantity and quality of exploration activities;
- vi. Due to its high cost, exploration is not being carried out in a systematic and correct way by small mining companies. Even in LMEs, exploration efforts are not entirely satisfactory;
- vii. Due to a lack of a specific exploration data bank, there are many repeated efforts in

⁷ According to the MMM's new policy, all exploration applicants should either possess the required expertise or secure the services of an expert, either an individual or a company, to supervise the exploration operation.

exploration;

- viii. The MMM should arrange exploration training programs for SSMS;
- ix. LMEs should adopt new technologies in exploration;
- x. More co-operation between explorers and the MMM and its affiliated institutions need to be established;
- xi. Lots of experienced people are active in exploration activities. I see no problem here;
- xii. The problem is that the exploration information is not published. It is not easily available. For some reasons the exploration data are kept in personal archives;
- xiii. Regulations regarding EPs should be modified, so that they are awarded only to experts; and,
- xiv. Exploration needs large amounts of funds. Presently, the private sector does not show a strong interest to be involved in this risky business. Instead, the government becomes involved and then leases the properties out to the private sector.

Comments on Exploration from Respondents in Administrative Positions

Respondents in this category were employees of the Ministry of Mines and Metals (MMM), and the Organization of Planning and Budgeting of Iran (OPBI). A summary of their comments is given below:

- i. Exploration in the ferrous and non-ferrous metals sectors is satisfactory. The private sector lacks the incentives to conduct exploration *per se*, or at least in a satisfactory way;
- ii. At present, due to high expenses and risks associated with an exploration program, the private sector is not particularly active in exploration of precious minerals and non-ferrous metals;
- iii. Most people, following a recent engagement in small mining operations, would like to recoup their investment as soon as possible. Thus, they tend to avoid involvement in

long-term mining activities and policies;

- iv. Training programs for prospectors are essential. Also using new methods and upgrading the existing technology is highly recommended;
- v. A major obstacle at present is that banks normally do not participate in the financing of exploration activities. The Ministry of Mines and Metals should negotiate with bank authorities to convince them to provide loans for exploration;
- vi. Those involved in exploration should be guaranteed that they can lease the mine for a period of at least 20 years. This will improve the confidence of miners to invest in exploration;
- vii. The government should precisely determine the areas and minerals that are free for exploration by the private sector;
- viii. We should consider the experiences of other countries. For instance, in Turkey, the government has established two companies: one carries out exploration work, and the other prepares discovered deposits for development. Once prepared, the mines are leased out to the private sector for exploitation;
- ix. Exploration data is not regularly updated and is kept in a fragmented and scattered state. The MMM should collate all the available data and make it available to the public⁸;
- x. According to the Mining Code, the prospector is eligible to either receive a reward and leave the mine for government disposal or be granted the mining rights. In most cases the former situation occurs. The MMM should attempt to encourage the second option as often as possible⁹; and,
- xi. When the Exploration Department was active in the MMM, exploration in the country

⁸ Recently, exploration and mining information has been computerized in the MMM.

⁹ According to the new mining code enacted in July 1998, mining rights are being granted to explorers for a period of 25 years (see chapter 5).

was carried out reasonably well.

8.3.3 Concluding Remarks

Generally, as mentioned by some respondents, systematic exploration in the ferrous and non-ferrous sectors is being practised. This is because some large SMEs are responsible for exploration in these sectors. They possess the required funds and the expertise to carry out this task. Although the information on the amount of funds spent in exploration from the internal sources of SMEs was not available to the author, the 1996 MMM report stated that the targeted exploration activities of SMEs to be funded from their internal sources had been implemented according to plans. However, as is apparent from various sources (i.e., less investment in exploration activities according to the 1996 report of the Organization of Budgeting and Planning of Iran, the results of this survey, and the author's observations), exploration activities of other sub-sectors are not satisfactory. At this point, some issues are noteworthy with regards to exploration.

(i) The Role of Government in Exploration: One important issue here is the role of government in exploration. As was apparent from the survey responses, there were contradictory ideas regarding the government's role in exploration activities. Some respondents believed that exploration should actually be carried out by the state, others believed this activity should be left to the private sector.

Sinding (1993) in his analysis about the role of government in exploration, explains that exploration information can have both public-goods (or local information) and speculative value. "Local" refers to situations where the results of one firm's exploration efforts bring benefits to other firms. Without the availability of such information, many firms will explore land where only one firm is needed to explore. This over exploration leads to unnecessary investment.

The speculative value of information may cause a problem, which is particularly apparent in competitive bidding for leases. In an auction, by having information before a competitive bid for leases, a company may obtain a monopoly (as other firms are less able to value the land and put in a winning bid). Distortion resulting from the speculative nature of exploration information has implications for mine leasing and government exploration.

Government exploration prior to leasing can reduce pre-sale exploration. Thus, although government exploration may not be a good alternative, most governments engage in research closely related to mineral exploration. Maintenance of extensive geological surveys by most governments may be explained by the fact that markets do not generally invest in such things (as the information represents prohibitively large sunk cost).

(ii) The Issue of Exploration Permits: In recent years, the MMM has granted Exploration Permits (EPs) to almost every applicant, with the assumption that this will increase and improve exploration activities. Many respondents believed that this policy did not facilitate the overall expansion or improvement of exploration activities by the private sector. The experience of other countries tells us that the granting of EPs indiscriminately is a good policy to enhance exploration activities (Otto, 1998, Barry, 1996, Strongman, 1994, Averill, 1993, World Bank Technical Paper No. 181, 1992). However, every permit holder should employ a specialist to provide technical assistance. The administrative respondents supported this policy, and believed that any restrictions in awarding EPs will be a threat for mining activities.

(iii) Enhancing Exploration Activities: The government should create a conducive environment to encourage private sector investors to invest more funds in exploration activities, and commit the funds for a longer time in order to boost mining activities using private, rather than treasury funds. Both the public and the private sectors should be encouraged and assisted to employ satellite facilities and use more advanced technology in exploration activities. Training programs for explorers, in particular for SSMs, is very

productive, and is being practised in a number of LDCs. The Institute of Mining Training and Research, affiliated to the MMM, should expand exploration training courses and make them more comprehensive.

(iv) Trade of Exploration Permits in the Market: The sale of Exploration Permits (EPs) in the free market was not allowed at the survey time. However, the transfer of EPs in the case of small operations was believed to be common. In order to know whether this practise was common and if so, to what extent, the following question was asked.

"In general, is the exchange of Exploration Permits between the legal owners of these permits and third parties in the market a common practice?"

The answers are summarized in the following table (this question has not been asked from LME respondents, due to their lack of knowledge).

**Table 8.3 The Exchange of Exploration Permits
Between the Legal Owners and Third Parties in the Market**

	SSG	MM	ADMIN	SUM
Yes	67	71	52	64
No	13	12	22	17
No answer OR I don't know	20	17	16	19
Total	100	100	100	100

Overall, 64% of respondents believed that the EPs were being traded in the free market. This shows that this is a common practice, and many respondents believed that there are no effective means to prevent its occurrence.

In most countries, exploration permits are freely tradable and the elimination of restrictions in the trading of exploration rights is frequently suggested (For instance see: Otto, 1998; Barry, 1996; Strongman, 1994; World Bank Technical Paper 181, 1992; and Kumar, 1992)

as an effective way to boost investment in exploration activities. On the other hand, the answers to this question showed that there is a practice of trading exploration permits, particularly in the case of small deposits. Given all these facts, therefore, the elimination of restrictions on the transfer of exploration (and also mining) permits appears logical¹⁰.

8.4 MINING LAW

In general, mining law may be defined as consisting of all the laws, regulations and guidelines that directly affect mineral development (Walde, 1989). Traditionally, the mining law has served as a tool for establishing the conditions under which mining rights can be acquired, transferred, and terminated. More recently, the major function of mining law has been to articulate and clarify the government's policy towards this sector of the economy. It deals with issues such as ownership (public or private), regulation by mineral development agreement, investment promotion, and environment stewardship, among others. It also establishes the administrative procedures and sets up the specific criteria used for granting mining titles.

8.4.1 History of Mining Law

Gabre-Maryam (1989) provides an interesting discussion on the features of recent mining legislation. The following is a summary.

Mineral legislation embodies a country's mineral development policies in legislative instruments. Most legislations since the establishment of a New International Economic Order and the Charter of Economic Rights and Duties of States, both adopted by the United Nations General Assembly in 1974, assert that with few exceptions, a land's mineral

¹⁰ In the new mining code of Iran, the transfer of EPs are allowed with prior permission from the MMM.

resources belong to the state, and not to the owner of the land. Although in some countries individual land owners/processors may retain some rights to certain minerals, the state ultimately controls the method of development of these minerals.

In the 1960s and early 1970s, the world's economic performance was good and the outlook was optimistic, therefore, the LDCs were in a strong negotiating position. Equity and loan capital for projects were readily available, and the prices of mineral commodities were stable. However, the mid-1970s brought world-wide economic recession and the drying up of investment funds, which forced most developing countries to examine their mining investment and taxation legislation, leading to restrictive policies. However, that picture has changed radically with the more recent legislation, in which most governments encourage prospecting and extractive ventures. These governments encourage investment through a stable and precise legal framework of their mining codes designed to recognize that mining exploration methods are expensive, long-term, and inherently risky.

These changes are noticeable in a number of new mineral industry investment laws enacted in countries like Botswana (1976), Columbia, Chile, Egypt, Argentina, Zambia and Indonesia (1977), Cameroon (1978), Trinidad and Tobago, Nigeria, Burundi, China, the Philippines and Mauritania (1979), Sudan and Malaysia (1980), Djibouti (1981), Liberia (1982), Algeria, Burkina Faso and Ivory Coast (1985), Ghana and Zaire (1986), and Nepal and Guinea (1987) (Ibid.).

The new legislation, while preserving permanent sovereignty over resources, invariably provides financial incentives such as: tax holidays, lower tax rates, accelerated depreciation, lower royalties in the initial years of operation, exemptions from withholding taxes on dividends and interests, tax credits for domestic purchases, and guarantees with respect to foreign exchange remittance of profits, equitable compensation in the event of expropriation, and settlement of disputes through international arbitration rather than through domestic courts.

These laws also often carefully define the relationship between the operator's licensee and the state as sovereign owner of the mineral properties. They also define the relationships between the surface owners and the holders of mineral rights as well as among the operators themselves.

As most of these countries lack sufficient finances, technical ability, marketing connections, and the managerial skills required for large scale mining operations, there is a strong tendency to contract out to foreign controlled entities. The investor undertaking the development of such a mineral property is often in partnership with the government in a joint venture or in a consortium which includes multinational institutions. Their job is to spearhead profit-motivated development by encouraging private investors who would otherwise be unwilling to invest, due to the perceived high-risk of the venture.

8.4.2 Main Features of Anglophone Mineral Titles

In English speaking countries, mineral titles are granted according to the scale of mining development, the type of mineral, extraction method, and the stages of mineral development. Most modern statutes allow the minister discretion in classifying minerals. In Tanzania, Zambia and Botswana, building and industrial materials fall-in one class of licensing arrangements, while in Malaysia and Tanzania, among others, precious stones are given special treatment. This separate licensing treatment in some jurisdictions also applies to radioactive materials.

Although the scale of mining development is not explicitly defined in most mining acts, size is usually taken into account, when awarding mineral rights for certain minerals. Licences for relatively unsophisticated small-scale operations generally involve smaller areas and are issued for shorter periods.

(i) Large-scale mining operations: prospecting or reconnaissance licence¹¹

A prospecting permit or a reconnaissance licence typically:

- i. Confers on the holder the right to explore for 12 months, is renewable, and allows the installation of camps, and temporary buildings;
- ii. Requires the applicant to describe a prospecting program with estimated cost.
- iii. Requires the applicant to report adequate plans for training of locals and procurement of local goods and services;
- iv. Is refused if the applicant does not possess adequate financial resources and the necessary competence and experience;
- v. May prohibit transfer or assignment of any interest or rights contained therein without prior authorization;
- vi. Generally confers no exclusive right of the search over the reconnaissance area, though it may award exclusivity over minerals discovered during the terms of licence. The government may issue other licences for other minerals in the same area; and.
- vii. Does not confer on the holder any rights to remove or destroy materials found, without authorization.

There are also obligations on the distribution of information and reports for the intent of monitoring all stages of operations. The reconnaissance licence is a useful device for investors to identify all the important aspects of the terrain before investing large sums on exploration programs.

¹¹ Compiled from Gabre-Maryam, 1989.

(ii) Exploration Licence

The second type of mineral licence is called an Exploration Licence or Permit. The duration of the license is usually 3-5 years with automatic renewal for those who are not in default. With prior consent of the authorities, assignment, transfer or sale of mineral rights is possible. At this stage, detailed logs of the exploration efforts must be kept, and periodic reports must be submitted.

(iii) Development Rights

The final stage is the granting of development rights which are given to an exploration license holder who has a) established that the mineral for which he holds a license exists in commercial qualities within his exploration area; b) has sufficient financial resources; and c) has satisfactory technical capabilities. With the exception of small-scale mining operations and building and industrial minerals, no mining can take place without the granting of a mining lease. No mining lease can be granted unless the authorities are satisfied that the rights of any other exploration license holders for that land would not be substantially prejudiced by the granting of the lease, that all license-holders for that land consent the granting of the lease, or that it is in the public interest to grant the lease. However, as the licence-holder may resubmit an application for development rights, some provisions concerning this process may restrain the authorities, particularly subordinate officials, from behaving arbitrarily in exercising their statutory powers.

The maximum period for which a mining lease is granted is 25-30 years, often giving a limited right of renewal that is within terms and conditions set by the holder and the authorities. If the holder of a mining lease finds further deposits of the mineral specified in the mining lease, or a mineral not specified in the mining lease, the issuance of an additional lease or the modification of the existing one is often guaranteed.

(iv) Small Scale Mining Operations

In most countries, world-wide, regulatory schemes for large-scale operations tend to consist of the three-step system described above. Under most mining acts, a much simpler licensing procedure exists to promote small-scale mining. For instance, substantial expenditure is not a condition for the granting of rights either at the exploration or mining stage. Small-scale mining rights are usually granted only to nationals or to national institutions such as co-operative societies or registered villages. In most LDCs, industrial and building minerals are licensed as small-scale operations.

Since the conditions put upon the small-scale miner are minimal, the title of the small-scale miner to prospecting and mining rights is less secure than that of the large-scale miner. The administering authorities, however, are generally granted wide discretionary control to impose other conditions deemed necessary by government policy (Barry, 1996; Kumar and Amaratunga, 1994).

8.4.3 Main Features of Francophone Mineral Titles

In French speaking jurisdictions, the grant of mineral rights, both for large and small-scale mining, is slightly different from those described in the previous section. Minerals are divided into two basic categories: mineable and quarriable substances. Although quarries belong to the surface owner, their exploitation is subject to conditions set by the government. On the other hand, minerals belong to the state.

There are different types of permits regarding mining. The first is personal authorization, which is granted for one or more minerals over a specified territory. It is entirely discretionary, covers a limited time, and can be revoked at will. A Search Permit is similar to the Anglophone exploration license, and is an exclusive permit over an area for a designated mineral or minerals. This permit is renewable, provided the holder does not

breach any regulations. Although the permit cannot be leased or mortgaged, it can be transferred or relinquished. Any search permit holder who discovers commercial quantities of a mineral, and who has financial and technical resources, is entitled to an Exploitation Permit, which gives the right to exploit the mineral. Although this permit is for a shorter period, it can be renewed as many as four times. A concession follows the Exploitation Permit, and is granted for no less than 30 years, giving the holder extensive powers to exploit the mineral for which the permit is granted.

All the traditional rules found in English speaking jurisdictions governing the relationships between mine operators, surface owners, and lawful occupiers are also meticulously prescribed in these French speaking jurisdictions.

8.4.4 Stability of Fiscal Regimes

Mineral exploration and development require years of active effort, as well as large amounts of capital, which is generally in short supply in LDCs. It is invariably the investor who must provide all the risk capital (equity) in the early stages of mineral exploration. As a mixture of risk capital and loan funds is common at the production stage, it is not unusual for the host government to seek out some kind of equity participation. Thus, the prevailing fiscal regime and the investors' expectations as to continued stability in the jurisdiction of mining operations have an important bearing on investment decisions. The overall fiscal burden and its composition, mainly payments as a share of gross revenue and of profits, and the timing of these payments to the host government are extremely relevant to the decision to invest.

An unstable fiscal regime may justify a higher risk premium on the investor's discount rate used to calculate the net present value of the project. Before putting up the risk capital, investors want to know about royalty, tax and foreign exchange arrangements. Thus, if a government wishes to promote the development of its mineral sector in association with foreign private investors, it is essential to have a clear policy on these issues.

8.4.5 Survey Questions

In the survey, two questions were asked about the mining code. First, it was necessary to know how many of those involved in mining activities were adequately familiar with the mining code. The results are shown in the following table. As can be seen, only about one third of the respondents from SSMs were quite familiar with the Mining Code of Iran (MC), while 71% and 88% of respondents from MMEs and the Administration, respectively, were quite familiar with the MC.

Interestingly, only 63% of respondents from LMEs were adequately familiar with the MC. This is because the LMEs have very little relationship with the MC. As will be discussed later in this section, a major drawback of the MC is that it does not dominate the main activities of LMEs. Another interesting observation was that 33% of respondents were not adequately familiar with the MC, the law that governs their mining activities.

Table 8.4 Familiarity of Respondents with the Mining Code of Iran

	SSM	MME	LME	ADMIN	MINSEC
Adequately familiar	33	71	63	88	57
Not familiar enough	15	17	0	0	9
Total (%)	100	100	100	100	100

The second question asked was concerned with the opinion of respondents about the country's mining code. From the beginning of the FFYDP, the idea of revising the MC was raised in the MMM and among the mining companies. A group of specialists was assigned to review the MC and to comment on changes needed to make it more attractive for investment and mining activity.

As the table below indicates, the majority of respondents (about 60%) replied that the MC needs minor revision. Only 3% of respondents believe that the MC needs a major revision. Among the various groups of respondents, governmental agents favoured modification of the MC. Again, as the large state enterprises have fewer dealings with the Mining Code, they were less concerned about difficulties arising from the current MC.

Table 8.5 Views of Respondents about Revision of the Mining Code

Category	USSM	EMME	LME	ADMIN	MINSEC
Major revision	2	0	5	4	3
Minor revision	67	46	40	30	33
No revision	16	33	22	12	20
No answer	15	21	33	54	44
Total (%)	100	100	100	100	100

As a supplement to the above question, those polled were asked to list those parts of the MC they felt needed to be modified. Their answers are summarized below:

8.4.6 Comments of Respondents Regarding Iran's Mining Code

- i. The problem is that every employee at the MMM considers himself/herself to be the interpreter of mining law. The mining code should establish an article, clearly stating a specified person/body/unit whose responsibility is to ensure that this law is enforced fairly;
- ii. In order to improve the current mining code, the MMM should ask the views of miners/mining companies, especially those in the private sector, regarding the changes required. These should not be limited in the private sector, provided they have the required expertise;
- iii. The procedures for obtaining EPs are good. The mining code should encourage mineral

- processing. Therefore, the period of mine exploitation should be increased to 30 years;
- iv. Although the mining code itself is a good law, other amendments and directives issued by the MMM make things complicated. Each Deputy of the Minister sees himself as a lawmaker, and/or interprets the mineral code subjectively;
 - v. If the private and public sectors were treated indiscriminately by the mining code, the result would be a boom in mineral activities; and,
 - vi. The bureaucracy of issuing mining rights should be reduced, and the procedures for the collection of royalties should be spelled out in the law.

8.4.7 Concluding Remarks

Due to a scarcity of public funding for mineral development in the country, the mining law must be such that it can in itself attract private financial interest. Accordingly, the mining code serves a very important function in presenting prospective investors with a clear, consistent, and approved set of guidelines for mineral investment. The law should not be a legal camouflage, but should instead be a professional statement for articulating the country's policies towards investment in mining ventures (Walde, 1989).

Modern mining codes intended to provide a framework for large-scale private investment rest on two guiding principles: the investor has a right to explore for and mine minerals in return for specific commitments which can be assessed and monitored; and the investor should have secure and long-term title to mining rights. The mining code should treat all investors equally, public and private, domestic and foreign. The mining code should encourage efficient and orderly exploration and development.

Attitudes towards national sovereignty, the regulation of mining activities, and the need for investment all have influence on the drafting and enactment of mining legislation. Policies of other countries, drawn from a comparative survey, may also be beneficial in drafting new

mining law. In Iran, like many other developing and some developed nations, sizeable public sector organizations for mineral development exist. The mining code itself, however, is partially market-driven, and partially centrally-planned. In order to increase private sector investment in mining ventures, the mining code of Iran has to be modified¹². In particular, the length of mining lease permits should be extended to at least 20 years.

8.5 THE LABOUR LAW

The Labour Law is the main legislation that regulates industrial relations and protects the rights of both workers and employers in Iran. The Labour law summarises specific minimal standards regarding salaries, working hours, overtime, etc. In Iran, a legal workweek is 40-44 hours and the annual leave is 30 days. Workers in Iran are protected by the Social Security Act, which contributes to medical treatment, compensation for work-related accidents, disability, death and the like. Such indemnity is funded from 7% deductions in employee salaries as well as 21% paid by employers.

The existing Labour Law, enacted in 1984, is quite similar to the previous law, which had been in existence for 30 years. The main difference between the two appears in three aspects: reduced working hours, restrictions on dismissal of workers, and tougher health and safety regulations. These changes, while beneficial to the workers, met with opposition from employers.

Some groups of employers believed that the labour law needed a complete overhaul, whilst others believed that only minor modifications were required. Labour law is important in any investment decision, including particularly foreign investment, and due to the variety of opinions regarding the existing law, labour law was one of the main issues of concern in this survey.

¹² This comment was driven from the author's survey. As mentioned, during the course of this research, the mining code was modified in order to attract new investments in the mineral sector.

8.5.1 Survey Questions

To this end, two questions were asked. The first question was, “*How do you rate your familiarity with the labour law?*” and the second question was, “*Does the labour law need revision?*”

With regard to the first question 33% of respondents from SSMs, 72% from MMEs, 56% from LMEs and 50% of mining administrative respondents were adequately familiar with the labour law. As seen, two out of three small-scale miners were not adequately familiar with the law. This is partly due to the fact that most small-scale operators often employ few workers, the majority of whom are family members, relatives, close friends and non-trained workers. Since the labour law exempts family businesses, and, to some extent, other small businesses, these do not have many dealings with the labour law. Only 50% of administrative respondents were adequately familiar with the labour law. This is surprising, because although some of those respondents have no direct connection with this law, they should be adequately familiar with it due to the nature of their responsibilities. The following table gives the complete results.

Table 8.6 Familiarity of Respondents with the Labour Law

Category	SSM	MME	LME	ADMIN	MUNSEC
Adequately familiar	33	71	55	52	49
Somewhat familiar	24	14	23	32	29
Not familiar enough	-	4	-	8	2
No answer	43	11	22	6	20
Total (%)	100	100	100	100	100

With respect to the second question, 20% of all respondents believed that the labour law needs major revisions. About 30% believed that it requires minor revisions, namely the articles related to the dismissal of the workers, which under the existing law is not easily

done. Some 33% of respondents saw no need for the revising the law. These statistics show that strangely, the administrative respondents were most in favour of changes in the labour law, even though half of them were not adequately familiar with it. The following table provides results associated with the second question.

Table 8.7 Views of Respondents about Revisions to the Labour Law

Category	SSME	MME	LME	ADMIN	CONS/G
Major revision	13	33	18	24	20
Minor revision	26	22	28	17	20
No revision	46	33	22	24	33
No answer	15	12	32	35	27
Total (%)	100	100	100	100	100

The following is a brief review of comments given by the respondents. This section is divided into the categories defined in the survey.

8.5.2 Comments from Respondents

Comments from LMEs

The Labour Law, as mentioned, is there to protect the rights of both workers and employers. However, many respondents believed that the Ministry of Labour and Social Affairs, responsible for supervising this law, has so far failed to apply the law fairly. They mentioned that while the ministry has maintained its continuous support for the workers, it has created a lot of constraints on their employers (mostly industrial investors).

This has increased the cost to industrial investors and has made the market very competitive. The industry market is, therefore, very expensive for new industrial investors and some of those already in the market are trying to leave. Those industrial investors who leave the market tend to enter the trading market, where, along with other advantages, there are less

employees, and thus fewer labour-related problems. This, however, causes a serious imbalance between the number of industrial investors and the number of trading investors. Having said this, these respondents concluded that the disadvantages of the Labour Law by far outweigh its advantages. A few respondents were even more radical, and suggested that this law would not improve industrial investment at all, as it completely neglects the rights of employers and over-protects labour.

Some complained about the safety regulations and believed that regulations concerning health and safety in the work place are too rigid¹³. They added that employers are always unfairly blamed for workers' accidents in the Accident Reports completed by the Labour Department. Some felt that this reflected that the Labour Department is not familiar with the structure of mining activities.

An experienced manager believed that the labour law in itself was not problematic. Rather, the problem is the lack of "*working culture*" on the part of workers. He added, "the Labour Law should not have decreased work hours since Iran needs rebuilding after the war"¹⁴. Most respondents were concerned, in particular, with the section concerning the dismissal of workers. They believe that under the existing Labour Law, it is difficult to dismiss a worker. Although this may seem beneficial for the workers, the reality is that employers, fearing problems associated with dismissal of their workers, tend to employ new workers on the basis of temporary contracts. This impedes the creation of sufficient long-term employment

¹³ According to the Labour Law, a Supreme Safety Council, chaired by the Labour Minister, is responsible for promoting work place safety and health, and issuing occupational safety and health regulations as well as codes of practice. The Supreme Safety Council also oversees the activities of the safety committees that have been established in enterprises employing more than 10 persons.

¹⁴ The labour law establishes a five to six day work week of 40 to 44 hours maximum (except for overtime at premium rates), with one to two days of rest (normally Thursday and Friday) per week, as well as at least 12 days per year of leave with pay and a number of paid public holidays. The workweek was 48 hours in the previous Labour Law.

in the mineral sector, and may eventually cause high unemployment levels in the industrial sector¹⁵.

Comments from MMEs

As with large-scale operators, some members of MMEs believed that the law itself is beneficial, but do not like its implementation by the Labour Department. In most disputes between workers and employers, the arbitrators side with the workers. They also feel that employers should have more rights when it comes to dismissing labourers (as was the case in article 30 of the previous law).

One respondent raised a very important technical point. He said that the text of the law is very complicated, and should be changed so that it becomes clear, precise and easy to understand. A mining engineer suggested that other relevant sources should be studied to improve the Labour Law, since, in its present state, it lacks items crucial to mining activities, such as conditions of work in mines, etc.

Comments from Administrative Respondents and Small-Scale Miners

These two groups raised more or less the same issues as discussed above. Their comments can be summarized as follows:

- i. Complete right to dismiss workers should be restored;
- ii. In its present state, it is the Workers' Law and not the Work Law (i.e. it favours workers);
- iii. Mining workers should receive higher salaries and more fringe benefits:

¹⁵ Although workers and employers, according to Article 131 of Iran's Labour Law, have the right to form and join their own organizations, in practice, there are no real labour unions. However, a national organization known as the "Worker's House", founded in 1982, is the only national labour organization with claims to represent all Iranian workers. It works closely with the Islamic councils that exist in many large enterprises.

- iv. The Labour Law does not support employers;
- v. There is nothing wrong with the Labour Law, as it improves efficiency by obliging workers to work in a responsible and effective way;
- vi. The Labour Law should be changed and presented in a way such that all investors would be interested in investing in industrial and mineral activities;
- vii. The law itself is good. I feel, however, that it is not being applied correctly by the Labour Department;
- viii. The Labour Law should create more incentives for those who are working night shifts, in remote areas, in plants, in factories, in field work, etc.; and,
- ix. The Labour Law should create incentives to have engineers come out of their air-conditioned offices and into real fieldwork. Our engineers and technical people have changed into administrators and bureaucrats.

8.5.3 Concluding Remarks

The general consensus of the respondents seems to be that like any other regulation or legislation, the labour law has some weaknesses that prevent it from achieving its full potential.

First, due to Iran's labour law being expressed in complicated and specialist language, it is very much open to interpretation. Setting out the labour law in as simplified a form as possible would lead to fewer misunderstandings and subjective interpretations during the implementation phase. As Walde (1989) mentioned, desiderata in any law are: "Simplicity, clarity, concision, consistency, precision and flexibility."

Second, any dispute involving employers and the labour force is referred to Regional Labour Offices, who, according to some respondents, tend to be biased in favour of the latter. However, if the labour law is to be implemented in a just manner, personal prejudices must

be left out of the judgement process, and Regional Labour Offices should try to maintain as neutral a position as possible. One way of insuring such neutrality would, again, involve simplifying the existing law as much as possible so that all parties can understand their position vis-à-vis its articles.

Third, the majority of respondents believe that the hiring and firing procedures should be more flexible. Experience of recent years shows that constraints on layoffs have discouraged hiring of new workers in the private sector and has increased informal and temporary employment, which in most cases does not provide workers with required safeguards. Based on these changes, the implementation of the labour law stands a higher chance for becoming fair to both the employers and the labour force.

8.6 EXPORT OF MINERAL COMMODITIES

The development of non-oil exports has been a major strategy of the government in recent years. There are several reasons for this emphasis. Firstly, producing for export forces the manufacturers to improve the quality of their products, thus enabling them to compete with products from other countries, and, it also compels the country in making better use of its manpower and natural resources (such as mines). Secondly, production for export also results in increased employment, leading to a more equitable distribution of income. Through higher employment, the level of expertise rises and this in turn generates more income (Iran Chamber of Commerce, Industries and Mines' Quarterly Magazine, Vol. 2, No. 1, 1994). Finally, considering Iran's limited foreign currency resources, exports also provide companies with the hard currency to import the products, machinery and equipment required to keep their production on track. A stable and diversified export market also consolidates the production process and provides a safe haven for local industries

In the mineral export arena, priority is given to those commodities which provide high added

value. Accordingly, effort is being directed towards the expansion of the export of such commodities, as well as the construction of more mineral processing and metallurgical plants for the export of items with increased added value.

8.6.1 Domestic Market and Exports: Directions for Improvement

Given the size and structure of the Iranian economy, the domestic market is the supporting pillar of exports: although export markets are vital for earning foreign exchange, the domestic market is the base for production. A secure and strong domestic market encourages greater production and increases exports proportionately.

This necessitates the mobilization of the domestic market to consume locally produced products. Supporting the consumption of local products, however, should not come in the form of granting monopolies. Rather, the support and protection of domestic products should be limited to a point where the local products remain competitive. Otherwise, unreasonable protection would produce unhealthy industries, lacking the quality demanded from export products, and constantly in need of subsidies to survive. Thus protection must act as ignition, not as the fuel for motion.

The flourishing of local products in domestic markets is only possible if the local products retain their competitiveness with similar foreign-made goods, on an equal basis. To achieve this, the local producers will find it essential to manufacture quality products at competitive prices. Maintaining such conditions would enable Iran to compete in international markets and expand its exports. In short, supporting national products is a must, if local industries are to expand and become self-sufficient. However, protection policies must be reasonable and rational¹⁶.

¹⁶ If local producers became internationally competitive, they would automatically be more competitive at home, and not in need of protection.

8.6.2 The Survey Questions

Regarding the state of the market for mineral commodities, the following questions were asked. *Q1: How is the market (domestic/foreign) for your products now?*

Q2: How would you predict the market for your products in the next three years?

Q3 What are the main problems and bottlenecks in the export of mineral commodities? and what are your suggestions and comments to solve those problems?

The following tables detail the responses to questions one and two.

Table 8.8 State of the Market (Domestic/Foreign) for Respondent's Product(s) at Present

State of Market		GD	NVG	WK	NEX	NR	MINSEC
SSMs	Domestic	28	39	24	N/A	9	100
	Foreign	14	20	9	57	19	100
MMEs	Domestic	33	42	21	N/A	4	100
	Foreign	18	25	13	53	11	100
SMEs	Domestic	42	18	12	N/A	28	100
	Foreign	22	23	11	52	12	100

GD= Good, NVG= Not Very Good, WK=Weak, NEX=No Export, NR=No Response

**Table 8.9 State of the Market (Domestic/Foreign) for Respondent's
Product(s) in the Next 3 Years**

		GD	NVG	WK	NEx	NR	Total
SSMs	Domestic	46	24	15	N/A	15	100
	Foreign	15	15	7	32	21	100
MMEs	Domestic	58	21	4	N/A	17	100
	Foreign	15	15	5	29	21	100
SMEs	Domestic	47	15	8	N/A	30	100
	Foreign	15	15	5	29	21	100

GD= Good, NVG= Not Very Good, WK=Weak, NEx=No Export, NR=No Response

Regarding the state of the domestic market at survey time, except for the large mining companies in monopolistic or oligopolistic situations, the market was not very promising, especially for the SSMs and MMEs. SSMs are the major producers of construction materials and MMEs are the major producers of industrial materials.

The main reasons for the weak market situation for SSMs are as follows:

- i. Due to the high increases in the exchange rates with foreign currencies, prices were very high in general, and this resulted in a reduced demand for mineral commodities;
- ii. The number of government construction projects had been decreased and this affected the construction materials market. However, most respondents believed that the number of these projects would increase and were optimistic about the market situation in the near future; and,
- iii. A majority of those who responded that the market was weak were producers of decorative stones. Because of a rapid expansion in the production of decorative stones, the market had been flooded. Because of the high exchange rate, however, the export situation was better.

Regarding exports, all producers surveyed believed that the market would improve. The main reasons for this optimism were as follows:

- i. Some SSMs and MMEs were in the early stage of exporting their products. They expected their exports to increase over time, as they were gaining more expertise;
- ii. As a result of the expansion of the trade relations between Iran and Central Asian countries, new demands for mineral commodities were expected; and,
- iii. The export markets for steel products were rapidly growing. Therefore, the LMEs, particularly steel producers, expected a better export market in the future.

It is noteworthy to mention that Iran has a relatively big domestic market. This, along with the markets in neighbouring countries and the good quality and variety of mineral commodities, could provide a relatively good and stable market for mineral commodities. If these advantages are coupled with good marketing practices, the mineral sector should escape problems related to product demand.

8.6.3 Iran's Mineral Exports: The Problems

As stated in chapter 6, the export value of minerals during the FFYDP stood at \$307 million, representing 23.6% of the target figure. However, the value of exported metallic products amounted to \$1083 million, which was 27.5% more than the plan's target. Therefore, the performance of the sector in metal exports was very good despite its poor overall performance¹⁷.

In the MMM's annual report (1996), the policy of this Ministry to avoid the export of unprocessed commodities was given as the main reason for the poor performance of mineral

¹⁷ For instance, according to the Minister of Mines and Metals, Iran produced 5 million tonnes of building and decorative stones in 1996. Only 160 000 tonnes of this was exported (IRNA, September 21, 1997).

exports. However, survey respondents gave the following reasons for the poor performance of mineral exports:

- i. Lack of observation of international standards in the quality, packaging, transportation and marketing of mineral exports;
- ii. Instability in government policies concerning import/export regulations, foreign currency, exchange rates, and custom and other relevant rules and regulations;
- iii. Lack of adequate financial resources and marketing skills in small and co-operative mines;
- iv. Poor planning skills of exporters and bureaucratic procedures for non-oil exports;
- v. Lack of co-operation between customs authorities and mineral exporters in case of a problem;
- vi. Inadequate transport facilities and lack of docking channels for export goods; and,
- vii. Lack of adequate tax incentives for export.

In addition to the above factors given by the respondents, the overvalued currency had a negative impact on exports. During the FFYDP, the exchange rate fluctuated. In 1995, the government fixed the exchange rate at 3000 Rials per US dollar. Many economic observers believed that this rate did not reflect the real value of local currency. Accordingly, one problem area in the export of minerals is the distorted prices caused by an overvalued local currency.

One key characteristic of an overvalued (as well as undervalued) currency is that the official exchange rate does not appropriately reflect the price of goods and services sold in the country. This means that domestic producers receive less by way of local currency from their exports than they would, if the "market-related" exchange rate was used. The problem is compounded if there is a shortage of foreign exchange.

8.6.4 Summary of Respondent Comments about Improving Mineral Exports

- i. The government should not get involved in the actual execution of mineral export activities and should leave this task to professional private companies;
- ii. Transportation problems should be solved. At present, the transport fares are very high and the required vehicles are not available;
- iii. The MMM and Iranian embassies in foreign countries should collect market information¹⁸ and make available the necessary information about Iranian export commodities;
- iv. Customs should cooperate with exporters;
- v. Regulations should support exports. The MMM should assume the planning and supervision of mineral exports;
- vi. New docking channels should be built for exporting goods;
- vii. There should be only market exchange rates;
- viii. There should be tax incentives for exports;
- ix. The MMM should provide training for exporters;
- x. There should be changes to the relevant regulations in order to ease barriers for exports;
- xi. Qualified and experienced managers should be employed to carry out export activities; and,
- xii. The MMM should not intervene in the export of decorative stones. This should be done by the private sector.

8.6.5 Concluding Remarks

¹⁸ According to Tiessen and Merrilees (1998), market knowledge, executing timely product delivery from distance, and finding good distributors are essential elements for successful exporting firms.

The following is a review of some of the major obstacles to improving exports and some suggestions to solve existing problems.

(i) Improving the transportation situation: Due to Iran's geographical location, transportation plays an important role in exports (and imports). Accordingly, shipping is an important part of raw material distribution, which can affect the ability of Iran, a bulk mineral-producing country, to compete in international markets and effectively distribute and market its products around the world.

In 1994, 94% of imports entered Iran via ports and the remaining 6% arrived via land through border crossings. Out of 15.4 million tonnes of imported goods which were transported to various regions of Iran from border areas, 81% (12.5 million tonnes) were shipped by truck and the remaining 19% by train. As for the exportation of goods, 79% were handled by truck and 21% by train (Kahani, 1995).

Kahani (1995) further asserts that although marine transportation and railways have played a more dynamic role in transportation since 1994 than in the pre-1994 years, truck transportation still plays a substantial role in the handling of goods and materials. Increased usage of railways is required to facilitate the transportation of heavy and bulky mineral materials and goods within the country. Further, as stated by most survey respondents, shipping may be a significant constraint in promoting mineral exports. There are deficiencies due to the inadequacy of port facilities. Therefore, appropriate policies should address such deficiencies. Such policies should focus on the acquisition of more knowledge of shipping and marketing, an active participation in the freight market, the utilization of the shipping industry's full potential, and the improvement of the efficiency of Iran's port facilities. The implementation of such policies will improve the country's ability in negotiating shipping and marketing arrangements, and may mitigate and relax some constraints on its mineral exports.

(ii) More involvement in international trade fairs: Establishing and participating in trade fairs and exhibitions may be an effective way of improving Iran's mineral exports. For instance, the Fourth International Exhibition of Mining Machinery, Equipment, and Decorative Stones, held in Tehran in 1995, was attended by some 127 domestic and foreign firms, who showcased their goods and equipment (Iran News April 30, 1995). This exhibition was declared a success by MMM authorities.

(iii) Amalgamation of small private sector players into larger firms: The MMM's move to privatize some state-run mines is praiseworthy. However, some survey respondents stated that small private firms with limited financial assets could not play a major positive role in the exploitation of mines for export purposes. Therefore, it might be more appropriate to amalgamate these small firms to form relatively large co-operative firms¹⁹, which, for the following reasons would make more positive contributions.

- i. Possessing enhanced financial assets, a large firm is able to import more advanced technology into the sector and export products with a higher value added;
- ii. A large firm is able to invest capital into mines which might be initially cost-intensive but which would ultimately yield high outputs; and,
- iii. Effective marketing is a prerequisite for successful exports. A firm with more financial ability is able to undertake marketing procedures on a global level more easily.

(iv) Forming joint export companies: A good way of improving the export of mineral products, and for decorative stones in particular, is by forming joint export companies with countries who have expertise in that commodity. It would be even better to form a production-export joint company with another country and invest jointly in ventures for the

¹⁹ Large firms, however, have their own negative features: slow to move, inflexible, bureaucratic, etc. The suggestion is to form relatively large co-operative firms, which, while keeping their flexibility, would be able to play a better role in exports.

production of exports to world markets. The profit would then be shared proportionately²⁰.

(v) Other ways of expanding mineral exports²¹

- i. Adopting appropriate policies on foreign exchange, required for the stability and promotion of exports;
- ii. Supporting the Export Promotion Bank;
- iii. Adopting proper policies on credit facilities and taxation;
- iv. Establishing and then promoting marketing offices abroad;
- v. Making substantial investments in market research and product development;
- vi. Making effective use of the free trade zones for the promotion of exports and reducing trade barriers;
- vii. Setting up and supporting mineral export unions and co-operatives;
- viii. Making effective use of the Internet and foreign mass media by exporting firms for marketing and advertising;
- ix. Introducing export incentives for completely processed goods; and.
- x. Setting up data banks for exporters (Barrasiha-ye Bazargani, Dec. 1997 & Jan. 1998).

The fulfilment of the above-stated policies requires that all available potential be exploited and a skilled work force be employed. Promotion of the society's export-oriented culture and the co-ordination of export activities could facilitate the achievement of export targets. It is also essential to promote non-oil exports in a reasonable and specialized manner by setting up expert groups composed of teachers from universities and training centres along with traders, exporters and market researchers from various organizations.

²⁰ Recently, a joint production-export company has been established with Italy for exporting decorative stones.

²¹ Most of these guidelines are set for the Second Development Plan to promote non-oil exports.

As a final note, it is important to mention that while expanding the export of existing mineral products, Iran must make a serious effort to join the league of important producers and exporters of other industrial and mineral products and produce commodities for which it has a comparative advantage. There are possibilities for exporting other mineral products, as well as offering technical services, particularly to Central Asian countries. For instance, up to few years ago, the idea of Iran becoming an exporter of steel, copper and aluminium products was improbable. Today, these, and many other products are leaving the production lines for export.

8.7 ENVIRONMENTAL ISSUES

Proper stewardship of the environment is one of the greatest challenges to face the mining industry in recent years, particularly in developed countries. In order for the mining industry to develop properly, the industry must commit itself to effective and reasonable environmental protection programs that are also consistent with growth. However, meeting environmental requirements can be costly²².

Environmental and amelioration issues are less of a concern to LDCs, partly due to the fact that LDC governments are trying to create less restrictive fiscal environments in order to attract investment (Ibid., 1990). Zaamwani (1994) also confirms this argument. In his study, he evaluates policy and legislative frameworks for managing environmental impacts of mining in five minerals exporting developing countries²³. While giving an overview of the evolution of the environmental protection dilemma facing LDCs when balancing their development plans with environmental conservation, he argues that unfortunately many

²² The Windy Craggy Co. in British Columbia, Canada is a good example. This company spent over \$50 million on new exploration only because it has been stopped from mining a 165 million tonnes deposit for environmental reasons (den Ouden, 1990).

²³ South Africa, Botswana, Namibia, Papua New Guinea and India.

LDCs, in practise, have moved away from environmentally sustainable development policies. They have often argued that observing environmental standards adversely impact the operating costs of mining projects, with similar effects on attracting private investment (Zaamwani, 1994).

By investigating of the legislative frameworks in the case studies, he found that although these countries have comprehensive environmental protection laws and regulations. implementation and enforcement of these laws is impeded by administrative and institutional inefficiencies. He concludes that despite the presence of comprehensive measures, environmental degradation in LDCs is continuing. Ouden (1990) believes that this trend, however, is only short-term, as environmental concerns will soon be voiced in those countries, commanding rigid legal requirements on environmental issues.

In Iran, despite many improvements²⁴, environmental activities in the mining sector have yet to be considered a priority by the miners. The main environmental impacts of mining and metallurgical operations in Iran are the health and safety problems caused by the emission of particulate matters and other toxic materials (Heydari, 1994).

Experience suggests that small-scale mining may also have had adverse effects on the environment. In this regard, the government needs to address some technical, economic and social considerations (Kumar, 1995). As is generally observed, small-scale miners lack the knowledge and facilities to exercise environmentally sound techniques. It is the MMM's duty, therefore, to monitor, assist and encourage compliance with certain standards. The Organization of the Environment²⁵ should set, reassesses and monitor the minimum

²⁴ Recently, the Minister of Mines and Metals announced that novel mining and prospecting technologies were being applied to protect the environment. He added that directors of prospecting companies were obliged to set aside an environmental protection budget in their annual budgets and meet environmental standards (ISO-14000).

²⁵ The Organization of the Environment is the main Government agency responsible for

standards of compliance and the MMM should provide technical assistance in designing optimal mining systems.

8.7.1 Government Role in Environmental Protection²⁶

Regarding the role of LDC governments in environmental protection, it is notable that there has been a shift by governments away from centralized decision making on control procedures and the use of detailed, prescriptive and inflexible standards to more flexible and realistic standards that are practical to apply. Governments are now focusing on measures such as creating incentives, providing information, and encouraging the establishment of comprehensive environmental management systems. Application of Environmental Impact Assessment (EIA) processes along with monitoring of company performance is emphasized. However, inadequate bureaucratic systems, multi-layered government, and overlapping authorities hamper the process (World Bank, 1997).

The Iranian Organization of the Environment, as well as the MMM has a major role in overseeing environmental management in the mining industry. They have to set the thresholds of acceptable environmental impact based on adequate environmental resource information and a clear definition of social values, examine actual impacts, and assist companies in their environmental functions.

As mentioned, small operations usually require training, support services and technical assistance to conform with environmental regulations. In the case of SSMs, some measures such as controlling the sale and distribution of mercury, advising miners to locate in appropriately designated areas, and assisting in rehabilitation, is said to be helpful for appropriate stewardship of the environment (Ibid.).

environmental protection and monitoring.

²⁶ Compiled from World Bank, 1997, cf. World Bank Web Page.

8.7.2 The Survey Questions

With respect to environmental issues, the following questions were asked. (The LMEs were not asked the first two questions). *Q1. In your opinion, how concerned is the mineral sector with keeping the environment clean and safe?* The results are summarized in the following table.

Table 8.10 Degree of Concern of the Mineral Sector with Keeping The Environment Clean and Safe

Category	SSM	MME	ADMIN	SUM
Adequately concerned	74	38	32	55
Not too concerned	20	42	40	30
No answer	6	20	28	15
Total	100	100	100	100

As can be seen overall, more than half of the miners/mining companies seems to be adequately concerned about environmental issues. This is a good sign of improvement.

Q2. To what extent is the environment in your mining area clean? These are the results:

Table 8.11: The Extent to which the Environment in Mining Areas are Clean

Category	SSM	MME	ADMIN	SUM
Adequately clean	72	54	36	59
Not clean	20	33	37	27
No answer	8	13	28	14
Total	100	100	100	100

According to the answers given, the SSM sector believed that in 72% of mining operations the environment was unpolluted, while the government gave a figure of only 36%. The MMEs were in between these two values (54%).

Differences in views suggest that there are no commonly understood standards about what constitutes a clean and safe environment. The Iranian Organization for the Environment and the MMM should join hands to conduct a program of awareness and education on environmental issues relating to mining operations, particularly for the small-scale mining sector. In the survey, a director from one of the MMM's provincial offices mentioned that due to a lack of budget and manpower, the Organization for the Environment could only oversee environmental policies in large mining operations, and not the SSM sector. The latter has remained the MMM's responsibility.

Q3. "To what extent is your mining operation/environment safe?" The results are shown below.

Table 8.12: The Extent to which the Mining Operation and Environment are Safe

Category	SSM	MME	LME	ADMIN	MINSEC
Adequately safe	72	54	62	48	62
Not much safe	20	38	30	24	27
No answer	8	13	8	24	11
Total	100	100	100	100	100

As shown, 72% of SSMs, 54% of MMEs, and 62% of LMEs believed that their operation procedures and their working environments were adequately safe. The MMM authorities responded that in almost half the operations (mostly large companies), the procedures and the environment were safe. Again, the MMM should be highly involved in monitoring the safety of mining operations and the environment.

8.7.3 Concluding Remarks

To avoid massive environmental degradation, the government should provide environmental awareness and persuade the public and industry that the environment is as important as

increased productivity. Zaamwani (1994) stated that regulations or even rigid controls do not always protect the environment. The author's observations during visits to large mining and metallurgical companies, including the giant Mobarake Steel Co., the Esfahan Steel Co., the Sarcheshmeh Copper Complex, and more than fifty small-scale mining operations, showed that the environmental issues of mining operations were better understood and implemented by large companies, as compared to small private operations. As it is usually felt that there is a lack of knowledge among small-scale miners to use the most environmentally safe techniques, it falls on government to oversee the use of such techniques.

The rise of environmental awareness and its impact on the development of the country, and the provision of technical assistance in creating environmentally safe mining systems are necessary. However, it is suggested that the emerging concepts and principles of "International Environmental Law" (such as sustainable development, polluter pays principle and Industry Guidelines) be incorporated into national strategies on environmental standards and be carefully monitored (Zaamwani, 1994).

Environmental considerations are as important as the economic, social, and technical considerations in development planning. Governments of developing countries should therefore be environmentally conscious in their development planning and purchasing. The head of the Iranian Organization for the Environment stated that the government's environmental objectives should be fully integrated with the economic objectives in any governmental projects (Ettelaat International, February 15, 1998).

During the course of site visits, the author became persuaded that in provinces where keeping the environment clean and safe is a concern of the mining regional office, the overall situation of the environment was much better than in other provinces. Initiating a productive environmental framework, specific to the regional and geological circumstances in the country, will require the co-ordination of environmental policies and operational linkages

with environmental agencies. Practically, the regional offices of the MMM must carefully monitor the environmental situation in mining areas. These offices should create some incentives for those firms keeping the environment clean and safe, and impose penalties on those doing otherwise.

8.8 CAPTURE OF MINERAL RENT, ROYALTY AND TAXATION

In pursuing their revenue objectives from the mineral sector, governments use a variety of fiscal instruments, including royalties, income tax, additional or windfall profit tax, severance or export taxes, dividend remittance taxes, and user charges for the infrastructure.

Scott (1991) has stated that mining tax regimes are essentially designed to achieve government objectives. However, there are many different conflicting objectives, which impact on a tax regime. A government should therefore carefully consider its objectives in light of the special nature of the mining industry, and appreciate the trade-offs which must be made to ensure a balanced system. The design of an efficient and effective tax regime by the government should first find answers to the following questions: Is short-term revenue the primary objective? Is the government willing to forego some current revenue in exchange for more accelerated development? Is local ownership of sufficient priority that the government will accept the consequences of "scaring away" some foreign investors? What is more important -- a steady revenue stream or a higher participation in profits in high-income years?

8.8.1 Mineral Rent²⁷

There are two classic views regarding the concept of mineral rent. These views have been addressed by Ricardo (1911), who stated that "royalty" and "rent" are the two elements of

²⁷ Compiled from Sinding, 1993.

the income of a mine, the former referring to compensation made to the owner due to a decline in the mine's resources (depletion) and the latter referring to variations in production costs arising from differences in ore quality or location. According to his view, the "Rent of Mines" is directly comparable to renting land.

A discussion of rent also warrants an examination of two important issues: the distinction between windfall rent and transfer rent, and the concept of quasi-rents. Windfall profit originates from unanticipated price/cost changes, whilst transfer rents occur in a situation when the holders of mineral rights succeed in excluding the investors from gaining a share of the expected rents. The existence of transfer rents is justifiable when one considers the inherently risky nature of mineral exploration

Quasi-rent may be described as a financial incentive for a particular allocation of resources, which would not occur in the absence of quasi-rent. For instance, investment in mining exploration and technology in a mining firm may cease in the absence of an adequate return on the accumulated mining knowledge. Considering the factors cited above, the remaining "pure rent" would be non-distortionary and efficient. However, the government, in seeking to capture all of the rent from mines, may remove the mine owner's incentive to control costs (Anderson, 1990).

8.8.2 Royalty and Taxation

Royalty is a levy imposed by the state for the extraction of non-renewable resources, and may be taken in cash or in kind. Royalty may be calculated per physical unit of output, on the value of production, or on a combination of both. Although royalty per physical unit of output has the benefit of administrative simplicity, its real value may erode with inflation, particularly in extended-term mining agreements. Consequently, governments favour royalty based on value, which may be either constant for a particular mineral or made to vary according to ore quality and/or price.

Although royalties are less important compared to income tax imposed on mining ventures, royalties still reduce the government's risk, and constitute an adjustable tax that can be increased or decreased (to the benefit of the operator). Royalties also help to appropriate windfall profits when prices are extremely high, although the trend is to impose an additional profits tax rather than increased royalties. The most important imposition made by all countries on mining operators is income tax on profits. It is common to all countries regardless of the political persuasion of the government.

With royalty, determining the appropriate price on which to base the calculations (when the levy is based on the value of production) is a major problem. This is even more difficult with income tax: not only the gross income, but also appropriate deductions must be specified in order to arrive at the taxable income. The lack of an open market makes the determination of gross income complicated; thus, in order to deal with the problem of pricing goods in such cases, governments have adopted various policies. Governments use reference or listed prices, which may not always be fair to both parties. To avoid such a price being imposed, mining companies may make some independent sales that provide a basis for assigning free market prices for sale to affiliates.

Deductions that are to be allowed in calculating taxable income are also important in determining gross income. In most countries, the recognized deductions include: operating costs; legitimate interest charges; royalties and other fees and bonuses payable to the government; expenditures incurred in exploration, development and continuing mining operations, whether by way of depreciation in the form of capital allowances or capitalized intangible costs. Although the actual rules vary, the goal is to recognize the high risks associated with the mining industry, and to grant the operator accelerated recovery of large expenses.

Compared to other types of investments, large mining investments take longer to complete and longer still to earn revenue. They also have large capital requirements and debt

obligations. Debt servicing is made easier by tax relief in the early years, effectively reducing risk and increasing investment incentives. Tax relief, coupled with additional profit tax schemes, results in a change in the time distribution of tax payments rather than revenue loss. Once taxable income is established, the actual tax rates are usually the same as other commercial activities.

Currently, income tax rates of 40-50 % are commonly used in various countries. Another important form of taxation practised by almost all states is a withholding tax of 15-20 % on dividends remitted to outside shareholders. Still another kind of tax is the excess profit tax that is levied on profits above a certain level deemed to yield a reasonable return on capital (usually 15-30%). This tax is now gaining wide international acceptance, enabling governments to obtain a major share of exceptionally high profits generated from the extraction of a country's resources, without affecting involvement in potentially profitable mines. Additional taxes are also imposed once the investors recoup their investment.

Generally, the sophistication of mineral tax schemes depends on the importance attached to obtaining tax revenues, the size of these revenues relative to other tax revenue sources, and whether or not mineral resources are perceived as depletable (depletion imposes a time frame within which fiscal benefits must be obtained or otherwise lost permanently).

In addition to royalties, income tax, withholding tax, windfall or excess profit taxes and dividend remittance taxes, governments also use a variety of other fiscal instruments, such as export taxes and user charges for the infrastructure. Traditionally, both developing and developed countries have utilized all these fiscal instruments. However, the major difference between fiscal approaches adopted in developed countries and those pursued by developing countries concerns attitudes toward the concepts of "acceptable/normal" profitability, socio-political concerns over foreign exploitation, and the extent of government involvement in the mineral sector.

Furthermore, in structuring fiscal packages, developing nations have only recently begun to consider the secondary implications of different fiscal instruments. For instance, although the negative impact of a sales-revenue-based royalty on cut off grade decisions has long been recognized by mineral economists, high royalty rates persist in the fiscal packages of some countries which also have contradictory policies designed to maximize the production of low-grade ores (World Bank, 1992).

8.8.3 The Tax Scheme in Iran: A General Discussion

In Iran, taxes account for a relatively small portion of the government's total income. One problem of tax collection in Iran, like in many other countries, is the extent of so-called *hidden trades*. According to the Finance Minister (cf. Kayhan Havai, issue 1189, July 17, 1996), as much as 35% of internal business transactions may be carried out in absence for financial records. Furthermore, massive tax exemptions have been, and are being used for investment motivation. These exemptions include government activities, a considerable proportion of exports of co-operatives, and 25% of total agricultural and industrial trading occurring in remote areas within the country.

Many economists have at various times commented that the tax system in Iran requires a revaluation and revision. Contemporaneous with parliamentary budget plan discussions, an Iranian newspaper article called on parliament deputies to ensure that the budget bill provides a sound tax system with enough revenues from the private sector (Hamshahri, January 14, 1999). The suggestions offered by economists concern the tax system as a whole. In order to make their arguments more specific to the topic under discussion, a few relevant features of the arguments will now be considered.

There are a number of features that are said to improve a taxation system and make it more efficient. These include administrative cost-effectiveness, maximal economic neutrality (except for regions targeted for regional development), and operational fairness (Salmasi,

1989). The principles of any tax reform should include administrative and allocative efficiency, and system sustainability. Reformers can minimize the costs and maximize the longevity of reform by increasing coverage through the establishment and maintenance of a broad tax base, and by emphasizing simplicity through promotion of transparent policies and administrative clarity. To translate these principles into practice, the process of tax reform in any country should emphasize the utilization of personal and institutional incentives and the dissemination of public information. Reforms could also facilitate changes in tax policies, administrative systems and human behaviour by improving service, applying sanctions, promoting merits for investment, linking policies and practices, and phasing implementation activities (Rosengard, 1992).

8.8.4 The Survey Question

The survey conducted showed the following results for the question:

"In your opinion, is the tax regime fair on miners/mining companies at the moment?"

Table 8.13: Fairness of Tax Regime for Mining Activities

	SSM	MINA	MINTEC	ADMIN	MINSEC
Quite fair	37	33	23	68	38
Not fair enough	37	21	42	16	32
No answer	4	29	30	-	15
Total	100	100	100	100	100

8.8.5 Comments from Respondents

Comments from SSM Respondents

As the above table reveals, 37% of SSM respondents said the tax regime was "quite fair." Interestingly, the same proportion (37%) replied that it was "not fair enough," with 16% saying that the tax regime is "somewhat fair." The most frequently stated comments provided by respondents to explain their answers are listed below:

- i. It is better that all taxes/duties be collected by one organization, rather than by separate organizations, such as royalties by the Ministry of Mines and Metals, duties by the Municipalities and other regional authorities, etc.;
- ii. The basis for calculation of the tax is not clear. For instance, the year before last, we made more profit and paid less tax. Last year, even though we made less profit, we paid more taxes, tax rates being constant. Furthermore, some of our mining operations were located in remote areas, but this was not considered by the tax authorities (certain remote areas are exempted from taxes);
- iii. Exemptions in the mining sector are very effective and good; and,
- iv. Tax exemptions could be removed if the Government created a conducive environment for investment and took the necessary measures to reduce the price of mining machinery and equipment. By adopting these policies, mining would become more profitable and there would not be any need for tax exemptions.

Comments from MME Respondents

The majority in this group said that the tax was "quite fair" or "somewhat fair" (50%). There was 21% who saw the tax regime as "not fair enough." The most frequently stated comments provided by respondents to explain their answers are listed below:

- i. All taxes/duties should be collected by just one organization;
- ii. One respondent who said "not fair enough" explained that compared to other countries, the Iranian Government collects almost no taxes. The tax regime is, therefore, unfair because of low rates of tax;
- iii. The government should help miners to make good profits and in turn collect more

taxes;

- iv. The tax offices do not respect the tax exemption status of new mines;
- v. Miners sometimes cheat when they pay taxes. If they were honest, this would solve most of the problems.

Comments from LME Respondents

The majority of LMEs responded that they thought the tax was "not fair enough" (42 %). The most frequently stated comments provided by the respondents in this category to explain their answers are listed below:

- i. Exemptions should be provided for expenses incurred on the expansion of existing operations (According to the tax law, companies are eligible for tax exemptions for their expenses incurred to increase the capacity of production and to install new utilities only when they have obtained advanced permits from their relevant ministries);
- ii. In order to simplify the tax regime, the Government should reduce its tax rates and remove exemptions;
- iii. Mining is an important sector in Iran, and if we want to substitute oil with mining, we should exempt all mining activities from tax to encourage people to invest in the mining sector;
- iv. There should be exemptions for all companies who are doing exploration activities and mine development; and,
- v. The tax offices get more taxes from governmental companies and very little taxes from private companies. This is discrimination.

Comments from Administrative Respondents

The majority of administrative respondents thought that the tax regime was "quite fair" (68%). Their most frequently stated comments explaining their answers are listed below:

- i. Exemptions should be given just in remote areas and for a limited time. The existing exemptions should be gradually abolished;
- ii. There are a large number of organizations that collect various kinds of duties. The number of duties and variety of collectors should be reduced;
- iii. The mining sector's profitability is much less than that of trading activities. The Government cannot control trading activities, therefore, they pay less tax than the mineral or industrial sector; and,
- iv. The law, in some instances, is not clear. (For instance, some respondents wondered whether tax exemption benefits enjoyed by an erstwhile mine operator would be transferred to a new operator when mine ownership changes).

8.8.6 Concluding Remarks

In summary, the following points and principles can be drawn from the earlier discussions, with regards to the mining and taxation policies of the government of Iran. There is a need for a careful weighing of the various factors, both facilitating and mitigating, against a successful mining policy for the investor as well as the government. Mining operations constitute risky businesses, requiring large capital and sometimes involving an uneven distribution and/or quality of mineral resources (Bilodeau & Davidson, 1992). Thus, mining taxes legislated by the government should not be so high as to discourage investment in mining operations and/or the operation of already existing mining ventures. On the other hand, the government must ensure that it receives a fair amount of the income generated by the mining operations. Thus, a delicate balance must be reached.

In recent years, government revenues from the oil sector have declined while its expenses have increased. In order to compensate for this decline, the government increased the tax rates on economic activities, including mining. However, compared to other countries, both developed and developing, the existing tax rates appear fair. It is important to note that due

to the fact that many companies are not using a proper accounting system, their taxes are assessed by estimation. This opens the way for personal judgement and possibly unfair or illegal actions. Companies should seriously improve their accounting system to avoid this problem. Furthermore, at the moment, different kinds of mining duties are imposed on different institutions. It may be more efficient if this hierarchy was reduced to a single organization.

One principal factor in mining taxation is the creation of a linkage between profitability and effective tax rates (progressive taxation system). Such a linkage impacts a society's allocation of resources: a progressive taxation system may mitigate against the growth of highly profitable firms by removing a greater proportion of funds from firms that have high return, which in turn may impede overall economic growth. Having said this, a regressive system is not necessarily better: such a system may increase an investor's risk and thus discourage investment. This matter has been a source of concern in most countries.

Brewer, Bergewin, & Dunlop (1989) studied the impact of profitability on the rate of effective tax rates in ten countries²⁸. They found that most systems studied were progressive, though to different degrees, in that the effective tax rate rises or falls with the rate of profit. Few systems were found to be regressive, i.e. those in which the effective tax rate moves opposite to the direction of profit. Although some systems approached neutrality (i.e., with a constant effective tax rate regardless of the rate of pre-tax profit), no one system was neutral.

In his study, Schereck (1996) assesses the effectiveness of different fiscal regimes in achieving the dual objective of collecting an adequate share of economic benefits for the government while encouraging further exploration activities. His major conclusion was that

²⁸ Canada, United States, Australia, Brazil, Chile, Indonesia, Papua New Guinea, Peru, South Africa and Zambia.

fiscal systems, which are progressive, come closest to creating the flexible conditions needed to enable a fair and reasonable allocation of economic benefits and risks between developing countries and transnational companies. Such schemes provide a low government-take when resources are small and marginal but at the same time assure the host government a significant share of the economic rent in the case of large and profitable deposits.

8.9 RISKS IN MINERAL INVESTMENT

The mineral industry is a high-risk business possessing certain unique characteristics, which can result in both problems and opportunities. According to Bilodeau and Davidson (1992), these characteristics are:

- i. High risk nature of mineral exploration;
- ii. Large capital requirements of mining projects;
- iii. Long lead and exposure times associated with mineral projects;
- iv. Exhaustible nature of mineral reserves;
- v. Uneven distribution of mineral resources;
- vi. Fixed location and physical uniqueness of mineral deposits; and,
- vii. Significant environmental impact of mining activity.

In mineral investment, risk is defined as the probability that a mining project will end up with a loss as a result of uncertainties associated with geological and engineering information, as well as with the instability in commodity markets, which cause price fluctuations. Actually, these factors affect one another and the courses of action employed in response to them. In the following, some risk elements in the mineral industry are discussed in more detail.

(i) Exploration Risks: The highest risks are usually involved in the exploration phase. It is

very expensive and despite technological advancements in the practice of exploration, the probability of actually making a commercial discovery is low, possibly as low as one in 1000 (Ritchie, 1995). Mackenzie and Bilodeau (1982), in their analysis of Australian exploration discovery statistics for the period from 1955 to 1978, showed that from 100 mineral deposits discovered, only 43 could be considered economic on a pre-tax basis. This number, however, reduced to only 33 economic deposits following tax considerations (Ibid.). Exploration is usually carried out in remote areas with poorly established infrastructures. Provision of continuous support in terms of modern equipment, experts and the means to maintain both man and machine in an often-difficult environment is a necessity, which requires a substantial financial outlay.

(ii) Capital-intensive and Long-term Investment: Mining operations are capital-intensive, which explains the high productivity in this industry. However, the disadvantage comes in the form of huge interest payments as well as loan repayment obligations. Mineral exploration and mine development are also long-term activities. The long time frame within which the majority of global mineral developments are set, means that mines need to be able to cope with the fluctuations of international markets and thus the mining investor has to operate under a higher level of risk than investors in other fields.

(iii) International Competition: The success of the mining industry is contingent upon its ability to compete within global markets. Due to the fact that export contracts are usually priced in US dollars, the industry is also vulnerable when it comes to fluctuations in currency exchange rates.

(iv) Political Risks: While the political system of a country does not essentially affect the attractiveness as an exploration site, a number of political factors - such as the stability in the political situation and existing laws, regulations and agreements, attitude towards foreign investors, and bureaucratic efficiency -- are important considerations for investors. An investor is concerned with any undesirable change in government policy during the

execution period as it may have disastrous impacts on the project²⁹.

(v) Operational and Development Risks: Elements such as the uncertainty of the future price of mineral products and estimated operating costs, inadequate design or processes, technical failure, capital cost overruns due to foreign exchange fluctuations as well as completion delays are among the major operational risks.

(vi) Economic Considerations: Regulations regarding equity participation, tax regimes, right to mine, security of investment and appropriate economic policies for the long-term, are among the main economic considerations in mineral investment. Environmental policies and regulations regarding mining activities are also quite rigid and costly, increasing the economic risk of mining activities.

Although a number of the risks outlined above are not unique to the mining industry, the risks associated with mining projects may often be higher than those of other industries. Thus, mining investors require competitive terms and conditions, and solid assurances that the investment environment will be stable.

8.9.1 The Survey Question

In this section, the question was concerned with the element of risk involved in investment in the mineral sector of Iran. The following are considered to be the main risks involved in mineral investment in Iran: economic and financial risk, technical risk (technical failure of the project), operational and managerial risk, socio-political risk, and instability in policies and regulations. The last element was perceived as a major risk by investors, both in the pre-test (pilot) questionnaire and actual survey.

²⁹ To alleviate these fears, some countries, like Chile, have created stable options for foreign investors: to pay corporate tax at a fixed rate guaranteed to remain unchanged for ten years (Price Waterhouse, 1994).

**Table 8.14 Relative Salience of Various Risk Factors Perceived to be
Inherent in Iran's Mineral Sector**

#1	Eco/Fin Risk	Eco/Fin Risk	Eco/Fin Risk	Eco/Fin Risk	Economic/Financial Risk
#3	Instab. Polt/reg	Instab. polt/reg	Tech. Risk	Soc/pol Risk	Socio-Political Risk
#5	Oper. Risk	Oper. Risk	Soc/pol Risk	Tech. Risk	Operational Risk

Eco/Fin: Economic/Financial; Oper.: Operational; Soc/pol: Socio-Political; Tech.: Technical; Instab. polt/reg: Instability in the Government's Policies and Regulations.

As can be seen, the economic/financial risk is the most important factor for all categories of survey respondents. The socio-political risk is the second most important factor for small miners, while technical risk and instability in the government's policies and regulations constitute the second most important factor for medium-scale mines and large SMEs, respectively.

As SSMs are private mines, the miners in this sector have relatively limited financial resources. At present, they are subject to various controls from different regional authorities, and they harbour fears of being mistreated by the regional powers. On the other hand, since conditions imposed on a small-scale mines are in general minimal, the titles held by small-scale miners to prospecting and mining rights are less secure than those of the large-scale miners (Kumar and Amaratunga, 1994). In their comments, the small-mine operators demanded more support from the MMM, and less intervention from lower level authorities.

As is frequently mentioned in the literature (Barry, 1996; Kumar and Amaratunga, 1994; Davidson, 1993; and United Nations, 1988), the government has a major role in the

promotion of small-scale mining. It should be a supportive role, ensuring that small-scale mining contributes to the developmental goals of the economy. In many developing countries, governments have tried to ease the regulations governing the activities of SSMS. In Tanzania for instance, according to the Commonwealth Secretariat (1989), the ministry of mines grants prospecting permits to individuals in designated areas to encourage prospecting and mining for minerals by methods which do not involve substantial expenditures or specialist technology. Under the Ghanaian mining legislation of 1986, small-scale mining is specifically provided for by enabling the Secretary to designate areas for such activities, and further enabling him to modify or exclude provisions of the Act that would otherwise apply to, and thus constrain, small-scale miners.

This is also a common practice in some developed countries. In Canada, Australia, and the USA, governments are obliged to maintain a supportive role, to create the geological infrastructure and provide geological, geophysical and geochemical information to the small-scale miners (Kumar and Amaratunga, 1994).

8.9.2 Concluding Remarks

Given the above-mentioned facts, it is highly desirable for the MMM to take the necessary measures in order to ensure that the SSMS are entirely protected by the laws and regulations, and that they are not subjected to harassment and unnecessary interventions.

The scenario is different in the case of the SMEs. At present, they enjoy the solid support of the MMM, and as they are closely connected to the ministry, they have almost no concerns regarding problems of a socio-political nature. That is why the SME survey respondents viewed this factor as one of the lesser risks.

The position of the MMEs (mixed ownership) lies between that of the two others. For them, the technical risk is the second important factor. This is because their operations require

more technological procedures and devices. As they have received more support from the government, they perceive the socio-political factor as an element of less importance.

Considering the overall responses from all categories, socio-political risk was ranked as the third important factor. Many respondents, in particular those from the private sector, demanded that the MMM take the necessary steps to assure the junior mining companies that they have the full support of the government and that irresponsible interventions by whatever authority would be prevented.

Another important factor of risk in mining investment in Iran is the instability in government policies and regulations. This partly refers to the MMM's executive policies on mining activities. As mentioned before, the major policy of the MMM during the FFYDP has been to transfer mining activities to private entities. In reality, however, as stated by many respondents, many elements, some beyond the control of the MMM, as well as some actions of the ministry, have prevented timely and appropriate policy making regarding mining activities. First, the government's economic policies, particularly regarding the tax regime, import/export regulations and the exchange rate, were not steady. The limit of ownership by the private sector is yet to be clearly spelled out. Second, there were several changes in the functional organization of the ministry, resulting in several changes in executive procedures. Third, the regulations by which a mine was classified as either small scale or large were not clear. All these problems, as admitted by some authorities of the MMM, resulted in a less stable economic environment for miners/mining companies. However, most administrative authorities in the MMM blamed the government's overall economic policies for this situation.

The following table summarizes the types of risk inherent in mineral investment in Iran, taking response rate, as an indication of importance to the respondents.

**Table 8.15 Various Risk Factors Perceived to be
Inherent in Mineral Investment in Iran**

Economic/Financial Risk	90%	1
Socio-political Risk	73%	3
Operational Risk	63%	5

As can be seen, besides the economic risk, instabilities in government policies and regulations as well as socio-political risk are considered major concerns in mineral investment in Iran. Stability in the government's economic policies, in particular those that have a strong impact on investment decisions, as well as proper, timely and stable policies by the MMM, may reduce the importance of these elements in mineral investment.

Other risk elements, such as operational and technical risks, were considered to be relatively less important by the SSMs, LMEs, Administrative respondents, and the whole sector, due to the fact that these problems could be solved by operators and were less subject to government policies. However, as explained in the case of SSMs and MMEs, the expectation was that government should provide technical information and services to help solve these problems.

8.10 FOREIGN CAPITAL AND TECHNOLOGY

One of the targets of the FFYDP and the MMM, as mentioned in chapter 5, was to attract foreign investment into mining projects. In chapter 9, we will discuss this topic in more detail. In the survey, the author intended to discover the overall views and opinions of the mining sector players concerning foreign participation in mining development, and to what extent the country is ready for foreign investment. As well, the author intent was to explore

the possibility of co-operation between the domestic mineral sector and foreign investors, and furthermore, the extent to which the domestic mineral sector realized that foreign investment is necessary to expand mineral activities.

8.10.1 The Survey Question

To achieve the above-mentioned goals, respondents were asked: *“Does the Iranian mineral sector need foreign capital, foreign specialists and foreign technology?”*

The purpose of dividing the foreign participation into three parts -- foreign capital, foreign specialists and foreign technology -- was to find out which components of foreign participation were preferred by the domestic sector.

With regards to foreign capital, 58% of respondents favoured and 27% did not favour foreign investment in the mineral sector of Iran, while 15% did not respond. The opinion of government officials was particularly interesting. A total of 88% of those interviewed believed that foreign capital for mining development was needed. Also, 67% of large mining enterprises favoured foreign investment. Given the relatively high rate of positive responses, and bearing in mind that the government and SMEs are normally the counterparts of foreign investors, it can be concluded that the domestic mineral sector has a favourable view of foreign participation.

Concerning the hiring of foreign specialists, 43% of respondents favoured this, 43% did not, and 14% did not respond. Among government officials, 64% of those interviewed believed that the use of foreign specialists was necessary. However, SMEs, who already have some experience in hiring foreign specialists, were equally split in their views on the subject. One of the interviewees from this group stated that experience has shown that the quality of specialists, who are sent to Iran by foreign companies to work on technical consulting contracts, is normally low, unless the foreign company is a relatively large shareholder.

Overall, the mining sector had relatively unfavourable views on the hiring of foreign specialists.

With respect to the use of foreign technology and know-how, the majority of respondents (81%) agreed that it was a good practice, as was expected. The proportion of positive responses was 74%, 96%, 77% and 88% from the SSMs, MMEs, LMEs and government officials, respectively. Detailed results are presented in the table below.

Table 8.16 Needs of the Mineral Sector of Iran for Foreign Capital, Foreign Expertise and Foreign Technology

		SSMs	MMEs	LMEs	GOVERNMENT OFFICIALS	MINSEC
Foreign Capital	Yes	44	42	67	88	58
	No Answer	30	0	15	0	15
	No	26	58	18	12	27
Foreign Expertise	Yes	43	33	38	64	43
	No Answer	18	0	25	0	14
	No	39	67	37	36	43
Foreign Technology	Yes	74	96	77	88	81
	No Answer	6	0	8	0	4
	No	20	4	15	12	15

8.10.2 Comments from Respondents

The following is a sample of the comments made by the respondents concerning the promotion of foreign investment in the mineral sector:

- i. The government should guarantee to foreign investors the repatriation of their capital

and profit;

- ii. By partly privatizing recognized banks and allowing the entry of foreign financial institutions, foreign investment could be improved;
- iii. The government should clearly spell out conditions of trading and property rights;
- iv. Necessary changes in foreign relations/policies of the government should be made so as to attract more foreign investment;
- v. To attract more investment to the mineral sector, the government should create a satisfactory legal and regulatory environment and leave mining activities and management to private entities;
- vi. The mining code should be modified to make it clearer and easier to understand;
- vii. To create enough guarantees for foreign investors, there should only be one exchange rate (market rates);
- viii. The approval process for foreign investment applications should be eased;
- ix. Inflation should be controlled and the responsibilities of foreign investors and the host companies should be clarified; and,
- x. One respondent from a SME said that he only agreed with the "buy-back" system in foreign investment (i.e., the investors get a portion of production for their investment).

8.11 THE ORGANIZATION AND DUTIES OF THE MINISTRY OF MINES AND METALS

8.11.1 Establishment of the Ministry of Mines and Metals

The Iranian Ministry of Mines and Metals (MMM) was established in 1981. According to its establishment law, the MMM is responsible for providing the necessary means for

carrying out geological surveys, exploration and the extraction of minerals, as well as the forming of metals up to standard grades, for use in industry.

With the formation of the MMM, the following mining companies or public organizations were put under its supervision in 1981:

- Iran Geological Survey Organization
- National Iranian Steel Company (NISCO), and affiliated companies
- National Iranian Copper Industries Company (NICICO)
- Iranian Aluminium Company (IRALCO)
- National Iranian Exploration Company (at present, partly privatized)
- Iran General Mining Company (at present, partly privatized)
- National Iranian Lead and Zinc Company (at present, partly privatized)
- Other mining companies for exploration and production of mining materials, such as strontium, refractories, barite, bentonite, silver, chromite, etc. (some of these mines were privatized during the FFYDP).

The MMM has a representative office in each of the provinces of the country for the supervision, coordination and control of the mining and metals industry (referred to as Provincial Offices here).

8.11.2 Organization and Duties of the MMM

The MMM have five Divisions, each headed by a deputy minister:

- 1) Mining and Mineral Processing Division (various minerals and non-ferrous metals, such as copper, aluminium, lead and zinc, gold, tin, nickel, etc.);
- 2) Ferrous Metals Industry Division (Steel, Ferro-alloys, Iron ore, Limestone, etc.)
- 3) Planning and Programming Division;
- 4) Economics and International Affairs Division; and
- 5) Administrative, Finance and Parliamentary Affairs Division;

According to the law for enacting the MMM, this ministry has wide-ranging duties, from providing the long-term strategies and plans for the sector, to implementing projects and acting as a major producer in the mineral sector. Since many major mines were managed by the government, the law-makers assigned a mixture of planning as well as day-to-day operational functions to the MMM at the time of its conception. During the FFYDP as well as the SFYDP, the government policy has been to transfer most mining operations to the private sector. Accordingly, the major duties of the MMM should have been modified.

Although a number of mining companies were privatized during the FFYDP, the organization of the MMM remained almost unchanged. Therefore, along with the new policies of the MMM, the organization chart and duties of this Ministry need an overhaul. In order for the mineral sector of Iran to smoothly develop and become internationally competitive, the MMM should undertake more strategic planning and policy making duties and leave many operational duties to the companies (private and public).

8.11.3 The Survey Question

In order to discern the opinions of the people involved in mining activities in Iran concerning the duties of the MMM, those surveyed were asked to rank the most important duties of the MMM in order of priority.

Having investigated the duties of other Ministries of Mines and Natural Resources in some countries, including Canada, Australia, Turkey and Indonesia, and knowing what is practiced in Iran, the complex set of the duties of the MMM are assigned to six categories as shown below. This categorization made this question easier to answer and analyze³⁰.

- i. Global planning and direction of the mineral sector
- ii. Providing administrative assistance to the mineral sector

³⁰ This question was answered by 101 respondents.

- iii. Providing technical assistance to the mineral sector
- iv. Providing exploration information for investors
- v. Providing financial and legal assistance to the mineral sector
- vi. Others (based on respondent opinions)

8.11.4 Analysis of Responses

Analysis of SSMs Responses

The duties of the MMM recognized as important by 33 respondents from this group were as follows: i) Financial and Logistic Assistance: 32/33; ii) Technical Assistance: 29/33; iii) Providing Exploration Information: 24/33, iv) Administrative and Legal Assistance: 23/33; v) Global Planing and Direction 15/33. The breakdown of results is given in the table below.

Table 8.17 Priority of Duties of the MMM (Category: SSM Respondents)

Duties:	1	2	3	4	5	Sum	Overall Rank
Global Planing and Direction	6	3	4	0	2	15	5
Admin. And Legal	4	4	5	0	2	23	4
Technical Assistance	8	8	7	4	2	29	2
Providing Exploration Information	11	9	7	2	2	24	3
Financial and Logistic Assistance	11	9	7	2	2	32	1
Others	1	1	1	0	0	3	6
Total Number of Respondents: 33							

As can be seen above, from the Small-Scale Miners' point of view, the most important task of the MMM is to provide this sector with financial and logistic help. The second most important task is to provide technical assistance to the SSMs. As stated by 70% of the respondents, the major problems of SSMs were a) weak financial position, b) low technical capabilities, and c) expensive equipment and machinery.

Almost all respondents from SSMS stated that they were expecting the MMM to support and help them solve these problems. With respect to financial problems, most of the interviewees wanted the government to increase their share of low-interest government loans (Code 3 of Annual Budget). Other answers to the priority of duties of the MMM were:

- The first priority of the Ministry's tasks is: *"To create a conducive environment for investment and to leave mining to experienced miners"*
- The second priority is: *"To help SSMS market their mineral products, domestically and internationally"*

A total of 60% of those who responded that financial and legal assistance is the first priority of the MMM suggested that in terms of logistic assistance, they expect the MMM to provide them with low-cost machinery and equipment, by either allocating low-rate currencies (preferable exchange rates) for mining input, or leasing mining machinery and equipment out to SSMS at prices lower than the free market.

Analysis of MME Responses

The duties of the MMM recognized as important by respondents from this group were as follows: i) Financial and Logistic Assistance: 18/18; ii) Technical Assistance: 17/18; iii) Global Planing and Direction: 11/18; iv) Providing Exploration Information: 10/18; and v) Administrative and Legal Assistance: 9/18.

The breakdown of results is given in the table below.

Table 8.18 Priority of Duties of the MMM (Category: MME Respondents)

Duties	1st	2nd	3rd	4th	5th	6th	7th
Global Planing and Direction	5*	1	3	1	1	11	3
Admin. and Legal Assistance	0	2	0	0	2	0	0
Technical Assistance	7*	7	2	1	0	17	1
Providing Exploration Information	0	1	0	0	0	10	2
Financial and Logistic Assistance	4	4	3	2	2	15	2
Total Number of Responses: 10							

*) One respondent: global planing and direction, technical assistance, and providing exploration information are all first priorities.

As can be seen, according to MME respondents the most important task of the MMM is technical assistance. The second most important task is financial and logistic assistance to the MMEs.

Analysis of LME Responses

The duties of the MMM recognized as important by respondents from this group were: i) Global Planing and Direction: 24/27; ii) Technical Assistance: 22/27; iii) Providing Exploration Information: 22/27; iv) Financial and Logistic Assistance: 21/27; and v) Administrative and Legal Assistance: 18/27. The breakdown of results is given in the table below.

Table 8.19 Priority of Duties of the MMM (Category: LME Respondents)

Duties	1st	2nd	3rd	4th	5th	6th	7th
Global Planing and Direction	24	1	1	0	0	26	1
Admin. and Legal Assistance	0	0	0	0	0	0	0
Technical Assistance	0	9	7	6	0	22	2
Providing Exploration Information	0	0	0	0	0	0	0
Financial and Logistic Assistance	0	3	7	5	6	21	4
Total Number of Responses: 27							

Analysis of ADMIN Responses

The duties of the MMM recognized as important by respondents from this group were i) Technical Assistance: 21/23; ii) Global Planning and Direction: 20/23; iii) Financial and Logistic Assistance: 19/23; iv) Administrative and Legal Assistance: 18/23; and v) Providing Exploration Information: 13/23. The breakdown of results is given in the table below.

Table 8.20 Priority of Duties of the MMM (Category: ADMIN Respondents)

Priorities	First	Second	Third	Fourth	Fifth	Sixth	Overall Rank
Global Planning and Direction	10	3	3	2	2	20	2
Admin. and Legal Assistance	2	2	2	2	2	13	3
Technical Assistance	6	6	5	2	2	21	1
Providing Exploration Information	2	2	2	2	2	13	3
Financial and Logistic Assistance	2	6	5	2	2	17	4
Total Number of Respondents							

Analysis of MINSEC Responses

The following table shows the duties of the MMM recognized as important by all respondents from the Mineral Sector.

Table 8.21 Priority of Duties of the MMM by Respondents who Recognized the Duty as a Priority (Category: MINSEC Respondents)

	Global Planning and Direction	Financial and Logistic Assistance	Providing Exploration Information
5		1	3
3		2	4
1		4	3
42		3	5
3		22	4
71%		44%	64%

The following table shows the duties of the MMM recognized as first priority by all respondents from the Mineral Sector.

Table 8.22 Priority of Duties of the MMM by Respondents who Recognized the Duty as the First Priority (Category: MINSEC Respondents)

	Global Planning and Direction	Financial and Logistic Assistance	Providing Exploration Information
	4	1	5
	2	3	4
	1		2
	1	4	5
	1	3	5
	44%	16%	9%

The following general deductions may be inferred from the above two tables. The priority of duties of the MMM from the view point of SSMs is quite different from that of the LMEs. The SSMs expect assistance, such as technical, financial and logistic, from the MMM. For instance, 97% of SSM respondents referred to the financial and logistic assistance as a priority in duties of the MMM, and 34% of them ranked it as the first priority. However, 77% of respondents from LMEs identified financial and logistic assistance as a priority and none of them mentioned it as first priority. Furthermore, 96% of LME respondents referred to global planning and direction as a priority in duties of the MMM, and 92% mentioned it as the first priority, while 45% and 18% of respondents from SSMs mentioned this task as a priority and first priority of duties of the MMM, respectively.

LMEs and administrative respondents referred to global planning and direction as the first priority of the MMM, while the SSMs and MMEs referred to financial and logistic assistance and technical assistance as the first priority of duties of the MMM, respectively. However, according to the overall responses, global planning and direction is the most important (first

priority) task of the MMM, followed by technical assistance.

The views of administrative respondents are very similar to those of LMEs and very different from those of SSMs. This shows that MMM policy-makers are focusing more on the state mining companies. Another reason for this is that there is no department or division to deal with SSMs in the MMM.

SSMs, MMEs and even administrative respondents referred to financial and technical assistance as an important task of the MMM. This is because the SSMs and some MMEs were in dire financial straits due to the high price of mining equipment and the low prices of mineral commodities, particularly industrial minerals and decorative stones. This was evident in other responses of the survey as well. We will elaborate more on this point later in this chapter.

8.11.5 Concluding Remarks

Before any attempt to comment on the duties of the MMM as well as on its organizational chart, it is important to establish the principal goals of government in the mineral sector. The government should focus on implementing sound macro-economic policies and a satisfactory legal and regulatory framework in order to promote and sustain private investment in the globally competitive mining industry environment. A World Bank study (Barry, 1996) stated that the role of government is one of a regulator and promoter, leaving operations and management to private sector enterprises. In the case of small-scale mining, however, a supportive role is suggested for government. To achieve this goal, the institutional framework of the Iranian mining sector requires some modernization and modification to respond to the challenges of mining.

As Kumar (1992) states, there is no unique institutional chart which could be applicable to every country; rather, each country must establish and promote an appropriate institutional

framework based on its goals and plans, and utilize its institutional capability. Given the current status of the MMM and the lessons derived from this survey, some modifications in the tasks and organizational chart of the MMM are recommended.

Policies and strategies of the MMM towards the mineral sector should be stated clearly; the processing of applications must be done more rapidly; the authority and responsibilities of regional offices must be transparently defined; technical staff need to be properly trained and motivated, and the management style and functional chart of the ministry need change to meet the requirements of large operations in the private sector. In other words, there is a need to have a strong administrative foundation to take on the tasks of managing mineral resources which may be worth millions of dollars. To this end, the following are suggested.

(i) Strategic Policy Studies for Mineral and Metals: A prominent duty of the MMM, as stated in its establishment law, is to determine strategies and policies related to mining and metallurgical activities and to propose medium- and long-term plans for the mineral sector of Iran. It is suggested that the Division of Planning reorient its duties to study domestic and international mineral policy issues in order to propose plans concerning sustainable mineral development and regulations related to fiscal and environmental issues.

(ii) Mineral Technology: Technology along with labour and capital are the three important factors that influence the production of goods and services from an economic point of view. Using a simple mathematical equation, an IMF study (1995) measured what proportion of increased output is a result of higher labour participation and better use of capital, and what proportion is the result of technological upgrading. According to this study, increasing output by increasing inputs of labour and capital can work only for a limited period (extensive growth). However, a significant and sustained rate of technological progress is the only possible way for an economy to achieve a sustained rate of growth in output per person (intensive growth). Further studies have also confirmed the validity of these conclusions (IMF Working Paper 95/98).

Mining is an internationally competitive business. New technologies and equipment are being used in the mineral sector of developed countries on a regular and continuous basis. The mining companies which learn to use technology faster and more efficiently can succeed³¹. To achieve this goal, research and development should be conducted on a regular basis in mine mechanisation and automation as well as in metallurgical processing. The research work in the steel industry of Iran is a good example of what needs to be done in other industries.

To undertake this duty, a Mineral Technology Unit is suggested for the MMM. This unit should operate in partnership with industry, provincial offices, universities and other research institutes³². The main activities of this department should include the following:

- i. To study and put in place appropriate technologies that can enhance all aspects of mineral production, including the development of value-added products from metals and minerals;
- ii. To investigate and recommend sound technical inputs and processes as well as policies and regulations to ensure work safety and sustainable development; and.
- iii. To investigate and recommend steps to promote the growth of small- and medium-sized mining companies as well as support these industries by giving practical advice on how to improve their products and processes to ensure their competitiveness (Compiled from CANMET Homepage, 1998).

³¹ It should be noted that assorted technical and non-technical elements are ascertained as significant components in decision making regarding technology. However, most accepted mining procedures may not be the best technology for the present environment. There may be differing technologies that can function at a much higher level (Kanchanamethakul, 1989).

³² A similar department is working as CANMET in Canada. The most important direction of the research activities by the Department of Mineral Technology include: promoting sustainable development by finding technically sound solutions to environmental problems; improving industry competitiveness through enhanced productivity; and improving health and safety in the underground mining environment (CANMET Homepage, 1998).

(iii) Promotion of Small-Scale Mining: The importance of the SSMs in regional and economic development will be discussed in later sections. However, with respect to the duties of government regarding SSMs, the most important goal of the MMM should be to raise the status of small-scale mining from that of an unorganized and under-supervised industry to one that is organized, monitored, supported and modernized to meet the sector's development objectives (Barry, 1996).

As is being practised in some LDCs (Kumar and Amaratunga, 1994), the unit responsible for SSMs in the Mining and Mineral Processing Division should be activated. This unit should continuously deal with issues relating to small-scale mining which are different from those of large-scale mining. Some of the potential duties of this unit are summarized as follows:

- i. To provide geological, geophysical and geochemical data to the small- and medium-scale miners;
- ii. To provide technical assistance and advisory services to small- and medium-scale mines related to practical mining problems on an on-going basis. Small-scale miners should be taught how to fully explore the advantages of manual mining methods as well as how to employ modern technology;
- iii. To encourage research on the development of equipment and technology for small-scale mining;
- iv. To require small-scale operations to maintain basic accounts and supply statistical information to the MMM in order to better plan approaches to sound business practices; and,
- v. To allocate governmental loans to SSMs and to help them find financial sources on easy terms for the purchase of supplies and equipment.

(iv) Other Duties: The following duties are suggested for the Department of Economics and

International Affairs:

- i. To establish relationships with international mining companies in order to maintain the competitiveness and progress of the mineral industry;
- ii. To create a favourable investment climate for exploration and mine development in the country in order to promote the international competitiveness of the industry;
- iii. To provide detailed information to potential investors in Iran and abroad to attract them to the mineral sector³³; and,
- iv. To study the economic and financial impacts of mineral development, as well as the elements of mineral policy to achieve economic goals and objectives. To achieve this objective, a proper system of data gathering from mines should be designed and implemented. The Department should provide and analyse statistics about the country's mineral industry, including ore reserves, exploration, and mineral production and consumption.

8.12 TRAINING PROGRAMS IN THE MINERAL SECTOR OF IRAN

As mentioned in section 8.11, one of the duties of the MMM according to its establishment law is to plan and supervise academic and field training in the mineral sector. In its annual report, the MMM claimed that the goal of the training programs during the FFYDP was completely achieved.

8.12.1 The Survey Question

In order to develop further insight into the training programs in the mineral sector of Iran.

³³ This is a very important task for the Department of Economics and International Affairs. As it appears from the survey on foreign mining companies (see chapter 9), little information exists about the mineral industry of Iran as well as the various rules and regulations related to mineral investment. Only 17% of respondents were aware of the Mining Code and foreign investment regulations in Iran.

the following question was asked. *"Do you have any training program related to mining operations for your personnel?"*

The responses are shown in the following tables.

Table 8.23 Academic Training in the Mineral Sector of Iran

	CSMT	IMM	LEMP	ADMP	MINSRG
Yes	6	37	69	48	37
No	2	3	9	10	3
No answer	12	-	12	12	10
Total	100	100	100	100	100

Table 8.24 Field Training in the Mineral Sector of Iran

	CSMT	IMM	LEMP	ADMP
Yes	42	67	85	62
No	45	33	10	30
No answer	13	-	7	8
Total	100	100	100	100

8.12.2 Concluding Remarks

One problem in this arena is the incompatibility between training and employment programs in the country. In many instances, there is no coherence between educational programs and employment opportunities. The needs of various economic sectors for manpower have never been correctly predicted, and therefore, the educational sector cannot make the necessary adjustments in anticipation and in response to the requirements of the economy.

When manpower training does not conform to the demands of the employment market, apparent unemployment surfaces initially, and when these unemployed people get hired to work, hidden unemployment develops. This is caused by the fact that those people who have

been employed have not undergone the necessary training to become skilled and active in the performance of their jobs (Kar va Kargar, Iranian Morning Daily, March 9, 1995). It is important, therefore, that the mineral sector prepare and announce a long-term program outlining the requirements for trained manpower to enable universities and education centres to make the necessary adjustments in their manpower training curriculum.

8.13 OTHER INVESTIGATED ISSUES

8.13.1 Financing of Mineral Projects

Financing of exploration activities to determine the grade and size of mineral deposits, metallurgical testing (pilot plants) to assess the best beneficiation methods, and development of infrastructure, are the most expensive and risky stages of mineral development. Also, the long waiting periods before returns can be realised makes the financing of mining ventures very costly.

Generally, banks and financial institutions approach the financing of mining ventures very cautiously because of the following elements:

- i. Inaccuracy in reserve estimation;
- ii. Delay in revenue flow due to delays in the implementation period(s);
- iii. Cost overruns;
- iv. Technical failure;
- v. Failure of a contractor to fulfil his commitments;
- vi. Government intervention in project implementation;
- vii. Instability of mineral markets;
- viii. Miss-management;
- ix. Foreign exchange fluctuations;
- x. Poor labour relations (which cause unrest, etc.), and
- xi. Possibility of nationalization, in the case that the lender is a foreign bank.

While some of these elements are common to any industrial investment, others are unique to the mining ventures.

For these considerations, banks and financial institutions examine very carefully the following key aspects of mining projects: amount of reserves; project rate of return; form of operation (large open pits are favoured), level of infrastructure and geographic location (projects in remote areas are not favoured, since they are subject to infrastructural investments and externalities); methods of construction; marketing abilities and opportunities; cash flow; financial situation and credibility of the mining company (larger and more diversified companies are favoured); metal markets; mining title, land law and statutory requirements; and finally potential risks, including environmental impact, as enumerated earlier (RAC, 1992).

One can say that issues such as mining title, land law, tax regime, labour law, etc., have strong impacts not only on the decisions and reactions of the mining entities, but also on the financial institutions financing mining ventures. This makes government mineral policy important from both above-mentioned points of view.

At the moment, one major problem, as mentioned by more than 80% of respondents from SSMs, is the unwillingness of the banking system to provide them with long-term loans³⁴. This causes liquidity strains on small mining companies. Another problem is that the banking system perceives exploration activities as very risky and, therefore, does not grant sufficient funds for exploration activities unless the applicant can provide the bank with a reliable guarantee other than exploration permits.

Since mining is ranked as a risky business according to risk assessment standards of banks,

³⁴ As will be seen in the author's financial analysis (appendix), most loans to mining companies have been in the form of short-term loans.

and due to a relatively high demand for funds from other less risky projects (e.g., trading), banks are not overly keen in financing mining ventures. To solve this problem:

- i. The government should provide low-interest-rate loans to small and medium-sized mines, provide support in capital financing from provincial and regional development banks, encourage the development of strong regional economies, and upgrade the physical infrastructure;
- ii. The MMM should also encourage and challenge the banks and other financial institutions to develop concrete ways to help small and medium-size mines in capital financing without the use of personal guarantees; and,
- iii. Bank of Industries and Mines³⁵ objectives and policies should be changed to meet the growing needs of small and medium mining activities.

8.13.2 Mining Co-operatives

Co-operatives were mentioned in Iranian laws for the first time in 1924. However, it was after the victory of the Islamic Revolution, that Article 44 of the country's Constitution declared that the co-operative sector should form one of the pillars of the national economy.

To boost activities of small mining operators and to build a better structure for activities of SSMS, the law for the establishment of mining co-operatives was passed in 1987³⁶.

³⁵ The Bank of Industries and Mines of Iran is the only specialized bank to provide financing for the development of industries and mines.

³⁶ Kumar (1994) suggests that when it comes to small-scale mining, the individual operators are disadvantaged in a number of ways when compared to the co-operative or company structure. Some of the disadvantage are:

- Individuals have shown less organizational skills in the use of machinery and equipment;
- They have minimal market control in dealing with buyers;
- Increased pressure is put upon them by illegal dealers;
- Difficulties with contracts are created when there is an upsurge in the number of individual miners spread through the country.

It makes sense, therefore, for the government to encourage co-operatives where this is feasible.

Consequently, the MMM established the “Central Organization of Mining Co-operatives” in 1988. The main responsibilities of this organization are to issue mining rights to co-operatives and direct and manage their activities.

According to Iran’s Statistics Center (1996), 442 cooperative mining companies were active in Iran at the end of 1995. More than half of the mining cooperatives were active in extracting building and decorative stones. Some cooperatives were active in coal, iron ore and copper. No cooperatives were active in gold, lead and zinc mining.

There is a sizeable amount of small individual operations and mining co-operatives active in the mineral sector of Iran. Therefore, it is logical that the MMM review its policy regarding SSMs with respect to identifying and evaluating development problems, and recommending remedies and appropriate strategies.

The Survey Question: A major feature of mining co-operatives is that shareholders must hold an equal amount of shares. However, members can get different salaries and fringe benefits based on their expertise and experience. It is suspected that co-operative members do not always respect this requirement. To quantify this matter, the following question was asked to SSMs.

“What is your assessment of the proportion of mining co-operatives that are established in correct form (i.e., all members have an equal amount of shares)?”

The responses were as follows:

**Table 8.25 Proportion of Mining Co-operatives in which Shareholders
Have an Equal Amount of Shares**

Below 20%	6	15
40% - 59%	1	2
80% - 100%	6	15
Total	41	100

As can be seen, it is believed that the equal share requirement is not practised in most mining co-operatives. This shows that the community of co-operative mines did not accept this requirement.

8.13.3 Degree of Success of the Private (including Mining Co-operatives) and Public Sectors in the Mineral Sector of Iran

The results for the following question are shown below. Q: Which one of the private (including co-operatives) or public sector (SMEs) is more successful in the mineral sector of Iran?

**Table 8.26 Degree of Success of the Private and Public Sectors (SMEs)
in the Mineral Sector of Iran**

	Private	Public	Both	SUM
Public Sector	13	4	24	14
Both of them	9	13	16	12
No answer OR I don't know	24	29	20	24

This question was asked from the 14 respondents of the SMEs as well. Nine respondents answered that the private sector is not active in major mining operations and therefore cannot show its success or failure. However, they believed that SMEs have been relatively successful in recent years. Three respondents believed that the private sector is more successful and two had no idea.

8.13.4 Claims Related to the Ownership of Land from the Government or Individuals

The table below shows the responses to the following question: *“Do you have any claim, from the government or individuals, related to the ownership of the land on which you are mining?”³⁷*

Table 8.27 Claims Related to the Ownership of Land on which the Respondent is Mining

Category	SSMs		MMEs		ADMIN		SUM	
	#	%	#	%	#	%	#	%
Yes	20	61	1	6	4	22	25	36
No	12	36	13	72	7	39	32	46
No answer	1	3	4	22	7	39	12	18
Total	33	100	18	100	18	100	69	100

SSMs and MMEs mentioned two following problems:

- i. Problems with Agriculture and Forestry Regional Offices;
- ii. Some problems with private owners.

As can be seen, only 1/3 of respondents faced claims related to the ownership of land on which they are mining. LMEs have almost no problems in this respect.

³⁷ Administrative interviewees were asked: *In your opinion, do miners / mining companies have problems related to land title?*

8.13.5 MMM Support Given to Mining Companies and Individual Miners

Regarding MMM support given to mining companies and individual miners, the following question was asked: "*How much support do you feel you are getting from the MMM and its provincial offices?*" Responses to this question are presented in the table below.

Table 8.28 MMM Support Given to Mining Companies and Individual Miners

	Quite a lot	Adequate	Not much	No answer
Quite a lot	46	13	9	29
Adequate		6	33	13
Not much			15	
No answer	15	8	56	23

Altogether, the majority of respondents were pleased with the support they are getting from the MMM. This question was asked of administrative respondents in the MMM and its provincial offices in the following form: "*How much support do you think private mining companies/ individuals are getting from the MMM and its provincial offices?*" The responses were as follows: 8 responded "We have no idea, you are better to ask this question from miners and mining companies." Five did not respond or had no comment. Out of the 10 who responded, 2 responded "quite a lot", 5 responded "adequate", and 3 responded "not much". One MMM respondent mentioned that the degree of support depends to the director of the provincial office. The administrative system is such that if you don't follow your requests/ problems, nobody will help you. He added: "*If the baby does not cry, it will get no milk!*"³⁸

³⁸ The English equivalent: "squeaky wheel gets the oil"

8.13.6 Mineral Price Control

Regarding the control of mineral prices, the following question was asked: *"To what extent do you feel that the price of your product(s) is determined by market forces and/or by government control?"*³⁹

Responses are presented in the table below.

Table 8.29 Price Control on Mineral Commodities and Metals

Category	SSMs		MMEs		ADMIN		SUM	
	#	%	#	%	#	%	#	%
Total government control	1	3	1	6	-	-	2	3
Total market control	28	85	13	72	11	73	52	79
Controlled by both government and market	2	6	2	11	-	-	4	6
No answer	2	6	2	11	4	27	8	12
Total No. of respondents	33	100	18	100	15	15	66	100

8.14 CONCLUSIONS

This chapter reviewed the characteristics and performance of the mineral sector. This was done by examining the results of a country-wide survey, covering the comments and opinions of those directly involved in the country's mineral sector, from mineral policy makers in government, to prospectors, developers and mining companies. Many issues regarding current mineral policy of the MMM, the mining code, labour law, foreign

³⁹ The above question was asked to administrative respondents in the following form: *"In your opinion, are the prices of minerals and metal products determined by market forces and/or by government control?"*

investment, and other relevant aspects of mining activities in Iran were reviewed through a pre-prepared survey protocol.

New insights were also gained by conducting personal interviews with key government officials as well as experienced mining activists both from the public and the private sectors. The process involved a two-way exchange, emphasizing sincerity and openness. The author believes that the results of this survey represent what was “on the ground” and what were the opinions of the “real players” in the mineral sector of Iran. This was a necessary step before any attempt was made of formulating mineral policy amendments. Parts of the results of this survey as well as relevant concluding remarks were sent to the Ministry of Mines and Metals and the author is pleased to have learned that many recommendations were considered in the new mining code of Iran.

The results of the survey have been discussed throughout this chapter. In conclusions, some principal recommendations are presented below.

In addressing issues related to exploration, we concluded that to boost exploration activities, the government should create a conducive environment that encourages private sector investors to invest more funds in exploration, and commit these funds over a longer period. The provision of long-term loans to qualified applicants will improve exploration activities: the banking system should be encouraged to provide more assistance to the exploration effort. Exploration and mining permits should be tradable. Foreign capital and expertise should be employed for exploration activities: this requires a solid, fair and accountable mining code and fiscal policy.

The Exploration Department of the MMM should be activated and be given more authority to prepare a long-term exploration plan with financial and technical incentives set for exploration activities. The department should also conduct economic viability studies for the development of various minerals. All this information should be available to interested

parties. At the moment, exploration data is kept in a scattered fashion. Therefore, an Exploration Data Bank (EDB) is quite crucial and should be implemented by the MMM. Due to the lack of a centralized data depository, there were many repeated efforts in exploration in the past.

The MMM should offer technical assistance to private sector exploration efforts and the resulting geological, geophysical, geochemical, geo-engineering and geostatistical investigations, as well as other exploration information, should be made available to those who intend to develop mines. Prospectors should be financially motivated and backed by large companies in performing their job. Furthermore, they should be guaranteed by law that they can lease the results of their effort for a period of at least 20 years. This will improve their confidence and promote exploration investment.

The Mining Code was investigated and it was concluded that it possessed some deficiencies and required modification. Fortunately, during the course of this study, a new mining code was approved (July 1998). Some additional points are noteworthy: the MMM should establish a secretariat in the Division of Mining and Exploration, whose responsibility it is to ensure that the mining law of the country is fairly enforced. Any disputes regarding the mining law should be solved through authorized entities with no personal judgement biases. Any subjective interpretation of the mining code should be prevented. The MMM should deal with the private and public sectors indiscriminately. The bureaucracy associated with the issue of exploration permits and mining rights should also be reduced.

With respect to the labour law, many respondents believe that it needs minor revisions. A majority of respondents, however, said that they had problems with the enforcement of the labour law rather than with the law itself. They believe that regional offices of the Ministry of Labour and Social Affairs, responsible for enforcing this law, have so far failed to apply the law fairly. In particular, they mentioned that in most disputes between workers and employers, arbitrators side with the workers.

In discussions related to the export of mineral commodities and metals, it was mentioned that Iran has a relatively big domestic market. This, together with the markets of a variety of mineral commodities in neighbouring countries and good marketing practices, could provide a relatively good and stable mineral market.

During the FFYDP, the performance of the sector in mineral exports was not satisfactory. Measures such as the application of international standards in the quality, packaging, transportation and marketing of mineral exports; the stability in government policies concerning import/export regulations, foreign currency, exchange rates, customs and other relevant rules and regulations; the delegation of mineral export activities to private companies; the establishment of supportive export regulations and tax incentives; the improvement of local transport nets; and the forming of joint export companies, can effectively boost mineral exports.

With respect to environmental issues, the industry must be given environmental awareness and persuaded that the environment is as important as increased productivity. Also, the provision of technical assistance in creating environmentally optimum mining systems is necessary. Other measures such as expanding basic and applied environmental research based on the sector's particularities, and creating incentives for companies to prevent erosion and earth, water and air pollution are needed.

Regarding mining taxation, the government should consider its objectives in light of the special nature of the mining industry, and balance the trade-offs between the many different conflicting objectives to ensure an equitable system. Generally, the mining tax system depends on the importance attached to obtaining tax revenues from mining activities and the size of these revenues relative to other tax revenue sources.

In particular, some respondents have criticised the administration of the tax regime, and the way tax exemptions were given. Some believed that tax incentives were needed to promote

the expansion of existing operations. Other factors such as reducing the tax rate, broadening the tax base, and creating a linkage between profitability and the effective tax rate were suggested.

Apart from economic and technical risks common to mineral investment everywhere, many respondents argued that the instability in government policy and regulations are perceived as a risk factor and obstacle to mineral investment in Iran. Needless to say that proper, timely and stable policies are imperative to mitigate the effect of this risk element.

Regarding foreign capital and technology, the mineral sector as a whole had a favourable view of foreign participation. However, the hiring of foreign specialists was less favoured. To facilitate foreign participation in the mineral sector, many respondents believed that the government should state clearly its policy concerning trading, property rights and repatriation of profits and capital, and create a satisfactory legal and regulatory environment.

In the discussion related to the organization and duties of the Ministry of Mines and Metals, the Ministry's tasks were prioritised. As an important duty, the MMM should formulate a long-term strategy for the development of the mineral sector. The mineral policy should be proactive not reactive, i.e., decisions have been taken when dictated by events (Sinding, 1993). This is a prerequisite for attracting investors.

Other issues such as training programs in the mineral sector, financing of exploration activities, problems associated with the ownership of land in the case of small-scale mines and co-operatives, need to be given due consideration.

CHAPTER 9

INVESTIGATION OF ISSUES RELATED TO FOREIGN INVESTMENT IN THE MINERAL SECTOR OF IRAN: RESPONSE FROM MINING COMPANIES

9.1 INTRODUCTION

Mining and metallurgical projects are among those that require the most sizeable investments undertaken in Iran. One target of the first and second development plans and the MMM, as mentioned earlier, was to attract foreign investment in mining projects. As mentioned in chapter 6, the mineral sector, despite a promising situation and efforts of the MMM, has so far failed to attract considerable foreign capital. Some reasons for this were discussed in that chapter.

In an attempt to formulate a policy framework for Iran aimed at attracting foreign investment, a survey was conducted among some major international mining companies to determine their expectations and necessary conditions with respect to investment location decisions. The main purpose of this chapter is therefore to investigate the major factors and issues that determine the interest of major mining companies in investing in the mineral sector of Iran, and by extension, in developing countries.

More specifically, this chapter attempts to ascertain the most important factors affecting the investment policies of foreign companies in developing countries such as Iran. It also examines the particular factors/issues perceived as obstacles to enter the mineral sector of Iran for investment, and provides a comparison between the present survey and similar prior surveys. Finally, comments on how the current situation can be improved to make the country more competitive in attracting foreign investment in the mineral sector are presented.

9.2 GOVERNMENT ATTITUDE TOWARDS FOREIGN INVESTMENT

Based on the first and second development plans, the Iranian government encourages foreign investment in the mineral and other sectors where there are insufficient domestic expertise and capital. As for foreign investment in the mineral sector, Iranian authorities have shown their interest on many occasions (see for instance: Middle East Executive Reports, 1992; IRNA, June 26, 1994; Iran News Daily, April 30, 1995 and August 18, 1997; Reuters, February 9, 1998). The keynote address of the Minister of Mines and Metals at the Economic and Social Commission for Asia and the Pacific (ESCAP) Seminar in 1992, announced Iran's official position: *"We would like to announce our will and interest for the acceptance of foreign investment and joint venturing. We believe that because of Iran's comparative advantages in the abundance of energy and mineral resources, low cost of labour, long existing experience in mining and industrial activities and access to the Persian Gulf, investment in Iran can have reasonably high rates of return."* The validity of this statement extends beyond the government minister: 87% of the MMM officials and 66% of managers of large mining enterprises interviewed in Iran believe that foreign investment is necessary for development of the mineral sector¹. This shows that the mineral sector has formed a favourable view of foreign investment.

To enable the flow of foreign investment into the country, the government has established

¹ See chapter 8.

the “Organization for Investment, Economic and Technical Assistance of Iran (OIETAI),” controlled by the Ministry of Economic Affairs and Finance. In addition, according to the Law for the “Attraction and Protection of Foreign Investment,” foreign capital and profits are subject to the legal protection of the government, and foreign investments enjoy all rights, exemptions and facilities accorded to domestic investors (Price Waterhouse, 1996).

Furthermore, the government offers a range of incentives, including tax exemptions, tax holidays, tax rebates, duty exemptions, tariff protection, and special financial arrangements to foreign investors. In the past, foreign equity holding was restricted to 49%². Recently, however, the 49% ceiling on foreign ownership was entirely lifted and the government showed its willingness to consider foreign majority ownership on a case-by-case basis (IRNA, October 9, 1997).

9.3 THE IMPLEMENTATION OF A SURVEY AMONG MAJOR MINING COMPANIES

9.3.1 The Purpose and Methodology of the Survey

The main objectives of the survey were:

- i. To shed some light on the prevailing reality of MNC-LDC relations based on the cumulative experience of firms in the mining sector;
- ii. To gain a better understanding of the influential components of host country resources and advantages (LSA), and the concerns and prerequisites of potential mineral investors in developing countries and particularly in Iran;
- iii. To gain an insight into foreign investor perceptions of Iran’s environment in the

²According to Price Waterhouse (1994), when foreign investors transfer high technology, export the bulk of production, train local employees in different management and production levels, use a high percentage of locally-produced content in the export product and locate outside Teheran, a majority ownership is allowed.

mineral sector; and

- iv. To determine the strengths and drawbacks in the mineral sector of Iran that encourage/discourage foreign companies to invest.

The design of the questionnaire instrument in this study followed several steps: First, those factors appearing most frequently in the literature and in previous surveys formed the initial basis. Second, the results of case studies in chapter 7 were reviewed to incorporate further details. Third, in the first phase of design, semi-structured interviews were conducted with some academics and mining company executives to verify the nature of research questions, including scales and their rationale, so as to enhance the completeness and accuracy of the instrument. Fourth, the questionnaire was then prepared, pre-testing most of the questions with 5 to 6-point scale answers, to ensure maximum respondent specificity. Also, in order to facilitate a high response rate, the questionnaire design was optimised for its professional and visual impact. Prior to mailing the questionnaire, most of the executives of many major mining companies were contacted. Some were interviewed personally in a major international conference as part of the preparation of this research.

The questionnaire was sent to fifty major mining companies based in Canada, Australia, Europe and Japan. Special attention was paid to include mining companies who have had long-term experience and contract(s) within the mineral sector of Iran. After two follow-up communications with the recipients by letter and E-mail, replies were received from twenty-seven companies. Out of these, twenty-four were deemed usable and were subsequently analysed, yielding an overall response rate of 48%. The answers to the questionnaire represent the views of the respondents based on their knowledge and experience. Overall, they provide worthwhile information, which could serve as a yardstick for mineral investment policy in Iran, and may be generalized to other LDCs.

9.3.2 Experience and Involvement of Respondents

In terms of scope of activities and involvement, 71% of companies were active in

exploration, mine development and mineral processing, and 29% of them were active in technical and managerial services. Table 9-1 gives details concerning the respondent's position and experience in the company. The *high average experience of respondents* in the mineral sector (i. e., 25 years), including involvement in LDCs, gives this survey an experientially based perspective.

Table 9.1. Positions of the Respondents in the Company (% of Total)

President		Executive Manager		Consultant		Mid-level Manager	
Frequency	%	Frequency	%	Frequency	%	Frequency	%
3	12.5	14	58	3	12.5	4	17
Average Work Experience of the Respondents:				25 years			

In so far as the form of entry into the mineral sector of LDCs is concerned, table 9-2 provides a diverse picture. Common forms of entry in the mineral sector, as shown in table 9-2, are contractual agreements, joint ventures and wholly-owned involvement. Licensing agreements and project lending follow. Each of these forms is associated with a particular level of perceived risk and control (World Bank Research Observer, 1992; Classens, 1993; and Selassie, 1995).

**Table 9.2 Types of Contracts that Responding Companies
have had with Developing Countries (% of total)***

Joint Venturing	Licensing Agreement	Contractual Agreement (Managerial, Technical)	Totally-owned Subsidiary of the Company	Project Lending	Others
46	8	67	25	8	4

* Since some respondent companies have had two or more types of contracts with developing countries, the sum of percentages representing the types of contracts is more than 100.

9.4 DISCUSSION OF RESULTS

9.4.1 Reasons Cited by Mining Companies for Investing in Developing Countries

The incentives of multinational mining companies for investing in the mineral sector of developing countries are well discussed in the literature (see for instance: Selassie, 1995; Strongman, 1994; Tsomondo and Adde, 1993; Kumar, 1990; and UN-ESCAP, 1980). Incentives such as availability of resources (mineral endowment), profitability of the project (fast payback of the investment), maximizing profits over time by sustaining a long-term presence in a country (granting long-term claims tenure), and investing in minerals that have strategic importance, have been mentioned in many studies in the past.

The first question of the survey concerned the reasons/incentives for investing in a developing country. The respondents were asked the following question: *"Please rank in order of importance your reasons for investing in a developing country"*. The results are shown in table 9.3.

Table 9.3. Incentives of Mining Companies for Investing in a Developing Country

	Rank	Average	S.D.*
Profitability of the Project	1	4.64	1.58
Mineral Potential of the Country	2	4.47	1.66
Long-term Concerns in the Country	3	4.19	1.58
Market Expansion (Host country's market size)	4	2.87	1.64
Availability of Resources	5	2.19	1.49

♦ Degree of Importance of Factors on a Scale of 5=most important to 1=least important

* Standard Deviation

As can be inferred from this table, the profitability of the project, the mineral potential of the country and long-term concerns in those markets are cited as important reasons for entering

into a mining agreement with an LDC.

The next question concerned the importance to mining companies of the investment environment in the host developing countries where the (investor's) most recent operation is (was). *Question: In the developing country where your most recent operation is (was), in your opinion, how satisfactory is (was) the investment environment with respect to each of the following? (4=Quite Satisfactory, 3=Satisfactory, 2=Unsatisfactory, 1=Completely Unsatisfactory, 0=Not Applicable).* The responses are shown in tables 9.4 and 9.5.

Table 9.4 Degree of Satisfaction of Foreign Companies Regarding the Status of Selected Issues in Their Most Recent Experience with Mineral Investment in LDCs

	Degree of Satisfaction		
	Rank	Average	S.D.
Remittance Policies		3.65	1.63
Equity Ownership	2	3.53	1.65
Access to Foreign Currency	4	3.42	1.34
Mining Rights	6	3.33	1.35
Hiring of Foreign Specialists	8	3.28	1.5
Government Incentives (tax holidays & exemptions, cheap loans, ...)	10	2.95	1.58

♦ Scale: 4 means "Quite Satisfactory", and 3 means "Satisfactory"

From the table above, it can be seen that some factors are considered quite satisfactory in

developing countries. These include incentives related to the fiscal policies of the host government (the right to repatriate capital, access to foreign currency, tax holidays and exemptions), the regulatory system (equity ownership, mining rights, land ownership), the economic policy (no pricing of inputs and no price control on final products) and administrative policies (allowing hiring of foreign specialists). A review on these variables shows that there are factors that can be improved upon through appropriate government policies. On the other extreme, there are factors that are not currently satisfactory. The top five unsatisfactory factors are shown in the following table.

**Table 9.5 Issues/Elements that have been Unsatisfactory to Foreign Investors
In Their Most Recent Experience with Mineral Investment in LDCs**

1	Efficiency in Existing Mining Activities
3	Work Ethics (workers discipline, . . .)
5	Management – Workers Relations

The issues of low efficiency, instabilities in the political environment of LDCs, and work discipline that have been ranked unsatisfactory by mining companies are mostly factors that are inherent in LDCs. The lesson here for Iran (and any other developing country) is that if a developing country improves its status on these issues, it would be in a better position to attract foreign investment. Although this is a long-term challenge, a sound mineral policy along with efficient and sound fiscal regulations can dramatically improve the situation in these countries.

9.4.2 Major Factors/Issues that Attract Foreign Investment to the Mineral Sector of LDCs

Many factors may impact upon a country's attractiveness for mining-oriented foreign investment, the most important of which were discussed in Chapter 4. To summarise, these elements are: mineral endowment, guaranteed mining rights before exploration (e.g., security of tenure), stable and attractive fiscal and political regimes, progressive mining codes, economic and currency stability, simplified administrative procedures, contractual stability, availability of land for exploration and international arbitration³.

The survey question relating to the degree of importance of the above-mentioned factors for mining companies in formulating contracts related to mineral projects in a developing country was as follows: *How important are the following factors for you in formulating contracts concerning mineral projects in a developing country?* A list of 15 items helped capture the details and operationalize this question.

The results are shown in tables 9.6 and 9.7.

³ For a longer list and detailed discussion see: Eggert, 1997; Selassie, 1995; Strongman, 1994; Todd and Salmasi (1993); Engineering & Mining Journal, May 1993; Aldous, 1993; World Bank Technical Paper 181, 1992; United Nations [selected papers], 1992; and Kumar, 1990.

Table 9.6 Degree of Importance attached to Selected Issues from the view of Mining Companies in Their Decision towards Mineral Investment in Developing Countries

	Rank	Average	S.D.
Right to Mine (Security of Tenure)	1	4.95	0.22
Repatriation of Profits	2	4.90	0.37
Stability in Laws, Regulations and Government Policies	3	4.76	0.44
Mining Code	4	4.62	0.64
Access to Foreign Currency	5	4.45	1.26
Repatriation of Capital	6	4.29	1.12
Land Ownership	7	4.33	0.8
Equity Control	8	4.29	0.78
Fiscal Incentives (Taxes, Duties, . . .)	9	4.29	0.85
International Arbitration	10	4.05	0.86

♦ 5= Most Important to 1= Least Important.

Some issues which have been regarded as most important in attracting foreign investment (such as the right to mine, the right to repatriate profits and capital, the mining code, access to foreign currency, fiscal incentives and international arbitration), corroborate most previous surveys (UN-ESCAP, 1993; O'Neill, 1992; World Bank, 1990; and East-West Centre, 1989). However, the respondents to the present survey attached a high degree of importance to the stability in laws, regulations and government policies of the host country. This is a clear message for Iran. Recall that in Chapter 8, it was observed that local mining companies also perceived instability in regulations and government policies as an important risk inherent in mineral investment in Iran. Therefore, a major step for government to attract local and foreign investment would be to make prudent long-term plans and programs for the

development of the mineral sector and to commit itself to maintain a “stable regulatory and policy environment”.

On the flipside, factors rated as less important to mining companies in their mineral investment location decisions are shown in table 9.7.

**Table 9.7 Issues/Factors that are Less Important to Mining Companies
in Their Decision Toward Mineral Investment in Developing Countries**

Rank	Issues/Factors that are Less Important to Mining Companies
1	Growth of Local Demand for Products
3	Availability of Cheap Inputs

Issues such as local demand for the product (s), access to local expertise, availability of cheap inputs and financial contribution of the host country are relatively less important to the mining companies⁴. Tables 9.6 and 9.7 taken together clearly show that the concerns of the mining sector are different from those of general foreign direct investment (FDI). Important factors such as cheap inputs do not assume much importance to mining companies. Some elements that are critical from the point of view of mining companies in their decisions toward mineral investment location are discussed in the following section.

⁴ Some results of this study confirm those of a previous survey by Selassie (1995). Although his study is about the joint-venture formation in the agribusiness sector of Africa, foreign companies investing in the mineral sector have many common concerns. A comparison between the results, while bearing in mind the difference between the two sectors, can provide a better insight in this matter. Elements/issues such as price regulations on inputs, government incentives provided, ease of importation of raw materials, host country market size and prospect of expansion, and availability of skilled manpower, are categorized as “probably tolerable” by investing companies in Selassie’s survey.

9.4.2.1 Profitability of the Project and Fiscal Incentives

Rate of Return (ROR)

Mining companies want the rate of return in their overseas operations to be at least as favourable as at home (Aldous, 1993). Foreign investors, however, demand a higher rate of return because of high-perceived political risk in the host countries. Nevertheless, host nations are in a better bargaining position over conditions affecting the expected ROR, if they reduce the political risk. Foreign investors will only invest if the indicated rate of return is commensurate with the risks associated with exploration, development, extraction and marketing of minerals. Since the involvement of foreign partners reduces risks through risk sharing, they expect to be granted special incentives such as tax holidays, lower tax rates, special allowances and early write-off provisions, and the remittance of dividends (Adde, 1993).

Taxation

Taxation plays an important role while evaluating a country for investment. The tax rate *per se* is one of the most significant factors affecting the level of return to the investor. Foreign investment is generally subject to the same tax system applied to local investment. Due to its importance in the decision-making process of mining companies, taxation is presently being used by many developing and transition economies as an incentive for attracting foreign and national investment into the exploration for and development of new mines (Schreck, 1996)⁵.

Some previous studies (Strongman, 1994 and World Bank, 1992) have concluded that the profitability of the project and fiscal incentives (low tax rates, repatriation of profits and

⁵ Some countries like Chile, as mentioned before, have created more confidence in investors by allowing foreign companies to choose to pay tax on their profits either at the same rate as local companies, or at a fixed rate, which is guaranteed to remain unchanged for 20 years.

capital, etc.) of the host country are among the most important factors that encourage the entry of foreign investment. A survey of large mining companies (United Nations, 1993) has confirmed that three factors, namely guarantee of the right to mine, profitability of the project and the repatriation of profits, dividends and capital, play a leading role in attracting foreign investment. Ninety two percent of respondents of the present survey stated that the profitability of the project is an important consideration in investing in the mineral sector of an LDC. Regarding the degree of importance, this element ranked as the most important incentive for mining companies, with an average importance of 4.71 on a scale of 5= most important to 1= least important, with a standard deviation (S.D.) of 0.64.

Fiscal incentives followed closely. The degree of importance of this element was 4.29 with a S.D. of 0.85. It is noteworthy, however, that Kumar (1990) believes that the impact of fiscal incentives (tax holidays, investment allowances or subsidies) on investment decisions is limited. From his point of view, fiscal incentives cannot compensate for the high production costs or the losses associated with lack of the market. Competition among countries leading to almost the same incentives may have reduced the impact of fiscal incentives. They do not appear to prejudice the investment location decisions. This was somehow confirmed in the present survey, as fiscal incentives was ranked 9th in importance in investment location decisions.

9.4.2.2 Mineral Endowment and Geological Prospects

Another important consideration in any mineral investment is the rich mineral endowment and geological prospects of the host country. Foreign companies normally engage in exploration where assured by adequate geological data. Therefore, countries that have already conducted a certain amount of geological prospecting, with promising results of the preliminary investigations, stand a better chance of attracting foreign investment.

Johnson (1990) in his survey of multinational mining companies, showed that geological potential is the “most important factor” for investors in selecting countries for mineral

exploration. According to O'Neill's (1993) study among Australian junior mining companies, attractive geological prospects was ranked third in "critical to important" criteria for mining investment. Also, a survey of the Economic and Social Commission for Asia and the Pacific (ESCAP) among international mining companies showed that general mineral abundance and geological potential for certain targeted minerals were the top two most important factors in choosing exploration targets (United Nations, Economic and Social Council, 1993). The importance of this element in the present survey was 4.47 with a S.D. of 1.66.

9.4.2.3 Mining Rights

Given good geological prospects, a guarantee of mining rights before starting exploration is normally seen by mining companies as an essential precondition for investment. Afterwards, a well-established mining code and contractual stability are critical factors in mineral investment.

Mining rights in the host country was mentioned by 88% of respondents as an important factor in their decision on investing in LDCs. The degree of importance of this factor was 4.95 on a 5-point scale, with a standard deviation of 0.22.

9.4.2.4 Access to Foreign Currency and Foreign Exchange Policy of the Host Country

According to many studies (Op cit.), access to foreign currency and the foreign exchange policy of the host country has a significant role in attracting foreign investment. Transparent monetary, banking and foreign exchange policies are prerequisites for attracting foreign investment. Foreign exchange control is very important, since when under-run, it is intended to meet criticism of excessive returns to foreign partners, and when over-run, can prevent the exploitation of economic rent by foreign investors (Kumar, 1990). Therefore, it has an important impact on the freedom to remit dividends and repatriate capital even though guarantees to this effect will be demanded by investors.

Another point concerning foreign exchange policy is that an overvalued local currency and shortage of foreign exchange can cause illegal transactions in the black market (particularly in precious minerals such as gold and gemstones), and can create an environment of under-declaration of mineral output, and corruption (Ibid.).

Access to foreign currency and the foreign exchange policy of the host country is considered by 92% of respondents to be an important factor in their investment decision process in the mineral sector of LDCs. Regarding the degree of importance, this element ranked as the fifth most important, with an average of 4.45 on a scale of 5= most important to 1= least important, with a S.D. of 1.26.

9.4.2.5 Infrastructure

Availability of physical infrastructures is also quite important to attract foreign investment into the mining industry. Transport facilities, railways, roads, ports and waterways are vital for the delivery of plant machinery, equipment and materials, and to convey mine products to the market. The cost of physical infrastructure is also significant in the mining industry. Normally, the transport cost of bulk commodities such as iron, coal and manganese represents more than 50% of the delivered cost (CIF price) of the product. Therefore, the quality, the capacity and the nature of transport networks affect the economic viability of mining projects and is of main concern to the investing company.

Since the capital cost of physical infrastructure is high and its provision is time-consuming, countries with an adequate infrastructural base have a comparative advantage over those who lack such facilities. Apart from this, infrastructure also provides the necessary basis for industrial development, processing of local resources and mining activities, which in turn benefits the community by providing infrastructural facilities.

The availability of an adequate infrastructure in the host country was considered by 80% of respondents as an important factor in their decisions towards investing in LDCs. The degree

of importance of this factor was 3.86 on a 5-point scale of 5= most important to 1= least important, with a standard deviation of 0.49.

9.4.2.6 Mineral Sector Information

There is generally a lack of basic information on mining in LDCs. The existing information is often less adequate and less distinct with regard to basic geological data, and legislative and fiscal regimes. During the course of this research and based on the results of the present survey, it became apparent that foreign companies have little information about Iran's level of mineral endowment, mineral activities and regulations related to these mining activities.

The author asked the respondent companies who have had no contract with the mineral sector of Iran: "*How do you rate your familiarity with the following in Iran?*" (5 =*quite familiar to 1=not familiar at all*).

The results are shown in table 9.8, which combined with a figure, gives a more visual sense of this issue.

Table 9.8 Familiarity of Respondents with the Selected Issues in Iran

Subject/ Issue	Degree of Familiarity \diamond		Ave.	S.D.	Not Familiar	Familiar	Quite Familiar
Right to Mine			1.57	0.98			
Fiscal Regime (taxes, duties, ...)			1.57	0.98			
Performance of the Mineral Sector in Recent Years			1.76	1.09			
Mining Code			1.52	0.87			
Stability in Laws, Regulations and Policies			1.81	1.12			
Availability of Geological Data			1.86	1.24			
Overall State of the Economy			2.05	1.24			
International Relations of the Country			2.33	1.53			
Availability of Expertise			1.71	1.01			
Availability of Cheap Production Factors			1.71	1.15			
Mineral Potential of the Country			2.05	1.32			
Overall Infrastructure of the Country			1.81	1.33			
Foreign Investment Law			1.57	0.98			

\diamond 5 = quite familiar to 1 = not familiar at all

As can be seen, almost none of the foreign companies were familiar with the state of many important issues affecting investment location decisions, such as mining rights, tax regime, mining code and foreign investment law in Iran. Except for the international relations of the country, the overall state of the economy and the mineral potential of the country, that respondents were somewhat familiar with, other important issues such as availability of geological data, availability of expertise, overall infrastructure in the country and level of production of basic metals (steel, copper, lead and zinc) were not very well known by the respondents.

It is important to note that the mineral sector of Iran, a booming industry with expenditures reaching billions of dollars in recent years⁶, is unknown to many foreign mining companies. Therefore, it is quite important that the Ministry of Mines and Metals take the necessary steps to publicise and advertise locally and internationally Iran's mineral sector. The availability of geological data is, in particular, quite important, as discussed in chapter 8.

9.4.2.7 The Place of Arbitration

The place where arbitration is conducted is another important factor to investors for two different reasons. It is important from the viewpoint of accessibility and general convenience. It is also of legal importance because of the extent to which national courts may influence the final decision (Nusairet, 1987). In contracts in which parties of different nationalities are engaged, arbitration is often the means of settlement, generally in what may be regarded as a "neutral" place. However, if the parties do not determine the procedure of arbitration, then the law of the country in which the arbitration is conducted can be crucial (Ibid.).

In the present survey, 75% of respondents considered the practice of arbitration as an important factor in their decisions toward investing in LDCs. The degree of importance of this factor was 4.05 on a scale of 5= most important to 1= least important, with a standard deviation of 0.86.

9.4.2.8 General Business Climate

Generating a political and economic climate that instils investors' confidence is one of the most important factors in attracting foreign investment in mining and other sectors. At times there may be a perception, whether real or imagined, that a particular country is a riskier place to invest in than other countries. This intimates that the compensations for the perceived risk have to be higher compared to a similar investment in another country. To

⁶ See chapter 6.

attract foreign investment, therefore, the duty of “achieving business confidence” has to be followed up. The country's overall attractiveness eventually depends on the government's economic policy, relating in particular to finance, taxation and trade.

9.4.2.9 Ownership and Control

Ownership and control are important factors for mining companies, although views on the ownership of host government and local companies vary. Some companies do not like to invest in countries with mandatory local majority participation. They feel that this might hamper their ability to control the management and decision-making of the company. However, some feel that minority local participation is a positive factor because they can establish a good relationship with the government and exercise influence over its policies.

The degree of importance attached to local ownership and equity control in the present survey was 4.29 on a scale of 5=most important to 1= least important, with standard deviation of 0.78.

9.4.2.10 Institutional Infrastructure and Bureaucratic Procedures

The literature is abundant with thorough discussions on the significance of effective institutional structure and efficient bureaucratic procedures for title awarding, monitoring, regulating and controlling mineral development projects. Of the respondents to this survey, 75% regarded this factor, i.e., institutional structure and bureaucratic procedures in the host country, as an important factor in their decisions toward investing in LDCs. The degree of importance was 3.85 on a scale of 5= most important to 1= least important, with a standard deviation of 1.99.

9.4.2.11 Other Elements

Other factors, including land ownership, right to mine, repatriation of capital, repatriation of profits, access to local expertise, hiring of foreign specialists, pricing of inputs and

outputs, financial contributions from the host country, the possibility of influencing procedures, the availability of raw materials and cheap input factors, and prior experience of companies, all have important impacts in attracting foreign investment to the host country. The following table shows the importance of these factors according to the present survey.

Table 9.9 Degree of Importance of Other Factors that have Positive Impact on Attracting Foreign Investment

Subject	Average	S.D.
Hiring of Foreign Specialists	3.95	0.92
Access to local resources	3.95	0.74
Pricing of Inputs and Outputs	3.89	1.63
Stability of government and political situation	3.89	1.56
Bureaucratic Procedures of Doing Business	3.85	1.99
Financial contribution from the host country	3.85	1.54
Work Conditions (Labour Law, ...)	3.85	1.99
The possibility of influencing procedures	3.91	2.06
Prior Experience of Companies with the Host Country	3.22	1.57
Availability of raw materials and cheap input factors	3.08	1.64

5 = most important to 1 = least important

9.4.3 Experience of Mining Companies with Mineral Investment in LDCs

To assess the experience of mining companies in their treatment by host countries during their mineral investment efforts, respondents were asked in a broader question, how much support and co-operation they received from the government of other host LDCs. The results are shown in table 9.10.

Table 9.10 Co-operation of Host Countries with Companies in Mineral Agreements



As seen in the above table, host governments, overall, co-operate well with the investing companies. This suggests that if the mineral sector of Iran is to be competitive, the MMM and local companies must practise adequate co-operation with investing companies⁷.

9.4 STATE OF MINERAL INVESTMENT IN IRAN: RESPONSES OF FOREIGN MINING COMPANIES

To determine the impressions of foreign mining companies about the state of the mineral sector of Iran, the following question was asked. *"If you have (had) any mining operation/contract in Iran or if you have adequate knowledge of the mineral sector of Iran, how do you describe the state of the following in the country?" (5 = "Excellent" to 1 = "Not good at all")*.

The results are shown in table 9.11.

⁷ Considering the facilities that LDCs should create for investors, it should be kept in mind that investing companies must also be aware of the particular socio-cultural features of the host country in order to operate effectively. For instance Konopacki (1992), using the Asea Brown Boveri experience in forming a joint venture with 2 Indonesian firms, has made a number of suggestions for operating a plant effectively in a developing country, particularly with an Asian culture. To the author's experience, most of these suggestions are applicable to Iran's environment as well. The suggestions are as follows:

- Accepting the fact that in Asia things are accomplished at a slower pace;
- Trying to make a joint-venture with either an local partner or a foreign partner;
- Working on a product or service that the country urgently needs;
- Making a ceremony at a plant's opening; and
- Employing go-between or intermediary people to assist in providing solutions to problems.

**Table 9.11 State of Mineral Investment in Iran
(Responses of Foreign Mining Companies)**

The Element Issue	Degree of Satisfaction *	Average	S.D.
Right to Mine		3.33	1.25
Fiscal Regime (taxes, duties, ...)		3	1.25
Performance of the Mineral Sector in Recent Years		2.5	1.03
Mining Code		2.5	1.03
Stability in Laws, Regulations and Policies		2.5	1.03
Availability of Geological Data		3	1.38
Overall State of the Economy		2.4	1.12
International Relations of the Country		1.8	0.74
Demand for Mineral Products		3.8	1.67
Availability of Expertise		3.25	1.45
Availability of Cheap Production Input Factors		3.25	1.36
Co-operation of the Government with Investors		2.75	1.12
Co-operation of the Local Companies with Investors		3.5	1.06
Mineral Potential of the Country		4.2	1.92
Access to Telecommunication Links		4	1.61
Overall Infrastructure of the Country		3.25	1.32
Foreign Investment Law		2.25	0.93
Bureaucratic Procedures of Doing Business		1.75	0.73
Availability of Foreign Exchange		1.75	0.8
Work Ethics (Worker Discipline, Productivity, Labour Law, Management - Labour Relations, ...)		3	1.12
Price Control on Inputs		3.67	1.33
Price Control on Final Product(s)		3	0.65

* 5= "Excellent" to 1= "Not good at all".

The results of table 9.11 provide important insights into the situation of mineral investment in Iran as well as valuable indicators to the government regarding weaknesses that need addressing. From the table, elements such as mineral potential of the country, demand for mineral products, overall infrastructure of the country, access to telecommunication links, price control on inputs, availability of cheap labour, energy and other production factor inputs, and availability of expertise are, in general, satisfactory. Some laws and regulations governing the mineral sector, such as the right to mine and fiscal regimes are also relatively satisfactory. However, the state of some important laws like the mining code and the foreign investment law are not very good. What is more important is that the bureaucratic procedures of doing business, the availability of foreign exchange as well as the international relations of the country were not seen as satisfactory from the view point of foreign investors.

As discussed in chapter 8, most domestic investors tend to have the same perception. They also frequently claimed that the instability in government policies affecting mineral investment is a serious impediment to investment.

9.5.1 Mineral Investment Risks in Iran

The political, economic and technical risks in the host country are serious concerns for investors in their decision toward mineral (and any other) investment. Usually, higher risk premiums are required from investment projects in developing countries. Regarding the risk element in mineral investment, the following question was asked from those respondents who had at least one contract with the mineral sector of Iran: *“With respect to mining investment in Iran, please rank the following risks in their order of importance” (5=most important to 1= least important).*

The results are shown in table 9.12.

Table 9.12 The Importance of Risks Related to Mineral Investment in Iran

Risk Factor	Ranking of Importance		
	Rank	Average	S.D.
Financial/ Economic	2	2.24	1.67
Scale of Investment			

♦5= most important to 1= least important

Fortunately, the importance attached to various risk factors related to mineral investment in Iran is low, indicating that the Iranian government and local companies have interacted well with foreign companies in the past.

9.4.1 Main Obstacles/Problems that Discourage Foreign Companies from Investing in the Mineral Sector of Iran

In another question, the respondents who have (had) any mining operation/contract in Iran were asked to list the four main obstacles/problems that discourage them from investing in the country's mineral sector. The responses are summarised below in order of importance, from the most to the least important. The importance of each factor is determined by the number of responses received from the respondents.

Main Obstacles Problems that Discourage Foreign Companies from Investing in the Mineral Sector of Iran (from the Most Important to the Least Important)

1. Political Considerations, Management and Bureaucracy

International relations of the country, Bureaucratic legal system, Procedures to do business, Difficulty in obtaining visas, Multiple decision-making process, Lack of timely decision-making by authorities that cause increased initial costs in assessing project viability.

2. Cultural and Language Differences

3. Financial and Commercial Matters

Discouraging tax regime, Failure of government to meet payment/contract obligations, Unprofessional bidding practices.

4. Restrictive Laws and Regulations, Lack of Information

Unfavourable Mining Code, Restricted right to mine, Lack of availability of geological information

9.5.3 Main Incentives and/or Benefits that Encourage Foreign Companies to Invest in the Mineral Sector of Iran

In another question, the respondents who have (had) any mining operation/contract in Iran were asked to list the four main incentives/benefits that encourage them to invest in the mineral sector of Iran. The responses are summarised below in order of importance, from the most to the least important, as is determined in the previous question.

**Main Incentives and/or Benefits that Encourage Foreign Companies to Invest
In the Mineral Sector of Iran (from the Most Important to the Least Important)**

1. Mineral Potential and Economic Considerations

Availability of good mineral potential, Availability of cheap labour and experts, Availability of good infrastructure, Improved professional business practices (recent), Good investment opportunities for world class copper and zinc deposits

2. Political and Legal System

Political stability, Open government, Freedom of movement, Change of attitude of the new government to Western countries, Security of tenure, Majority equity ownership, Proactive invitation of foreign investors and Accepting international arbitration.

3. Financial Regime

A competitive tax environment, and Improved payment record

The results show that the government decision-makers should pay special attention to some critical issues if they want to boost foreign investment in the mineral sector. Regarding the political climate, some respondents stated that Iran is a politically stable country with a freely elected government. The new government's policy is to enhance the international relations of the country and to reduce tensions in the region and on an international level. This policy, if carefully practised, will increase Iran's ability to attract foreign investment. However, legal and administrative systems, despite numerous improvements, are still bureaucratic. This discourages foreign investment. As mentioned by some respondents, the "lack of timely decision-making by authorities" increases the initial cost associated with assessing a project's viability. Therefore, the government should make serious efforts to streamline decision-making procedures and reduce to a minimum the attendant bureaucracy. Also, among others, the "instability in laws and regulations" concerning financial and commercial matters should be reduced to a minimum.

9.6 IRAN'S COMPARATIVE ADVANTAGES IN ATTRACTING FOREIGN INVESTMENT

In this section, some characteristics of the mineral sector of Iran that can enhance its comparative advantage in mineral investment are explained. As mentioned before, Iran has many comparative advantages, among which are the abundance of energy and mineral resources, low cost labour, experience in mining, tax holidays and exemptions for new mining investments, a large regional market, access to the Persian Gulf, and free trade areas to attract foreign investment. According to Iran News (September 27, 1998) the government has also taken all the necessary measures for guaranteeing the safety of the hard currency coming into the country. An article in Tehran Times Daily (October 21, 1995) concluded that because of the existence of Free Trade Zones (FTZs) in Iran, it is the "fittest regional country" for the foreign investment. The author also believes that because of the existence of some good mineral resources in some FTZs and the possibility of establishment of smelters, these areas, if effectively managed, can create very good incentives for foreign mineral investment. In the following, FTZ history and regulations will briefly be discussed.

9.6.1 Free Trade Zones in Iran and their Advantages⁸

In accordance with the FFYDP to develop foreign trade and establish a basis to form joint-ventures, the Iranian Parliament ratified the "Law on the Administration of Trade and Industrial Free Zones" in August 1993. According to Article 1 of this law, the main objectives of FTZs are to "accelerate infrastructural activities," "promote economic growth and investment," "create employment," "participate actively in world and regional markets" and "produce, process and export industrial goods." For achieving these objectives, the law grants the government the authority to establish trade and industrial free zones at Kish and

⁸Compiled from the Law on the Administration of Trade and Industrial Free Zones, Iran Commerce (Winter 1994), and presentations in the "Doing Business in Iran" Seminar in June 1998 in Montreal, Canada.

Qeshm Islands, and at Chahbahar⁹

According to Article 5 of this law, each zone is to be administered by “an independent legal organization.” Companies in FTZs will be exempt from the rules and regulations governing SMEs and will be governed by this specific law and its related by-laws. In issues for which no provision is made in the law, the present “Commerce Code” will apply.

According to Article 8, the independent organization and its subsidiaries are authorised to sign agreements (within the context of the Constitution Law) with individuals and legal entities. Also, they are permitted to enter in partnerships with foreign investors for development and production projects. Disputes are to be settled following the terms and undertakings outlined in the contracts signed by the parties concerned.

Articles 13, 15 and 16 of this act deal with tax and custom duty exemptions. Individuals and legal entities, local or foreign, involved in various economic activities will be exempt from income tax for “a period of 15 years from the date of production commencement.” After 15 years, they will be subject to a tax regulation prepared by the Council of Ministers and ratified by Parliament. Products from the FTZs exported to other parts of Iran are totally or partially exempt from custom duties. Article 14 of this law states that commercial transactions of FTZs with other countries will not be subject to the country's import and export regulations. However, commercial transactions with other parts of Iran are governed by such regulations.

As per Articles 19, 20, 21 and 22 of this law, the managing organizations of each free zone may obtain the funds required for the provision of infrastructure from local or foreign sources. Upon approval of the Council of Ministers, each organization in each zone may provide the necessary guarantees to foreign investors against losses incurred as a result of

⁹ Three other FTZs were added later.

divesting of ownership or nationalization of their business. Such guarantees may be given on the strength of the organization's own financial resources, or through guarantees obtained from financial institutions or insurance companies.

The registration of companies, industrial and copyright ownership, and vessels and aircraft will be done by the administration of the concerned zone. Article 24 of the Law specifically emphasises that the lease of land to foreigners in the zones is permitted, but that the sale of property is forbidden.

At present, six FTZs, namely Qeshm, Kish, Chahbahar, Khoramshahr, Sirjan and Sarakhs are active in Iran. Sitting on the world's largest underground gas reserves, Qeshm, the largest island in the Persian Gulf, possesses good opportunities for foreign investments in "steel, aluminium and other heavy industries." The island covers an area of some 1500 square kilometres, and is a short distance from the mainland. It has good water, cheap fuel (natural gas), electricity, and vast land areas that the managing administration offers to prospective investors. Kish Island, with an area of more than 91 square kilometres, is the second largest island in Persian Gulf. This island experienced considerable development during the past decade.

In summary, the comparative advantages of investment in FTZs are: no restrictions on the number of shares that a foreign company can hold; security of foreign property and repatriation of capital and profit guaranteed by the government; considerable exemptions on income tax as well as reductions and exemptions on duties for imported machinery and materials; more flexible labour regulations; employment of foreign nationals and international banks and insurance companies as well as financial and credit centres are allowed; easy access to Central Asian Countries for international transit; cheap production factor inputs including low-waged work force, low cost fossil fuels, inexpensive water, power, and communication supplies and services; easy access to an airport, big quays and suitable roads (Doing Business in Iran Seminar, June 1998; Qeshm Free Area Quarterly, No.

3, 1997; Iran Commerce, Winter 1994; and Aminin, 1994).

Despite these numerous advantages, the following additional provisions are suggested:

- i. The existing law does not fully conform to the current policy of limited government involvement in economic affairs. Except for provision of financial-administrative facilities to individuals and private firms interested in the FTZs, the government must abstain from participating in investment in the free zones as much as possible; and
- ii. Land within the FTZs should be strictly leased on long-term basis.

9.7 COMPARISON OF THE RESULTS OF THE PRESENT SURVEY WITH PREVIOUS SURVEYS

Reports and results of a number of previous surveys concerning foreign investment in the mineral sector of LDCs were available to the author. A common concern of all surveys was to determine the important factors and issues for companies in selecting mineral projects in LDCs. The following is an attempt to compare the results of previous surveys to those of the present one. The following surveys are compared.

- Present Survey, 1998, annotated in the following table as SAL.
- A survey by the Economic and Social Commission for Asia and the Pacific (ESCAP-1993, and Otto, 1997), in 1992, among 39 mining companies headquartered in North America, Europe, Asia, Australia and Africa, about “the factors being important in considering mineral investment,” annotated in the table as ESCAP.
- A survey by O’Neill (1992), among Australian Mining Companies for their “reasons in selecting a specific African country for mineral investment,” annotated in the table as ONL.
- A survey by the World Bank, Mining Unit (July 1990), among International Mining Companies regarding “determinations of mineral exploration and investment in

developing countries,” annotated in the table as WB.

- A survey by Charles (1990), among Multinational Mining Companies regarding “determination of important factors in selecting countries for mineral exploration,” annotated in the table as CHL.
- A survey by the East-West Centre (1989), among 32 International Mining Companies regarding “critical and negotiable factors for major mineral exploration in a country,” annotated in the table as EWC.

Table 9.13 Comparison of the Results of the Present Survey with Previous Surveys
(Important Factors in Selecting LDCs for Mineral Investment)

	EWC 1989	WB 1990	ESCAP 1993
1	1	1	2
2	2	3	3
3	3	2	1
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
19	19	19	19
20	20	20	20
21	21	21	21
22	22	22	22
23	23	23	23
24	24	24	24
25	25	25	25
26	26	26	26
27	27	27	27
28	28	28	28
29	29	29	29
30	30	30	30
31	31	31	31
32	32	32	32
33	33	33	33
34	34	34	34
35	35	35	35
36	36	36	36
37	37	37	37
38	38	38	38
39	39	39	39
40	40	40	40
41	41	41	41
42	42	42	42
43	43	43	43
44	44	44	44
45	45	45	45
46	46	46	46
47	47	47	47
48	48	48	48
49	49	49	49
50	50	50	50
51	51	51	51
52	52	52	52
53	53	53	53
54	54	54	54
55	55	55	55
56	56	56	56
57	57	57	57
58	58	58	58
59	59	59	59
60	60	60	60
61	61	61	61
62	62	62	62
63	63	63	63
64	64	64	64
65	65	65	65
66	66	66	66
67	67	67	67
68	68	68	68
69	69	69	69
70	70	70	70
71	71	71	71
72	72	72	72
73	73	73	73
74	74	74	74
75	75	75	75
76	76	76	76
77	77	77	77
78	78	78	78
79	79	79	79
80	80	80	80
81	81	81	81
82	82	82	82
83	83	83	83
84	84	84	84
85	85	85	85
86	86	86	86
87	87	87	87
88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

As can be seen from Table 9.13, the results of this survey and previous surveys show that investing companies generally agree on many important issues but have different views on their degree of importance. The right to mine is the most important factor in all surveys. Mineral potential of the host country, repatriation of profits, political stability, mining code, access to foreign currency and fiscal incentives are the most frequently mentioned factors in all surveys.

The above-mentioned factors do not always guarantee an influx of foreign capital. Due to strong competition for foreign investment, many LDCs are simply adopting the mineral policies of other countries, and modifying them to offer more favourable conditions. However, investors are not flocking in as expected despite the fact that the other factors (geology, etc.) may be conducive. Difficulties in attracting foreign investment to the mineral sector of LDCs are well discussed by Tsomondo and Adde (1993). Factors such as the selective geographic location of money supply, tightening bank financing for mineral projects, declining metal prices, timing of mineral policies, geographic location of the LDC country, mineral commodity type, availability of information are notable in this respect.

9.8 CONCLUSIONS

Given the abundance of substantial mineral resources, the mineral sector of Iran needs to attract sustainable inflows of private capital to develop. In absorbing foreign investment, the mineral sector can also benefit from the generation of revenue and foreign exchange, the modernization and expansion of the local mineral industry, the stimulation of exports, better access to world markets, the acquisition of technology and managerial skills, the development of the infrastructure, the establishment of backward and forward economic linkages, and finally contribute to the overall development and economic goals of the country. Both the first and second development plans of the country were formulated using foreign investment in different forms, such as joint-ventures, buy-backs and different types of common counter-trades.

Throughout this chapter, a number of factors and issues that have an important impact in attracting foreign investment and the policies that the government and the MMM should adopt to create a competent, responsive and conducive business environment as well as an efficient institutional structure that responds quickly to the needs of investors, were discussed.

The results of the survey show that respondents are in general agreement on the critical issues, although they differ on the degree of importance attached to various factors/issues. The mineral potential of the country, profitability of the project, right to mine, political stability, conducive mineral and investment policies, access to foreign currency, availability of good infrastructure, stable and conducive investment policies, and capable institutional frameworks of the host country, are all key determinants of mineral investment decisions. As stated by respondents from foreign mining companies (and also domestic mining firms in the author's survey within Iran)¹⁰, sound and stable policies can significantly attract more investment to the sector. Iran's mineral sector, with the successful implementation of macro-economic programs, and effective private-sector-oriented mineral policies, can attract a substantially increased share of private, local and foreign, investment. This, however, is a challenging task.

The author believes that with the implementation of strategies stressed below, derived from a review of the literature on foreign mining investment, the results of the present and previous surveys, as well as the author's personal interviews with some large mining company officials during several mining seminars in which the author participated, the mineral sector of Iran can attract substantial amounts of foreign (and internal) capital in a reasonably short time.

¹⁰ See Chapter 8.

(i) Government Commitment:

First, the issue of foreign investment and the way in which it is approached is delicate and requires careful handling. As quoted by IRNA (March 7, 1997) from the English daily Kayhan International, *"not until there is a uniformity of view or consensus towards the issue of foreign investment would there be any tangible success in that connection."* In Iran, given the dwindling foreign exchange revenues resulting from a drop in oil prices and foreign debt payments, the attraction of foreign investment is necessary (Ibid.). Therefore, as the government recently announced, authorities in government as well as legislative bodies should commit themselves to enhancing foreign investment.

(ii) Attracting Domestic Investment:

Today, the mobility of financial resources is significant and rapid, and it is broadly known that "capital knows no bounds" (Adeli, 1995). From an economic point of view, capital is usually destined to a country that is in short money supply as long as it is allotted wisely and receives a good return. Attracting investment is strongly related to the "long-term expectations and economic environment" of the country (Ibid.). Because the mineral sector of Iran has many privileges, the government can attract investment to this sector prosperously. An economic difficulty facing Iran is how to mobilize domestic private investment to achieve a high level of growth. Domestic private investment as a proportion of GNP is less than 20%, well below that of many other developing countries, whose rates range between 25 and 30%, according to IRNA (November 15, 1995).

It should also be borne in mind that if the mineral sector cannot mobilize internal funds, efforts to attract foreign investment would create little interest from international mining corporations. The amount of domestic private investment is an indication of the business and economic environment in the country and, therefore, has a great impact on attracting foreign investment. Thus, the government should mobilize the broad sources of domestic private capital and direct them to productive sectors, e.g., mining. Privatization as well as proper

management practises will make way for this purpose.

Another important point in attracting domestic investment is that local investors are more able to “*adjust their industrial tool to the cyclical variations of the markets.*” (Bomsol, 1990). As is stated by Brown, Feber and Sisulu (1994), although all previously discussed factors have a positive role in attracting foreign investment, their effects will sometimes be subsidiary to “*the track record of the government in dealing with earlier foreign investment,*” and how the government of a country “*treats the firms and individuals in the country’s own private sector.*” Experience strongly suggests that if these elements are discerned to be favourable, foreign investors will seek to come even if a foreign investment code is absent in the host country.

With this argument, in addition to prerequisites of foreign mineral investors, reviewing the demand of local investors is important. These are discussed in detail in chapter 8. Among the important factors, the following are noteworthy.

- i. A solid guarantee of property rights;
- ii. Clear conditions of trading;
- iii. Maintaining a satisfactory and stable legal and regulatory system;
- iv. Modifying the mining code;
- v. Using the unitary exchange rates (market rates);
- vi. Eliminating red tape in the approval of investment; and
- vii. Control of inflation.

(iii) Privatization and Financial Reform:

To this end, the MMM should also privatize many existing SMEs to improve their productivity and give a clear signal to investors of its intentions in following a private-sector-based strategy. In addition, the government should promote financial sector (bank and capital markets) reform to encourage the mobilization of funds from domestic and

international sources, and to reduce investment risks (Adeli, 1995). In this regard, partly privatizing large public sector banks will expose these institutions to competition and improve their efficiency. Along with this, the government should plan for promoting non-banking credit institutes. The Central Bank of Iran (CBI) should, of course, exercise full supervision over the operation of such institutions. Recently, the Governor of the Iranian Central Bank announced that foreign banks are allowed to establish branches in the FTZs (Iran Weekly Press Digest, April 29, 1997).

(iv) Stability in Macroeconomic Environment and Reform in Regulations:

A stable macroeconomic environment is also an important precondition for foreign investment¹¹. Another challenge in attracting foreign investment is that prudential regulatory and supervisory regimes should be brought into line with international standards to enable investors to compete in an international marketplace. To this end, some reforms are suggested as follows.

Updating the Foreign Investment Law:

The most important areas that need to be addressed are firstly, the reaffirmation that the equity share of a foreign partner is open to negotiation, and secondly, the transparent definition of financial incentives for foreign investors. Thirdly, international arbitration of commercial disputes should be addressed, if there is no other arrangement in the contracts.

Fiscal and Mineral Policies:

The most important reforms in these areas are firstly, exploration Permits and Concessions, which should be transferable with a minimum of government interference. Secondly, taxation of mining companies, while taking the specific nature of mining as a resource-based

¹¹ Aldous (1993) states that increasing confidence in the stability of developing countries was a prime reason for mining companies to shift their capital, that had previously been largely directed to established mining economies in North America, Australia, Europe and South Africa, to mining exploration and development in LDCs.

industry into account, should be consistent with the taxation of other sectors in the economy. Tax levels in other mining countries should be considered to maintain or establish the competitiveness of the national mining industry. Exchange rate policies should also be market-based, and aimed at economic stability.

Administrative Reforms:

In this area, effort is needed to ease investment bureaucratic procedures, so as to reduce barriers to entry for foreign investment¹². The Ministry of Mines and Metals should be reorganized to better perform its promotional, regulatory and monitoring functions¹³. The MMM also needs to train a more efficient team of managers for negotiations with foreign contractors in order to defend the best interest of the country. As is mentioned by Kumar (1990), investment agreements, on one hand, should provide assurances to protect the investor from unwarranted government interference, and on the other, provide safeguards for the government to ensure that investors will respect their obligations.

As Selassie (1995) states, the literature suggests that the "divorce rate" or failure of joint-ventures has been relatively high. The major reasons, he adds, are related to post formation problems, such as lack of commitment by partners, government interventions, and conflicts in management and control. However, there is evidence to indicate that problems mostly originate at the creation or formation stage. Therefore, the mutual discernment of the motives of both foreign and host participants in a joint-venture, as well as the recognition of the problems that interfere with the achievement of their aims, will contribute towards starting a more successful co-operation.

Equipped with clear legal guidelines, and with appropriate administrative reforms, the

¹² Surveys of private investment decisions suggest that the bureaucratic structure of several LDCs acts as a major disincentive to investment, in particular, foreign investment (IMF, 1995).

¹³ See Chapter 8.

mineral sector can participate actively in the field of international investment. As discussed in earlier chapters, the presence of a progressive investment environment and the appropriate policies in some developing countries, such as Chile and Indonesia, have significantly increased national mining activity and investment during recent decades. The fruits of these policies have been increased mineral production and exports, investment in the mineral sector, and indeed, economic development (Todd and Salmasi, 1993).

On a final note, a change in attitude towards foreign investment, changes in mineral investment and administrative policies, a sound geological data base, the expansion of forward linkage activities and the improvement of the country's industrialisation process can substantially increase foreign investment. Meanwhile, there should be facilities and incentives for local investors to develop and finance mining operations and mineral-based industries to reduce the dependency on foreign investment. Intra-LDC trade and consumption of local mineral products and services should also be encouraged.

CHAPTER 10

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

10.1 INTRODUCTION

This chapter utilises and integrates the analyses and discussions of the preceding chapters to arrive at a handful of the most important policy implications that might be considered by the decision-makers responsible for Iran's future mineral policy. The policy implications are based on extensive literature reviews, case studies, Iran's first and second five-year development plans, the results of the survey conducted among Iranian mining companies and individual miners, the analysis of the financial performance of mining companies, and the results of the survey conducted among foreign mining companies. The contribution of this study to the research field as well as suggestions for further research are presented at the end of this chapter.

10.2 GLOBAL TRENDS IN THE MINERAL SECTOR

In order for the mining sector of *any* country to become prosperous, it should be able to compete in the highly globalized world-wide mineral industry. Hence, a realistic and effective mineral policy cannot be properly designed, unless analyses of global trends in the

mineral sector world-wide, and in developing countries, in particular, are carried out. As discussed in previous chapters, from the early 1980s, global economic recession, worsening of the real terms of trade, high indebtedness of LDCs, reduction in foreign investment, along with the lack of local capital, among others, are factors that collectively led to a *swift shift* from past mineral policies, favouring nationalization and government involvement, towards those favouring foreign investment and privatization of public mineral enterprises in the mineral sector of LDCs. This change is clearly detectable in all of the recent revisions in mining codes and foreign investment laws enacted in different countries: *some 90 countries have revised their mining codes during the 1980s and 1990s, or are now considering major changes* (Otto, 1998 and 1997 and Eggert, 1997). The new legislation is invariably designed to ease past trends, if not fully reversing them, and to buffer against the real or perceived risks, uncertainties and complexities inherent in the mineral sector. The higher efficiencies, associated with privatization, have slowly established a new *modus-operandi* in this sector.

A direct consequence of the way in which the global mining economy operates is that mining enterprises localized in a particular country are affected by global market forces, which are far beyond their control. Indeed, concepts such as “level playing field”, “national treatment” and “reciprocal treatment”, are no longer abstract terms. They have become the basis of world-wide operations regardless of the industry, or its location. Within LDCs, support of the national firms in the mining sector by national governments is becoming exceedingly difficult, as foreign operators demand similar treatment under, for example, level playing field or national treatment. Thus, Iran’s mineral policy should be re-designed in such a way as to enable the mineral sector to compete in this competitive and highly globalized industry.

10.3 POLICY IMPLICATIONS: PRINCIPLES AND LONG-TERM OBJECTIVES

At present, the official blue prints for the development of Iran’s mineral sector are the second five-year development plan and the guidelines issued by the MMM (see chapters

5 and 6). Although some comments and propositions in relation to all mineral policy components were offered in chapters 6 to 9, this chapter highlights the most important issues and policy implications regarding Iran's mineral sector.

The in-depth analysis of chapters 6 to 9 clearly indicate that the MMM should concentrate on formulating a set of *long-term policy measures* designed to make the mineral sector more viable and prosperous. The ultimate objectives of the government for the mineral sector in general terms, therefore, should be a) to maximize the economic rent from the sector, b) to secure economic growth and c) to promote the linkages between the various sectors of the economy¹. In terms of how these macro-policies can be achieved, the following long-term components are suggested.

- i. ***Attracting Local Private Investment.*** In order to maintain a prosperous domestic industry, mineral policy, along with fiscal, regulatory and investment policies, should be planned and enacted in a way to effectively increase the sector's competitiveness by *attracting private investment*. This is considered the most important objective. The implementation of mineral policy should specifically *reduce the uncertainty* that hinders investors in this sector (see chapters 4, 9 and case studies). In particular, the involvement of the local private sector should be encouraged by way of joint ventures with foreign companies, and/or stand-alone investments. Creating stable and conducive market conditions is a necessity, to which mining companies are extremely sensitive. Small and medium-sized mining enterprises, in particular, cannot be expected to absorb the costs of adverse market conditions for long without receiving compensating rewards eventually. Fluctuating foreign exchange rates and a lack of access to foreign exchange which adversely impact mineral exports and the health of the mineral sector (and

¹ Given the high unemployment rate at present, enhancing mining activities is also expected to generate employment. However, as discussed in chapter 6, because of its capital-intensive nature, the mining industry has proved to possess limited potentials for direct employment. Nevertheless, since the mineral sector, through economic linkages, causes a boom in other related industries, its development may create employment opportunities in other sectors.

consequently the national economy) is a case in point. The discouraging impacts of such arbitrariness – a theme that the survey respondents frequently *imply* – has already proven extremely costly and is in need of remedy (see chapter 8).

- ii. ***Attracting Foreign Investment and Joint Venturing.*** As discussed in chapter 9, attracting foreign capital and investment is not a mere requirement for developing the mineral sector. Foreign investment in the sector can generate additional revenue and foreign exchange, modernize and expand the industry, and augment exports and access to world markets. The acquisition of technology and managerial skills, the development of the infrastructure, and the establishment of backward and forward economic linkages are also added advantages. These factors collectively contribute to the overall development of the country². The new policy should create a conducive environment for such investments.
- iii. ***Diversification of the Economic Base.*** Several recent studies (e.g., Mikesell, 1997; Sachs and Warner, 1995; Auty, 1993; and Kumar, 1993) have provided impressive evidence that over-dependence on natural resources can cause a relatively slower rate of growth. The mineral policy, therefore, should aim towards diversifying the economic base of the country. As well, it should address the non-renewability of mineral resources. Particular attention should be given to the development of strategic minerals, which enhance the development of basic industries that produce intermediate products. The mineral policy should also encourage and facilitate the export of processed goods in order to reduce Iran's traditional dependence on oil revenues. Mineral development should be integrated into programs and projects so as to promote resource-based backward and forward linkages (see chapters 4, 8 and 9).
- iv. ***Sustainable Development and Environmental Issues.*** The mineral policy should consider the notion of sustainable development -- that is, a development that meets the current requirements, without compromising the needs of future generations. The principal aspects of sustainable development include the conservation of

² For details see Salmasi and Etemad, 1999; and Salmasi, Bilodeau and Momoh, 1998.

mineral resources by encouraging optimum recovery from deposits with a concomitant reduction in waste, as well as establishing effective management of the environmental and socio-economic impacts of mining during mining operations and mine closure (see chapter 8). According to Eggert (1997), one important direction of recent changes in mineral policy in over 90 countries is the reduction of the negative environmental impacts of mining.

- v. ***Technological Improvements.*** As mentioned in chapter 8, an IMF study in 1995 concluded that a sustained rate of technological progress is the only possible way for an industry to achieve a sustained rate of growth over time. To survive in the internationally competitive environment of the mining business, new technologies and equipment must be introduced in the mineral industry of Iran on a regular and continuous basis. Only the mining companies that actively participate in research and development and utilise more advanced technology for higher efficiencies in extraction and metallurgical processing can succeed. As discussed in chapter 8, the research work in the steel industry of Iran is a good example of what needs to be done by the MMM on an industry-wide scale.
- vi. ***Restructuring and Privatization of State-owned Mining Enterprises.*** As stressed in chapters 5, 6 and 8, the SMEs are the main players in the mineral sector of Iran, and therefore, exert great influence on MMM decisions and policies. Although some SMEs have recorded a positive performance in terms of increasing profitability and efficiency during the last few years, overall, however, they are suffering from the general problems inherent to state-owned companies world-wide, and in developing countries in particular (see chapters 2 and 3). In both the first and the second development plans, SMEs were to be privatised according to a scheduled plan. However, in reality, little effort was spent in this regard. It is exceedingly clear that in the prevailing global marketplace and in the present economic environment of the country, the viability of SMEs cannot be maintained by continual *support* by the government. Therefore, SMEs have to undergo fundamental modifications to

implement the necessary corrective measures, followed by partial or full privatization over a reasonable time frame (see chapters 3, 7 and 8).

10.4 POLICY RECOMMENDATIONS FOR GENERAL EXECUTIVE ACTIONS

The executive actions to achieve the above-mentioned long-term goals focus on a number of measures, which aim to increase the mineral sector's contribution to Iran's overall developmental objectives. These are presented in this section.

10.4.1 General Macro-economic and Trade Policies as Backup for Mining Policies

Iran's economic realities as well as the response of the economy to the FFYDP as discussed in chapters 5 and 6 dictate that the public-planning factors should be reoriented from a centrally managed to a market-based economy. Accordingly, continuing, or mandatory, measures for public intervention suggested in this research (see comments in chapters 8 and 9), are to facilitate a gradual approach to the market economy. The government economic policy should focus on the following main aspects³:

- i. Downsizing current government involvement and spending⁴, and balancing the budget;
- ii. Reforming public expenditure programs to increase their effectiveness and strengthen their contribution to economic growth;
- iii. Accelerating privatization programs in all economic sectors;
- iv. Deregulating policies in SOEs to improve the operational efficiency of public enterprises, thereby limiting the drain on government budgets;

³ For details see chapters 5 and 6.

⁴ According to the Iran Daily (Oct. 7, 1998), government spending comprises more than 50% of the Gross Domestic Product (GDP). In countries such as South Korea, for instance, government spending is less than 20% of GDP.

- v. Unifying the exchange rate aimed at economic stability; and
- vi. Facilitating non-oil exports.

It is important to mention that enforcement of economic reform policies has certain adverse effects for various economic sectors (see chapters 3, 4, 5 and 7). These should be taken into account and subsidiary policies should be applied to relieve adverse economic pressures.

10.4.2 Exploration

With regard to the exploration activities in Iran, results of the research's survey clearly indicate that the majority of respondents believe that the overall exploration process in the mineral sector is not appropriate, and this for several reasons. Among these were the unavailability of finance for exploration activities, too short a period associated with exploration permits, lack of sufficient resources for the private sector for exploration, lack of foreign capital, expertise and equipment for exploration purposes, lack of sufficient geological and other information required for efficient exploration, lack of a distinct organization to supervise exploration activities, and lack of technical assistance and financial incentives.

To promote the management of exploration activities, some suggestions were put forward by survey respondents. These are discussed in detail in chapter 8. The following list highlights the most important policy measures for promoting private-sector exploration activities.

- i. The government should establish a conducive environment that encourages the private sector to invest more funds in exploration, and commit these funds over a longer period of time.
- ii. The MMM should co-ordinate and plan the execution of geo-science programs that involve geological and mineral resources studies in co-operation with industry (in particular SMEs), the Iran Geological Survey (IGS), and academic institutions. The

Ministry should also integrate the geological and mineral resource data contributed by the IGS, universities, research agencies, exploration companies and prospectors. All these geological data, geo-science maps, and other exploration information and concepts should be made available to investors.

- iii. One of the basic difficulties related to exploration is the lack of necessary transportation logistics for reaching the sites and transporting the products to market afterwards. The various mines scattered all over the country should be accessible all year round. Thus, suitable roads are vital for the expansion of activities in the sector. Moreover, construction of ports and piers for shipping mineral products should be one of the priorities of infrastructure development.
- iv. Economic viability studies for the development of various minerals through the Department of Exploration should be conducted: the resulting geological, geophysical, geochemical, geoengineering and geostatistical investigations, as well as other exploration information, should be made available to interested parties.
- v. Fortunately, in the new Mining Code, the trading of exploration and mining permits is allowed. This will definitely have a positive impact on exploration activities. Along with this, the reduction in exploration permit areas to concentrate expenditure on smaller areas should be allowed.

Other measures such as encouraging banking and financial institutions in providing long-term loans to qualified applicants⁵, updating the exploration data bank within the MMM, preventing duplications in exploration of a particular area, improving the collection and distribution of geo-scientific and related information through the combined use of information technologies, e. g., the Internet, databases and library collections, and broadening the distribution of information through the MMM regional offices, are also given in chapter 8.

⁵ There has been negotiation between the MMM and the Bank of Industries and Mines in this regard. The results have not as yet been made public.

10.4.3 Mining Code

The mining code of Iran was updated on July 20, 1998. As mentioned earlier, the author sent the results of this study concerning the mining code to the MMM. Many recommendations of the present study were either adopted or taken into account in formulating the new mining code⁶.

To improve the implementation of the mining code, the following points are noteworthy:

- i. The MMM should clearly specify property rights, and deal with private and public sectors indiscriminately;
- ii. The bureaucracy associated with the issuance of exploration permits and mining lease permits should be streamlined;
- iii. Many survey respondents complained that the amendments and directives issued by the MMM from time-to-time make the mining code overly complicated. To avoid this, the MMM should establish a secretariat in the Division of Mining and Exploration with responsibility to oversee, and ensure that the mining law is fairly enforced. Any subjective interpretation of the mining code should be avoided and any disputes should be resolved through authorized, but impartial, bodies (see chapter 8).
- iv. The survey showed that more than 40% of respondents were not adequately familiar with the mining code. The MMM should arrange sessions in which authorities of MMM provincial offices, managers of SMEs, as well as interested people from the private and cooperative mining sectors, are trained on the mining code and the implementation of the new law.

⁶ The author is pleased to have contributed to the process of updating the mining code.

10.4.4 Attracting Foreign Investment

The role of foreign investment in the global mining market-place was thoroughly discussed in previous chapters. An important point in discussing the role of foreign investment in Iran's mineral sector is that it is viewed to be necessary. On many occasions, the Ministry of Mines and Metals has announced that the mineral sector needs foreign investment. This view is widespread: 87% of MMM officials and 66% of managers of large mining enterprises interviewed in Iran believe that foreign investment is necessary for the development of the mineral sector (see chapter 8). This view is also congruent with those of the foreign investors: the results of the survey among foreign companies indicated that many of them also had a favorable view of investing in the mineral sector of Iran, except that a number of problematic issues, such as certain elements of the mining code, foreign investment law, and the bureaucratic nature of procedures of doing business (see table 9-10) have not been satisfactorily addressed⁷.

The policy necessary for enhancing foreign investment were discussed in chapter 9 (see also chapters 4, 7 and 8). The salient points are summarised as follows:

- i. *Attracting Domestic Investment*: currently, domestic private investment as a proportion of GNP is less than 20%, well below that of many other developing countries. Further, if the mineral sector fails to attract domestic investors, it will likely be unable to attract foreign investment. Therefore, the MMM should make inroads towards attracting domestic private capital to mining.
- ii. *Updating the Foreign Investment Law*: Iran's foreign investment law was enacted in 1954 and revised in 1972. Based on the new realities of international commerce, the

⁷ The author explained that in Dunning's theory of foreign investment, it is not merely the absolute value of the location-specific advantages (i.e., rich mineral resources) that attracts foreign investment. Rather, it is the nature of authorization by local authorities that acts as a multiplier, from highly positive (incentives increasing the absolute value of the resource), to highly negative (disincentives reducing the absolute value of the resource), that determines the actual value of the resources. Therefore, governmental policies and regulations have a major impact on the value of the mineral resources.

foreign investment law should be updated. In particular, issues such as property rights, joint venturing procedures, government guarantees for repatriation of capital and remittance of profits, compensation in the event of expropriation, the extent of equity sharing with a foreign partner, place and procedure of arbitration, financial incentives for foreign investors, and foreign exchange policies, should be clearly defined.

- iii. *Stability in Regulations and Government Policies*: results from the author's survey among the major foreign mining companies, and the comparison of this survey data with that of past surveys, *confirmed a general consensus of opinion* among investing companies on the issues considered to be important in making investment decisions, though with different degrees of importance (see chapter 9). Particular emphasis was given to the stability of government policy by both respondents from domestic mining firms and foreign mining companies.
- iv. *Promoting the Role of the Financial Sector (Bank and Capital Markets) by Mobilizing Funds from Domestic and International Sources*: this can be done through the partial privatization of large public sector banks, facilitating the entry of foreign financial institutions, and encouraging and promoting non-banking credit institutes under the supervision of the Central Bank of Iran;
- v. *Other Measures*:
 - A solid guarantee of property rights; clear conditions of trading, the elimination of state trading monopolies, and the enhancement of cooperation between Iran and countries of the region;
 - Reduction of barriers to entry for foreign investment by easing the bureaucratic procedure in the approval of foreign investment (see case studies, the Chilean practice); and,
 - Control of inflation; using a single exchange rate (the market rate) and having foreign exchange available to manufacturers for the purchase of required materials.

10.4.5 Promotion of Private Mineral Investment and Privatization

To address problems associated with privatization, the following attributes are among several that are envisaged to facilitate the privatization of SMEs, and attract private investment to new mining ventures.

- i. As mentioned previously, many recent studies (for instance: Eggert, 1997, World Bank, 1997 and Strongman, 1994) have concluded that the role of government is one of a regulator and promoter, leaving operations and management to private sector enterprises. The Iranian government's approach in the past was to fund new mining ventures of SMEs mostly by way of equity sharing. The disadvantages of this approach were discussed in chapters 6 and 8. Therefore, the government should refrain from providing direct funds to or guaranteeing the financing of SME mining ventures. Rather, it should arrange for a major portion of ongoing investments to be obtained from commercial banks.
- ii. At present, one of the major pitfalls in attracting new private investment, and in privatising SMEs, is that the government is not making a credible commitment to adhering to a particular set of laws regarding property rights.
- iii. The MMM should provide easy access to a broad range of *information* about markets, industrial sectors, new technologies, and products and services to help firms become more competitive, innovative, and productive. All mining companies, regardless of size, location and ownership, should be able to access reliable and up-to-date information that will help them compete and grow. The MMM should prepare guidelines regarding the optimal operation of mines, to prevent the wasting of reserves and assist mining research in the private sector.
- iv. The government should have the banks and other financial institutions develop concrete ways to help small and medium-sized mines find the capital they need. Also, the use of *investment bonds* has been shown to be a good way to attract private investment (such as in projects implemented by the Municipality of Tehran). This

method should be considered by the MMM for mining projects. Banking facilities should be available to applicants, on an economic, technical and financial basis, and there should be no favouritism in state and private companies.

- v. Objectives of the Bank of Industries and Mines should be redefined to meet the growing needs of small and medium mining enterprises; and
- vi. The Ministry of Finance should arrange to have the share of banks in industrial and mineral companies offered to the private sector.

10.4.6 The Structure and Duties of the Ministry of Mines and Metals (MMM)

The institutional framework of the Iranian mining sector requires some modifications to respond to the challenges of the mineral industry (see chapter 8). It is important that the MMM separates long-term policy from day-to-day administration.

A considerable disadvantage of the current structural components within the MMM involves the lack of a properly co-coordinated and autonomous unit whose role is to oversee the design process of a mineral policy. This has meant that to date, there has been no cohesive, multi-faceted and long-term mineral policy forthcoming from the MMM. To undertake the strategic policy studies for minerals and metals, the *formation of a new unit* (Strategic Policy Studies for Mineral and Metals) under the Department of Planning and Programming is suggested (see chapter 8).

Two further important issues are required for the proper formulation and implementation of mineral policy: i) the participation of main stakeholders, ii) the co-operation of other governmental departments.

Accordingly, the MMM should take note of the differences in opinion in the formulation of a well-balanced mineral policy. The participation of mineral industry insiders in the process of proposing amendments and periodic reviews of the regulatory regime can help

policy-makers ensure that the policies are a) predictable and stable, b) responsive to the unique conditions of the mining business, c) performance-based rather than prescriptive, d) not an administrative burden on businesses, and e) able to reduce the uncertainty and costs associated with the mineral business.

For a mineral policy to be successfully designed and implemented, other governmental departments should co-operate with the MMM. This is due to the fact that mineral policy incorporates themes from many fields, such as economic development (e.g. tax, economic rent, finance, trade, and policy on competition), transportation, health, environmental protection, labour, regional development, and research and development. It is therefore necessary that all relevant government departments ensure that mineral policy is given due consideration in their respective mandates⁸.

If a mineral policy is to be successful, the inputs of highly knowledgeable, motivated, and well-rewarded individuals are necessary. However, there could perhaps be a broader scope for the MMM in attempting to recruit qualified and motivated experts. There should be training programs for staff in MMM provincial offices aimed at improving their capabilities in administering the mining code and other regulations, and in negotiating agreements with investors. Further, an exact system for evaluating and measuring efficiency in the administrative system should be established.

Provincial offices of the MMM should also be well equipped and given full authority over the monitoring of mine development, reclamation and closure operations within their jurisdiction.

10.4.7 Export of Mineral Commodities and Metals

Mineral substances and metals have yet to play a significant role in Iran's exports. Despite a steady growth in the number of active mines as well as mineral production, the

⁸ For a detailed discussion see Keyes, 1996.

trade performance of this sector, particularly in the last few years, has been relatively sluggish. At present, mineral and metal exports contribute only a meager 4% to the total exports (IRNA, August 13, 1999). Therefore, a serious effort should be made to produce commodities for which the sector has comparative advantages, in order to join the league of important producers and exporters of industrial and mineral products.

The following summarizes the most important policy measures in this respect:

- i. Adopting appropriate policies for foreign exchange, credit facility, tax incentives and ease of customs processes for export goods, and eliminating wasteful bureaucratic procedures are required for both policy effectiveness and promotion of mineral exports (see chapters 7 and 8).
- ii. The Export Promoting Unit (EPU) within the MMM should provide market and commodity information to exporters and potential exporters, and assist SSM exporters with advertisement of their products. To this end, investment in market research, product development, and short-term loans to SSM exporters through the Export Promotion Bank should be on the EPU's agenda.
- iii. Increasing the productivity of the mining sector requires the utilization of expert labour and modern equipment. If the export of raw minerals is to be reduced and the mining sector is to make significant contributions in non-oil trade, the provision of credit in order to assimilate modern technology, and expert human resources, should be regarded as a high priority in sectoral planning.
- iv. Improving the transportation of materials through the acquisition of greater knowledge of shipping and marketing, the utilization of the shipping industry's full potential, and the improvement of the efficiency of Iran's port facilities can dramatically help the expansion of exports (see chapter 8).
- v. Other policy measures such as supporting export unions and co-operatives, setting up export insurance facilities, making effective use of the free trade zones for the promotion of exports, forming joint export ventures with foreign companies,

supporting the Export Promotion Bank, expanding non-oil counter-trade transactions, and introducing export incentives for completely processed goods are discussed in detail in chapters 6 and 8.

10.4.8 Taxation of Mining Activities

Many economists have at various times noted that Iran's tax system requires an overhaul (see chapter 8). Most recently, the Minister of Finance and Economic Affairs announced that the Ministry was preparing a draft for a new tax system based on the current economic situation and aimed at economic stability (IRNA, July 1999). To improve the present taxation system, basic general features such as administrative cost-effectiveness and operational fairness should be realized. Reforms of the tax system should also include system sustainability, through a broadening of the tax base and the emphasis on simplicity of the system as a whole.

The government must also balance the trade-off between the many different conflicting fiscal objectives to ensure an equitable system. One important factor in mining taxation is, however, the creation of a linkage between profitability and effective tax rate. Past studies of the tax system in many countries have shown that tax systems which are progressive (i.e., the effective tax rate rises or falls with the direction of profit) tend to be more efficient in creating the flexible conditions needed to enable a fair and reasonable allocation of economic benefits and risks between government and mineral investors (see chapter 8).

The following are the most important recommendations in relation to the tax system reform:

- i. *Economic efficiency and expansion of mining activities:* as a whole, the taxation system should reflect economic realities, be equitable, fair, and non-discriminatory. Mining tax rates should take into account tax rates in other economically comparable mining countries to maintain or establish competitiveness of the national industry. Joint fiscal studies should be conducted with the tax authorities, the mineral industry and provincial offices, to devise incentives that improve the mineral investment

climate. Given the present state of mineral investment, the tax system should particularly encourage exploration activities (e.g., allow the writing-off of all exploration expenditures). The use of a special deduction to encourage the development of mineral resources in remote areas should be maintained. Also, it is suggested that the present tax exemptions for new projects be extended to expenses incurred on the expansion of existing operations.

- ii. *Elimination of the arbitrariness of the system regarding tax exemptions:* the extent of arbitrariness regarding tax exemptions and its direct consequences have been of major concern to mining companies, in particular to SSMs, as more than 50% of them found the tax system “unfair” (see chapter 8). Royalties, taxes on profits and other implicit taxes, such as discriminatory foreign exchange rates, impact mining companies directly and profoundly. To survive in the harsh taxation environment, SSMs find it difficult to develop solutions. On the one hand, they lack the time and resources to fight the bureaucracy, mostly located in the provincial and national capital far beyond their base of operations, to obtain provisions that the law has already accorded them (e.g., tax exemptions); on the other hand, they cannot cope with the arbitrariness of the system, especially in the areas of profit, taxes, subsidies and exemptions. The consequence is self-justified and subjective adjustment(s) to obtain what is perceived as “due to them” and compensate for the arbitrariness of the system. In order to eliminate this deficiency, tax exemptions should be clearly stated and fairly implemented.
- iii. *Administrative efficiency:* the majority of those surveyed criticized the administration of the tax regime for being unfair in their tax treatment of the SSMs (see chapter 8). Tax administrators, particularly in provincial offices, should be trained to apply the tax regime in correct manner. It should be noted, however, that due to the inefficiencies in financial practices of many small and medium-sized mining companies, taxes are assessed by estimation. This opens the way for personal judgment and possibly irregularities. The mining companies should improve their accounting system and financial management to avoid such problems.

10.4.9 Small-Scale Mining and Mining Co-operatives

Small-scale operators may perhaps be considered the only purists of the mining industry: they operate in inhospitable terrains, with much smaller financial backing, absorb relatively high risks, and yet remain optimistic about the future state of the market both at home and abroad (see tables 8-8 and 8-9 in chapter 8). A disturbing finding of the survey was that more than 50% of respondents of SSMs claimed to be unfamiliar with the mining regulations that govern them. Therefore, they are often exposed to the uncertainties of inspections, fines and closure. Although enforcement is not tight and SSMs are not considered to be very important violators of regulations in the mineral sector, they seem to operate under much greater levels of unwarranted risk than what they are capable of absorbing at any point in time. SSM operators are discontent with the status-quo and hence have created conditions of their own within which they can operate successfully and contribute to the economic development of the country.

The SSMs are responsible for more than 35% of employment in the mining sector. Given the present rate of unemployment, the government should establish the conditions under which job creation by the small and medium-sized mining companies is sustainable over the long-term. The MMM should review its key policies and make plans with a view of maximizing the benefits to small and medium-sized mining companies. In particular, the government and the MMM should encourage the SSMs by providing an increased supply of loanable funds and capital to reduce financial pressures, easing the regulatory and administrative burdens, promoting the development of strong regional economies, upgrading the physical infrastructure, providing technical and managerial advisory services, and improving their operational and financial management capabilities⁹.

⁹ The ability of SSMs to finance small mining development can be improved if they form groups and establish micro-finance mechanisms. A market for properties can also be established to allow owners of small mines to sell their properties to, or enter into joint ventures with, people who have the resources and skills to develop them (Barry, 1996).

The following are the highlights of other important policy measures in this respect (details are discussed in chapter 8).

- i. The introduction of modern mining and processing techniques can increase productivity and mineral recovery; also, model mines and training centers could help SSMs make an easier transition to modern mining (where possible).
- ii. The MMM should encourage the participation of active and successful mining co-operatives in large mineral projects.
- iii. Over 65% of respondents believed that exploration permits were traded in the free market. They believed that there were no effective means of preventing this occurrence. The elimination of restrictions on the transfer of exploration (and also mining) permits is therefore suggested.
- iv. As discussed in chapter 8, it is necessary that the Department of Mining and Mineral Processing focus on issues related to small-scale mining and offer services such as information, technical assistance and advisory services, development of equipment and technology, low-interest loans, and advice in the purchasing of supplies and equipment, among others.

10.4.10 Technology, Research and Development

The importance of research and development (R&D) and technological innovation for the future well-being and long-term competitiveness of the mineral industry is obvious (see chapter 8). Therefore, the development and implementation of a specific long-term research and technology program is necessary. The MMM policy in relation to research and development should ensure that the needs and interests of the minerals industry are accommodated, and that the industry's understanding and involvement in R&D matters is enhanced.

Research efforts can normally be classified as a) basic research with potential long-term scientific benefits; b) strategic and directed research with medium-term commercial

objectives, and c) competitive and focused research with short-term commercial gains. Government funded R&D must be directed towards wider industry issues and not any single firm or product. It should be basic and/or strategic, not competitive. Also, government funding for research should be predicated on defined long-term objectives to enable continuity and stability in the research effort.

For Iran's mining sector to be technologically sound, the following steps are required:

- i. Local processing of minerals and smelting increase value-added and foreign exchange earnings, and contribute to industrial development. This also has an important impact on demand for local goods, services and employment, and on self-sufficiency of processed products. Therefore, further local bases and facilities should be built (wherever economically viable) for industrialization and development of local resources and for upstream industries. This implies the creation and promotion of manufacturing, and repair and maintenance facilities for mining equipment and machinery. To facilitate this trend, companies should be encouraged to consign the manufacturing of their machinery and equipment to domestic manufacturers (with the participation or under the supervision of credible foreign manufacturers, where required) as much as possible.
- ii. The experts in Iran's mining industry possess a fairly high level of knowledge and expertise; however they are not given sufficient opportunity to disseminate their knowledge, due to the low level of the latest-generation of mining hardware. More recent and efficient technology needs to be brought into some of the plants, e.g., in copper and iron production.
- iii. As discussed in chapter 8, a Mineral Technology Unit is suggested for the MMM. This Unit should operate in partnership with industry, provincial offices, universities and other research institutes. The main activities of this department should include a) providing continuous R&D to promote exploration technology, mine mechanization, energy conservation, technological improvement of manufacturing processes, and re-use of mineral and metal products; b) supporting the development of centres of

excellence and collaborative research for mineral R&D; c) establishing a system of awards for standards of excellence in R&D in the mineral sector; d) providing a program to assist companies with ISO implementation through short-term loans and e) providing consulting services at a reduced cost.

- iv. The MMM should encourage large mining companies to work with existing research and development facilities. A collaborative technology network should be established between the MMM, universities, and the major mining companies. This network should provide mining enterprises with quick and easy access to the expertise, advice, and information on technology that they need to increase their comparative advantages.
- v. The MMM should establish a policy to reward mining companies who a) minimize their energy consumption; b) maximize the use of recycled materials in the production of metal parts and c) lower production costs and, in particular, the use of foreign exchange; d) develop new products; and e) develop technologies to improve manufacturing processes for mineral- and metal-based products.
- vi. A part of the MMM's R&D budget should be allocated to implementing proposals made jointly with the private sector in academic and government research facilities. This increases the commercial applicability of the research findings.
- vii. Companies who are involved in basic and pre-competitive research should be encouraged to liaise and co-operate with government funded organizations to avoid duplication and maximize research results.
- viii. Industry R&D expenditures should receive tax incentives in order to promote and increase industry funded R&D.

10.5 CONTRIBUTIONS TO THE RESEARCH FIELD

This study's contribution to the research field can be summarised as follows:

- i. **Overview of Iran's mining activities and mineral policy:** This study examined the development and operation of Iran's mineral sector under the government's post-revolutionary mineral policies and provided an economic assessment of its current state. This realistic portrayal led to some conclusions as to how the Iranian government might have obtained more benefits than those actually received from the mining industry.
- ii. **Investigation of international aspects of mineral development:** The role of foreign investment and multinational corporations, the principal participants in mineral development, came under close scrutiny. Relevant FDI theories from a mining perspective were discussed. Specifically, for empirical testing and verification of important elements in attracting foreign investment, a survey among the large mining companies concerning their views/comments about investing in the mineral sector of developing countries, in Iran in particular, was conducted.
- iii. **Field study:** To assess the present state of the mineral sector as well as the views/comments of all parts involved in the sector, including Governmental agents, mining companies, cooperatives and individuals, a survey consisting of semi-structured interviews supplemented by a formal questionnaire was conducted.
- iv. **Financial analysis:** A detailed financial analysis of Iranian mining and metallurgical companies during the first FYDP was conducted. This analysis was carried out by collecting some 141 financial statements, standardizing the data, and computing and analyzing relevant ratios.
- v. **Case studies:** Comparative studies of three developing countries in terms of the trends in their mineral investment policies/regulations, legal and institutional framework, fiscal regime, and government involvement, was conducted.
- vi. **Development of a new mineral policy framework:** This study identified and analysed drawbacks in the mineral policy, laws and regulations governing the mineral sector of Iran, and consequences of these deficiencies on subsequent mineral

investment. By applying an integrated approach to all relevant problems/issues identified, the study made detailed recommendations in the form of a new mineral policy proposals for Iran that, if faithfully implemented, may modernize the mining industry of the country, attract foreign investment into the sector, promote local participation, and increase the multiplier effect on other sectors of the country's economy.

- vii. **Generalization of the findings of this study:** Although this study is concerned primarily with Iran, it is hoped that the findings are at least partially generalizable to developing countries, due to overlaps in the basic socio-economic and political characteristics of these countries: they tend to have high foreign debt to GDP ratios, poor export and balance of payments records, and low levels of technological development. Many DCs share the common legacy of dominant state role in their economies and they also share common political and economic objectives and aspirations. Many of them are dependent on primary products for export and their natural resources are the basic tradable commodities that attract foreign investment and generate hard currency essential for debt servicing (World Bank. Development Report, 1998, and Tsomondo and Adde, 1993)¹⁰. Since most of the analyses in this study relate to generic research on issues associated with the design of a sound mineral policy for Iran, the results and policy recommendations can be extrapolated to the mineral sector of developing, and in some cases developed, countries.
- viii. **The use of a new method for designing mineral policy:** The "Participatory Process" method was employed in conducting this research plan. This method was described in chapters 1 and 8.¹¹ The rationale in using this method lies in the widely

¹⁰ Recent trends provide more evidence as to why DCs can be considered to be alike: by 1996, over 65 developing countries in the world were undertaking political and economic reforms (World Bank, Development Report, 1998), giving credence to the argument that they have common political and economic problems to address.

¹¹ To gain clearer insights into the features of Iran's mineral sector and to obtain the opinions of those directly involved, the author traveled to 10 provinces in Iran and conducted open-ended interviews with many people in the mineral industry.

believed notion that policy analysis that merely relies on reports, statistics and figures may not always represent the wider picture. Further, such data does not guarantee the formulation of a good policy. Many scholars (for instance, Seidman and Walde, 1998 and Agarwala, Schwartz, and Ponchamni, 1994) believe that in order to develop a good mineral policy, the views and comments of the *real players in the industry* should be considered. Even though this method caused considerable bureaucratic disturbance within the organizations concerned and required substantial expenses on the part of the author, it facilitated the formulation of more realistic and acceptable policy proposals. It is hoped that this will give new insights into the methodology of this type of research.

10.6 SUGGESTIONS FOR FURTHER RESEARCH

- i. The economic criteria used for evaluating the performance of Iran's mining companies were macro-economic criteria (excluding externalities) relating to financial performance. In fact, the test of industry performance is its profitability, leverage, activity and liquidity. To analyze the effectiveness of the industry in achieving economic goals such as optimization of resource allocation or maximization of income from Iran's resource endowment, further analysis within the context of econometric models in a general equilibrium framework is suggested.
- ii. Many new mining and mineral processing projects were initiated during the FFYDP. Some were completed by the end of the plan, and some are still under construction. There is a considerable delay in finishing some of the projects because of financial constraints. Many analysts believe that the completion of existing projects would have been more economical than the implementation of various scattered projects, which are now proceeding slowly. An interesting area of further research is an investigation in the ways that these unconsummated projects could be completed, whilst remaining within the boundaries of their economic viability.

- iii. In recent years, a large body of scholars have discussed the context of sustainable development, i.e., the notion that the present generation should ensure that the levels of natural resources they inherited should match the levels of resources that they leave for future generations. To this end, issues such as controlling the level of mineral extraction through special depletion taxes and the preservation of the environment, among others, are widely discussed. An area of further research is to integrate the concept of sustainable development into policies of exploration, exploitation and mineral processing.

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APPENDIX

FINANCIAL ANALYSIS OF IRANIAN MINING COMPANIES DURING THE FIRST FIVE-YEAR DEVELOPMENT PLAN

I.1 INTRODUCTION

As discussed earlier, during the FFYDP, the MMM espoused a market-oriented vision in directing SMEs, providing a number of measures including a) the enhancement of autonomy in the management of SMEs, b) transfer of ownership of portions of SMEs to private entities, c) gradual liberalisation of mineral commodity prices and d) introduction of incentives for improving the efficiency of mining enterprises. To investigate the impact of these policies on achievements of the mineral industry, this study provides an overview of the financial performance of Iranian mining and metallurgical companies prior to, and during, the FFYDP.

In an attempt to pursue the objectives of this study, financial statements of the majority of mining and metallurgical firms in Iran were collated and analysed. This analysis involved standardising the data collected from official financial statements and calculating a set of financial ratios. These ratios expose the relative strengths and weaknesses of a company (or group of companies) compared to other companies in the same industry, and show

whether the industry's position has been improving or deteriorating over time. To this end, the financial performance of the Iranian mineral industry, in terms of profitability, liquidity, leverage and activity measures is analysed. This appendix draws together data from the industry over the 1987-88 to 1993-94 period.

The analysis concludes with comments on the constraints which exist in ratio analysis as well as the limits of the data analysed, and offers -a number of suggestions that might influence the financial performance of the industry.

I.2 METHODOLOGY AND SAMPLING

I.2.1 Methodology

The present study investigates the trends in financial performance of the Iranian mineral industry in terms of profitability, leverage, activity and liquidity during the FFYDP. Two types of analysis are often considered in ratio analysis: a) *Status Analysis*, referring to the comparison of the firm's (or group of firms) financial ratios with other firms in the same industry or with industry averages; b) *Trend analysis*, involving an analysis of the performance of a firm (or group of firms) over time. Dahlstedt (1994), using the data of five financial ratios of 42 Finnish firms over a ten years period, indicated that the official industry classification is not often a homogenous grouping in terms of central financial ratios, and therefore, status analysis and intra-industry comparisons are often vague. He argues that the key in doing meaningful ratio analysis involves being sure that all data are comparable, with the most pristine form of analysis entailing an examination of trends within a company over a period of time. As financial statements for an individual company are prepared on a consistent basis from year to year, this study follows Dahlstedt's suggestion by focusing on *trend analysis*.

I.2.2 Sampling and Data Collection

To increase the accuracy and credibility of this investigation, it was decided to include as many firms as possible in the study. However, the relatively small number of mining firms did not warrant a random selection process, and thus random sampling was not found to be necessary in this study. Therefore, most major mining companies that were in operation in 1987 under the auspices of the Ministry of Mines and Metals, along with some private mining firms, were included in the study. Data analysed in this study consists of the official audited financial statements of 26 mining firms, all approved by company management. To make the analysis as accurate as possible, almost all large mining enterprises (public and private) are included in the survey¹. These enterprises account for about 90% of copper, lead and zinc products, and more than 50% of other industrial minerals and building materials.

I.2.3 Different Groups of Mining Enterprises

As Blanco and Zanibbi (1992) note, using a single industry for financial analysis has the advantage of controlling a myriad of potentially confounding variables, provided that the chosen industry consists of firms which are *relatively homogeneous*. When using ratio analysis to compare a firm with other firms in the same branch of industry and with industry averages, we make the assumption that the industry branch is "homogenous in terms of the firms' relevant financial ratios". If this does not hold true, the results of such comparisons can be misleading (Dahlstedt and others, 1994). On the other hand, if the companies in a group that are to be compared are not homogenous (in terms of kind and level of business, e.g., the volume of sales), then changes in financial position of large

¹ The period of this study is the FFYDP. As mentioned in chapter 5, the production of some major steel-producing firms commenced after 1991. At the beginning of the FFYDP, there were not enough steel producing companies for meaningful analysis. Therefore, steel producing companies were not included in the study.

companies with large amounts of transactions can over-shadow the changes in small companies. To increase the accuracy of the analysis and avoid these deficiencies, and for the purpose of this study, financial data of the mining companies active in the mineral sector of Iran were divided in three homogeneous clusters:

- i. **The state-owned large mining enterprises (LMEs):** This group encompasses principally non-ferrous metal mines, with companies producing copper, aluminium, lead, zinc, nickel, gold, silver and molybdenum. It includes companies with mining and milling operations, as well as integrated mining, smelting and refining firms. This group makes up the non-ferrous metal mining industry.
- ii. **The medium-sized non-metal mining enterprises (MMEs):** This group includes companies with mining, milling, smelting and refining operations, which produce different kinds of mineral products (other than ferrous and non-ferrous metals). Most of these were either privatized or merged with other state companies in 1992 (before the end of the FFYDP).
- iii. **The small regional mining companies (SSMs):** This group includes small mining companies producing a variety of mineral substances, mainly decorative stones, potash, asbestos, gypsum and salt. Two characteristics distinguish this group from the previous category: a) the volume of annual sales in these companies is less than \$1 500 000, and b) the number of employees is less than 200. All of these were discontinued, privatized or merged with other state companies by 1991.

The following table shows some basic information about the firms surveyed.

Table I-1 Summary of Information about the Firms Surveyed

Number of financial statements:	141	
Number of studied companies:	26	
Geographic coverage:	14 Provinces	
Kind of firms:	Total	%
Small Regional Mining Companies ◇	7	27
Medium-Sized Mining Companies (Industrial Minerals) ■	12	46
State-owned Companies of Non-Ferrous Metals	7	27
Total	26	100
Type of ownership at the beginning of the FFYDP (Study Period):	Total	%
State-Owned	16	62
Mixed (Private and State)	10	34
Total	26	100

◇ As mentioned, by 1991, small-scale companies were either dissolved, sold to private entities or merged with other state companies. Therefore, data was not available for the rest of the study period.

■ In 1992-93, major changes took place in the ownership of MMEs. Some of them were completely privatized and some were merged with other companies. Therefore, the 1993-94 ratios were not comparable to those of previous years. To avoid inconsistency, the ratios of this group were studied until the 1992-93 financial year.

I.3 LIMITATIONS OF THE STUDY

I.3.1 Accuracy of Information and Shortness of Time Series

A note of caution in relation to the results of this study relates to the accuracy of available data upon which the analyses are based. This limitation is controlled by using data from *official financial statements* of companies, and these are the most accurate possible financial data available. Regarding the length of time series when examining trends over a period of time, the appropriate time horizon to use is three to five years. Longer time periods run the risk of comparing the current operating environment to one where technology, competition and product mix has significantly changed. Shorter time periods do not allow the perspective from which to draw meaningful conclusions (Notes on Ratio Analysis, cf. <http://www.insight-cpe.com>).

I.3.2 Limitations of Ratio Analysis

Ratio analysis is designed to raise questions about a company's (or group of companies) performance, and if conducted in an intelligent manner with good judgement, could give valuable information about a company's operations and financial health. However, like all financial tools, it does have limitations and must be used with caution. An analyst should be aware of the problems associated with ratio analysis and make adjustments as necessary (Brigham, Kahl, Rentz, and Gapenski, 1991). The main limitations and shortcomings of the use of ratio analysis in this study are as follows:

- i. The evaluation of an absolute value of a particular ratio is often very difficult. For instance, how can a high current ratio be regarded? Does it reflect a high degree of safety, or does it indicate misuse of the company's assets? Too much cash, in an environment of high interest rates, is wasteful; too little can, in some cases, lead to detriment. To control this limitation, the author has, in the discussions, considered details given in the financial statements, and where possible, the annual reports of the MMM and the Organization of Planning and Budgeting, Office of State Enterprises, to increase the chances of making an accurate interpretation.
- ii. Having a precise definition of what constitutes a "good" result is also difficult. How can the overall performance of a company (group of companies, or industry) be assessed when some ratios are good and others are not? To avoid a biased judgement, the financial ratios of companies in each homogeneous group are discussed separately and relevant comments are given. In an overall discussion, the author considers the importance of individual results.
- iii. Inflation often distorts a firm's balance sheet. Further, since inflation affects both depreciation charges and inventory costs, profits are also affected. Thus, ratio analysis for one firm over time or a comparative analysis of firms of different ages must be interpreted with care and judgement.
- iv. Another caution in the interpretation of results relates to differing operating and

accounting practices². To avoid problems that result from different accounting systems, all financial statements were standardised and data were organized in a common database. To this end, the author studied the detailed information contained in financial statement attachments when available, and on several occasions contacted the financial managers of the companies to seek help in categorising the data used in the analysis.

I.4 MEASUREMENTS USED FOR FINANCIAL ANALYSIS

The basic tools of financial ratio analysis can be divided into four categories:

- i. *Measures of Profitability*: ratios that show the combined effects of liquidity, asset management and debt management on operating results.
- ii. *Measures of Liquidity*: ratios that explain the relationship of a firm's current assets to its current obligations.
- iii. *Measures of Leverage*: ratios that reveal the extent to which the firm is financed with debt and the firm's ability to meet its debt obligations.
- iv. *Measures of Activity*: ratios that measure how effectively a firm is managing its assets.

Formulas used for each category are presented in the following table.

² For instance, inventory evaluation and depreciation methods can affect financial statements and thus distort comparisons among firms that use different accounting procedures.

Table I-2: Formulas Used for Each Category of Ratio Analysis

Measures of Profitability	$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}}$ $\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Net Sales}}$ $\text{Return on Total Assets} = \frac{\text{Net Profit}}{\text{Average Total Assets}}$
Measures of Liquidity	$\text{Current Ratio (CR)} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$ $\text{Quick Ratio (QR)} = \frac{\text{Liquid Current Assets}}{\text{Current Liabilities}}$ $\text{Current Assets} / \text{Total Assets} = \text{Current Assets} / \text{Total Assets}$
Measures of Leverage	$\text{Debt Ratio (DR)} = \frac{\text{Debt}}{\text{Debt} + \text{Equity (SE)}}$ $\text{Equity Ratio (ER)} = \frac{\text{SE}}{\text{Debt} + \text{Equity}}$ $\text{Investment Ratio (IR)} = \frac{\text{Debt}}{\text{Total Assets}}$
Measures of Activity	$\text{Fixed Assets Turnover Ratio (FTR)} = \frac{\text{Net Sales}}{\text{Average Net Fixed Assets}}$ $\text{Total Assets Turnover Ratio (ATR)} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$ $\text{Average Collection Period (ACP)} = \frac{\text{Average Accounts Receivable} \times 360}{\text{Net Sales}}$

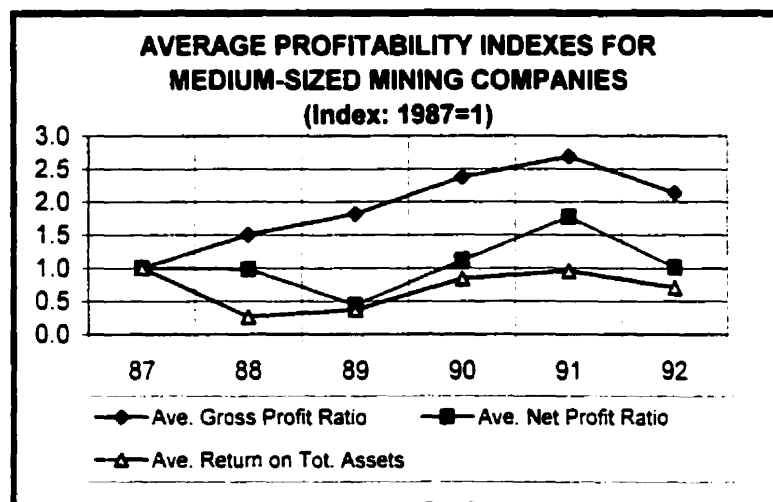
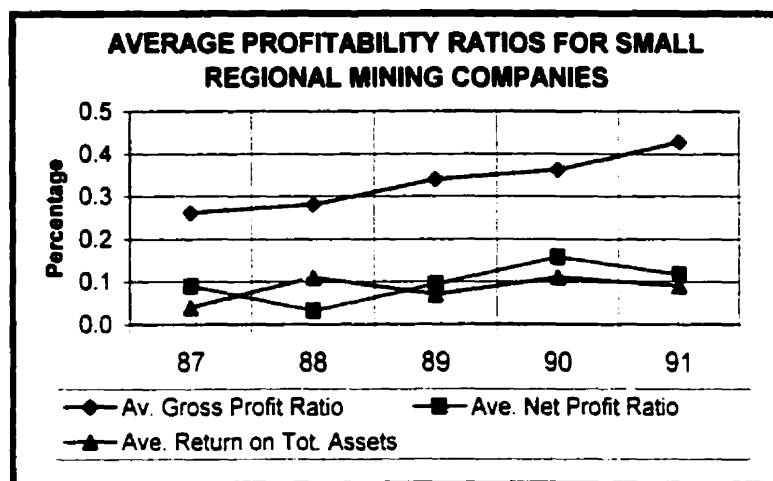
Source: Bilodeau, 1997 and Dheeriy, 1993.

I.5 DISCUSSION OF RESULTS

I.5.1 Trends in Profitability

Profitability ratios attempt to show the firm's effectiveness in generating profits from its sales and assets, i.e., how well the firm's resources are being managed. Margin ratios are one common class of profitability ratios. Firms commonly compute their gross profit margin and net profit margin as a percentage of sales. These margins are often watched closely, as changes can be early warning signals of serious problems (Sytsma-Ferris, 1998). Profitability ratios are discussed in terms of gross profit ratio, net profit ratio and return on total assets.

The following graphs show the profitability situation for small and medium-sized mining companies.



Gross Profit and Net Profit Ratios

SSMs: Before the FFYDP, small mining companies had very low net profits (around 9%), although their gross profits averaged 27%. The big difference between the gross and net profit indicates that the financial and administrative expenses of these companies were very high. From the trend we can observe a steady increase of gross profit for the period of 1987 to 1991, partly due to an increase in the prices of mineral commodities. By 1991, these companies had either been sold to the private sector or merged with state

mining companies.

The trend in net profit ratio does not look similar during the same period. As shown in the figure, although the gross profit ratios rose from 1987 to 1988, the net profit ratio actually decreased as indicated by the downward sloping curve. The same occurs from 1990 to 1991. Looking at the financial statements, it is apparent that the gap between the net and gross profit is due to two reasons: first, more than 85% of the total debt of small companies is short-term debt with a relatively high interest rate, causing high annual financial expenses. Second, the administration costs of these companies have increased over time.

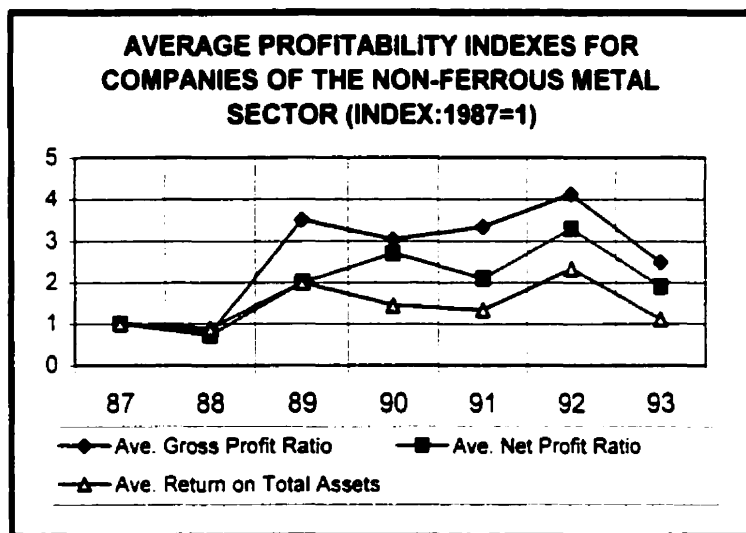
It should be noted that the gross profit is calculated as the profit after deducting the cost of goods sold, while the net profit is generally called profit before tax. In general, net profit gives a more accurate picture of a firm's profitability, as it takes into account financial and overhead expenses (for instance: warehouse, marketing, administrative and research and development costs).

MMEs: With regard to the profitability of medium-sized mining companies before the FFYDP, gross and net profit ratios of these companies were around 21% and 15%, respectively. As seen, the differences between net and gross profit ratios are less than that of the small companies. In the indexed figure above, the gross profit ratio increases steadily from 1987 to 1991. The decline observed in 1992 is partly due to the new government policies in liberalising exchange rates, which caused an increase in the cost paid to foreign suppliers for inputs and consequently the cost of goods sold. The financial expenses of these companies are generally lower than that of small companies, and administrative expenses are controlled in a more effective way.

Overall, the profitability of SSMs and MMEs has increased during the FFYDP, and the gap between the gross and the net profit ratios have been relatively constant. In both

small and medium-sized companies, the volume of sales has also increased. However, in 1992, due to an increase in the cost of goods sold caused by higher exchange rates, profit levels have decreased.

The following graph illustrates the profitability trend for companies of non-ferrous metals.



Non-ferrous Group: This group of companies experienced a fairly volatile performance during the 1987-93 period. As can be observed, gross profit ratios of these companies increased sharply from 1989, the beginning of the FFYDP. This is mainly due to the liberalisation of non-ferrous commodity prices and the policies of the MMM to export a major portion of the country's non-ferrous metal production. The exported portion of the products has generated more income for companies. Despite a slight increase in the local prices of non-ferrous metals, these prices were still lower than international prices. A sharp drop occurred in 1993, mainly due to the new policies of the government in liberalising exchange rates, which caused an increase in the cost of goods sold.

The net profit ratio shows the same volatility during the period. However, some

disagreements are apparent in 1990 and in 1991. The reasons behind this are: a) more efficient control of selling costs, administrative expenses and general expenses for 1990, and b) credit purchases of additional equipment that increased interest expenses in 1991.

In general, the overall trend of profitability (gross and net profit ratios) improved mainly due to an increase in production (improved efficiency) and sales level. During the early years of the FFYDP, the market demand for non-ferrous metals increased significantly, reflecting a strengthening economy. It is notable that during the same period, the cost of goods sold also increased sharply, which partly offset the increase in profits.

Return on Total Assets (ROTA)

Return on total assets (ROTA) is a measure of a firm's return or net income relative to the asset base used to generate the income. A firm that generates more income, relative to the amount of investment, is in a better position, other things being equal. The ROTA is particularly good for evaluating how well management has used the assets entrusted to them (Sytsma-Ferris, 1998).

SSMs: The ROTA supports the average gross profit ratio from 1987 to 1988 and contradicts both the gross profit ratio and net profit ratio from 1988 to 1989. This is attributed to amortisation and the purchase of new equipment. As the return on total assets is calculated on the basis of total assets, which include all the short term and fixed assets, an increase (decrease) in these assets can certainly affect the trend.

MMEs: The return on total assets declined from 1987 to 1988, caused by the additional purchase of new equipment. This group of companies was more willing to buy new appliances as the call for modernization arose during the period under study.

Non-Ferrous: The average return on total assets supports the net profit ratio except from

1989 to 1990, where the curve slopes downwards. This is caused by the acquisition of new equipment, which added to the denominator base.

As seen, the average return on total assets for all groups of companies has increased during the FFYDP. This means that companies were able to manage their assets more efficiently and therefore generated a higher return on their total assets.

Remarks on Profitability

In light of the above analysis, it can be concluded that the mining industry has experienced some growth in the period from 1987 to 1993. As part of long-term operational objectives, the MMM emphasised high volume production and cost reduction efforts to render the industry competitive in the world market place.

The profitability of SSMs has fluctuated less, while the MME and Non-ferrous sub-sectors showed more fluctuations, especially in the ability to manage their existing assets. Generally, the increase in profitability of the industry during the FFYDP is attributed to an increase in mineral and metal prices in local markets as well as an increase in production levels. Rising input-factor costs necessitated price increases. However, because mining companies, particularly SSMs (state-controlled at study time) and SMEs, did not effectively control their indirect (mostly administrative) expenses, net profit ratios were relatively low compared to gross profit ratios.

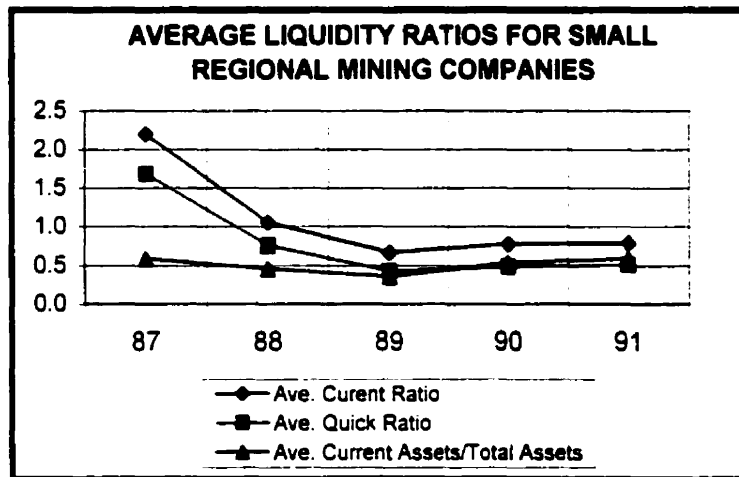
The liberalisation of foreign exchange rates during the plan caused an increase in the cost of foreign inputs, and consequently, the total direct expenses of production in all groups. In some instances, the increase in commodity prices did not compensate for the increase in total costs. Also, it should be noted that in the majority of cases, the ROTA is based on the value of assets net of depreciation. This is how they are recorded on the balance sheet. However, for two firms in the MME group, depreciation levels have been ignored,

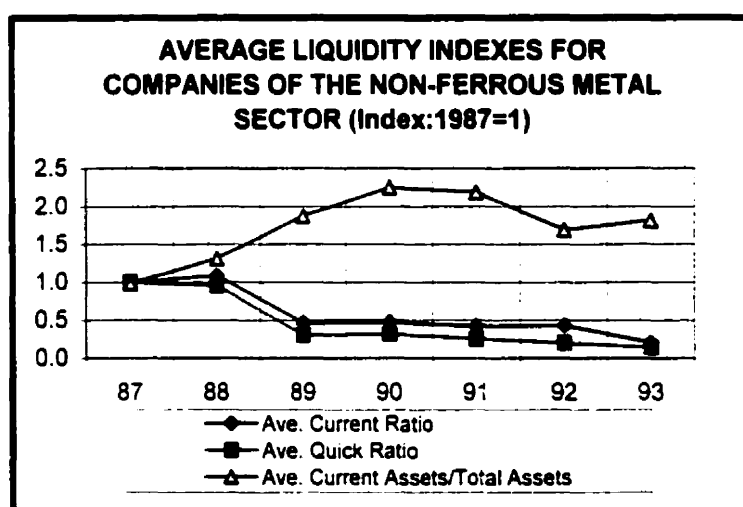
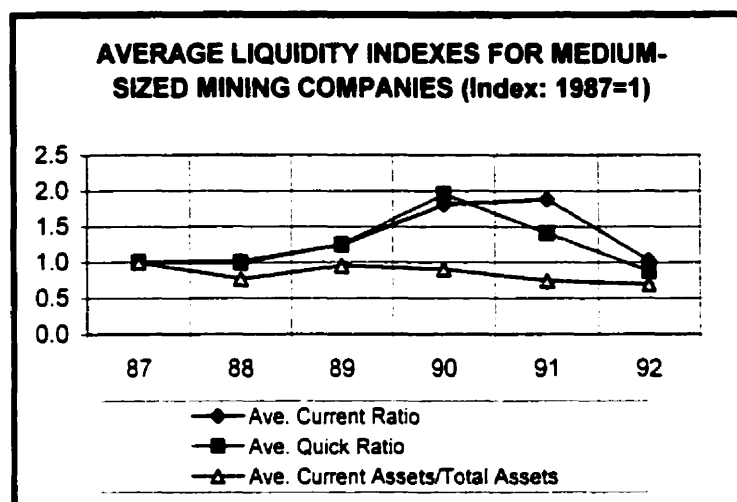
and the cost of the assets has been used instead. This was to avoid very high returns in cases in which assets were very old and fully depreciated.

I.5.2 Trends in Liquidity

Liquidity ratios assess whether a firm is maintaining an appropriate level of liquidity. Liquidity is an indication of the ability of the firm to meet its short-term obligations, in other words, a measure of the firm's solvency. Too little liquidity raises the possibility of default and bankruptcy. Too much liquidity may imply that long-term investments with greater profitability are being overlooked.

The following graphs show the liquidity situation of all three groups of mining companies.





Current and Quick Ratios

The current ratio is an indication of a company's ability to service its current obligations with a margin of safety to allow for a possible shrinkage in the value in its various current assets such as inventories and receivables. Generally, the higher the current ratio, the greater the "cushion" between current obligations and the firm's ability to pay them.

However, from a management point of view, there might be a serious doubt about the wisdom of an excessive build-up, in particular, of cash lying inactive or inventories out of proportion to the needs of the business. Therefore, the composition and quality of current assets are critical factors in the analysis of the company's liquidity.

Also known as the "acid test" ratio, the quick ratio is a refinement of the current ratio and is a more conservative measure of liquidity. It places more emphasis on the firm's short-term viability, i.e., its ability to stay in business. The ratio expresses the degree to which the company's current liabilities are covered by the most liquid current assets, i.e., those quickly convertible into cash. Generally, a quick ratio less than 1 implies a dependency on inventory or other current assets to meet short-term debt obligations. This ratio can be obtained by dividing cash plus trades receivables by total current liabilities. The following discusses the trends in current and quick ratios in all groups of companies under study.

SSMs: The current and quick ratios declined in 1988 and stayed relatively stable thereafter. The range of current ratios was around 2.2 in 1987, which indicates a relatively high short-term liquidity position of the companies. The current ratio declined substantially in subsequent years, stabilising at a value of about 0.8. This is explained by the fact that in 1988, many small companies purchased new machinery, using in part their internal financial resources, causing their current and quick ratios to decrease. After the start of the FFYDP, these ratios remained relatively low.

The quick ratio trend follows closely the current ratio trend. Mining companies should have a quick ratio not too far below unity to meet debt obligations they generally have for their machinery and equipment (capital-intensive nature of mining business).

MMEs: Since this group contains relatively large and diversified companies that generally have more debt, and since they are more likely to be publicly traded, they are more subject to government and security commissions regulations. Both the current and

quick ratios are higher than those of SSMS. This suggests that MMEs were more prudent in maintaining a reasonable ratio to guarantee creditor satisfaction. The average current and quick ratios over the period of study was 1.5 and 0.9, respectively.

Non-ferrous Metals Group: The average current ratio decreased by about 50% from 1988 to 1989 and remained relatively constant until 1992, after which it decreased by a further 50%. The quick ratio curve follows closely that of the current ratio here as well. The non-ferrous sub-group consists of 3 different important industries (i.e., lead and zinc, aluminium, and copper). With respect to the current and quick ratios, these groups revealed different trends. In the case of the lead and zinc industry, current ratios have increased over the 1990-92 period. However, it decreased in 1993 (average of 1.54). The same trend is observed for the quick ratios (average of 0.93 over the entire period). In the case of aluminium, current ratios have been almost constant. Regarding quick ratios (average of 0.82 over the entire period), they increased in 1989 and remained relatively constant for the rest of FFYDP. In the case of copper, current ratios were extremely high before the FFYDP, but decreased over the FFYDP period, although the overall average remained high. Quick ratios in the copper industry have decreased over the FFYDP, indicating a lack of liquid assets in the whole period. For the entire non-ferrous group, both current and quick ratios were high before the FFYDP, but decreased from the beginning of the FFYDP. The overall averages of these ratios were relatively high for the study period, compared to other groups.

The current ratio depends on management policy regarding working capital. The overall production and sales policy at the time was to produce steadily and extended credit was offered to customers. This policy is evidenced by the relatively constant difference between the current and quick ratios over the study period.

Current Assets/Total Assets

The average current assets of the small-scale mining companies remained around 50% of their total assets, which is a reasonable indicator of liquidity.

In the case of MMEs, this ratio decreased slightly in 1988, increased in 1989, and remained relatively constant thereafter. The average ratio of this group of companies remained within a range of 20% over the period, indicating a prudent approach from management.

In the non-ferrous metals sector, current assets over total assets increased at the beginning of FFYDP and remained relatively constant for the rest of the period. In the case of the copper industry, however, it slightly decreased in the 1992-93 period.

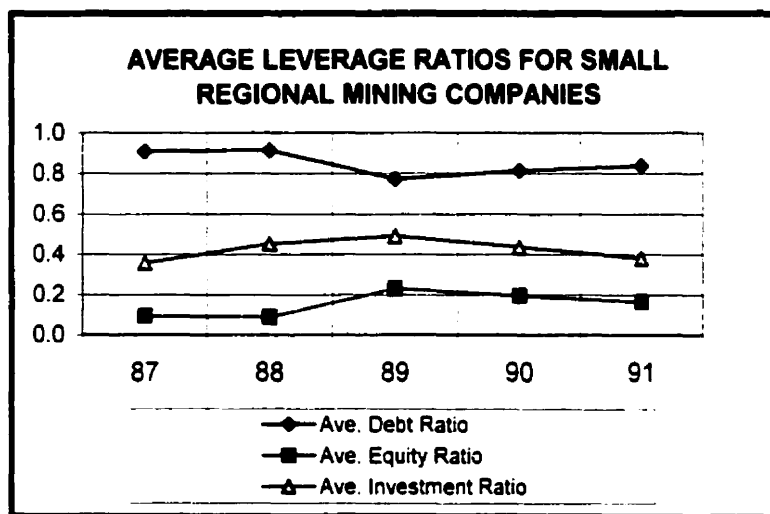
Remarks on Liquidity

The general trend in liquidity for all groups during the FFYDP is downward, except for the MMEs, which experienced an increasing trend until 1991. Current ratios of the non-ferrous metals group were much higher than those of other sub-groups in 1987-88 (ineffective utilization of current assets). This group, however, has shown signs of improvement during the FFYDP. Quick ratios were marginally low, particularly in SSMS, which is an indication of the existence of liquidity problems. Therefore, SSMS probably experienced difficulties in securing long-term loans from banks and other financial institutions. In the case of state companies in the non-ferrous sector, liquidity problems do not appear to be severe, but nevertheless, the short-term liquidity position is marginal over the study period.

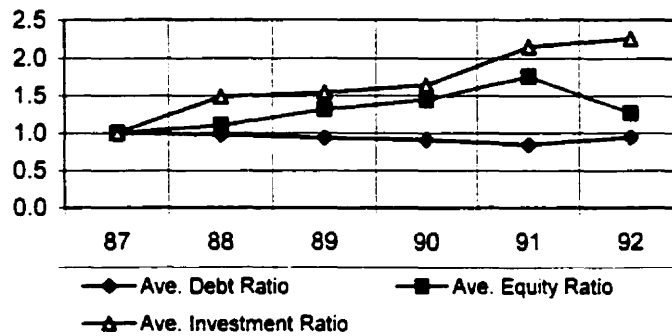
1.5.3 Trends in Leverage Ratios

Leverage ratios indicate the extent to which a company is financed by debt as opposed to equity, and its ability to meet debt obligations. A high debt ratio is not a cause of concern for a company with high profits. However, when the company is facing financial difficulties, a high debt ratio makes a bad situation worse. Thus, the company sinks into deeper trouble that may lead eventually to bankruptcy. Regarding measures of leverage, three basic ratios are analysed.

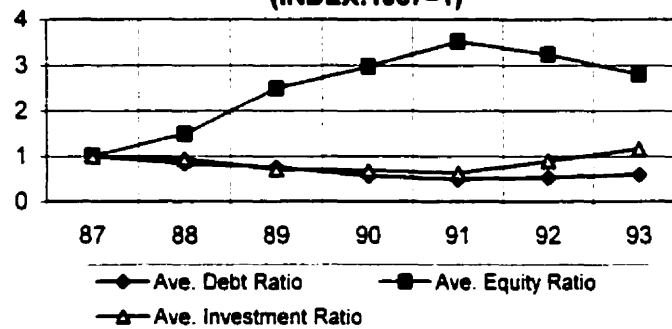
The following graphs show the liquidity situation of all three groups of mining companies.



AVERAGE LEVERAGE INDEXES FOR MEDIUM-SIZED MINING COMPANIES (Index: 1987)



AVERAGE LEVERAGE INDEXES FOR COMPANIES OF NON-FERROUS METALS (INDEX:1987=1)



Debt and Equity Ratios

The debt ratio expresses the relationship between the capital contributed by creditors and that contributed by both the creditors and the owners, i.e., the dependency of a firm on its creditors. It also expresses the degree of protection provided by the owners for the creditors. The higher the ratio, the greater the risk being assumed by creditors. A lower ratio generally indicates greater long-term financial safety. A firm with a low debt ratio usually has greater flexibility to borrow in the future. A highly leveraged company has a

more limited debt capacity. Thus, the greater the liabilities relative to the total assets, the riskier the firm. The equity ratio measures the extent to which the owner's equity (capital) has been invested in plant and equipment (fixed assets). In fact, it measures the financial strength of a firm. It is the complement of the debt ratio.

It is important to note that the nature of the firm and that of its industry have a great deal to do with what is an acceptable level of debt, relative to equity, and what level of interest payments can be considered reasonably safe. A business with very constant sales and earnings (e.g., large SMEs), can support a higher level of debt than a firm that has significant fluctuations in earnings (e.g., SSMs). This doesn't mean that one industry is better or worse than the other – it means that an equal level of debt does not imply an equal level of risk for two firms in different positions. The following analysis considers the leverage ratios in the different industry groups.

SSMs: The debt ratios were quite high for the small regional mining companies (around 85%). This can be explained in part by the nature of the business they operate in. Since this group of companies was not publicly traded, their debt originated mostly from institutional investors. As the equity ratio is the complement of the debt ratio, the two curves are mirror images.

MMEs: The debt ratios decreased slightly over the period of study. The equity ratios rose steadily from 1987 to 1992, while they decreased in 1992. The reason for this drop is an increased debt level due to expansion. Since the mining industry is highly speculative in nature, institutional investors generally lend their funds in the form of banker's acceptance and collateral, which guarantees the safety of the funds.

Non-Ferrous Metals Group: The average debt ratio of the non-ferrous metal sector was very high before the FFYDP. However, the debt ratio actually decreased to about 60% of the 1987 level from 1987 to 1993. One of the reasons for this was that interest rates being

so high, companies raised funds internally or through the issue of new shares. Furthermore, sales were so good that companies were able to retain a fair amount of earnings for future investment. This is evidenced in the chart of “Average Profitability Indexes” for the same group. One can see that the equity ratios of this group increased sharply to its 1987 level. This suggests that during the study period, investors were very optimistic about the non-ferrous metal sector. The reason behind this was an increased demand for this type of mineral commodities.

Investment Ratio

Another ratio investigated here is the “Investment Ratio”. This ratio is used to check if an increase in the debt ratio is matched by an increase in fixed assets (new investments). It shows the ratio of fixed assets to total assets. For some financial analysts, this ratio is not categorised as a leverage ratio. In this study however, it was important to observe the extent to which this ratio had increased during the FFYDP.

SSMs: While the debt ratio remained relatively constant from 1987 to 1989, the investment ratio increased from 0.36 to 0.5, which indicates an increased proportion of fixed asset to total assets. From 1989 to 1991, the debt ratios rose slightly while the investment ratios declined. This means that the small companies were using the borrowed money for purposes other than for purchasing additional equipment. These companies, as mentioned, had difficulties in meeting their financial obligations and consequently had to borrow to pay their debt.

MMEs: The average investment ratio rose steadily from 1987 to 1992, which indicates that MMEs were acquiring additional fixed assets. Since the debt ratio remained almost constant until 1991, one can say that the funds used to make these purchases were generated through other sources, such as retained earnings and the issue new shares. This is a good sign as companies were expanding their operations, implying future growth

prospects. In 1992, however, both the debt and investment ratios increased, indicating that the purchase of new fixed assets was partly financed through debt.

Non-Ferrous Metals Group: The fixed assets to total assets ratio remained quite stable for this group. In fact, the growth in fixed and total assets was relatively proportional.

Remarks on Leverage

In the Iranian mineral industry, the debt burden of companies was high before the FFYDP. In fact, based on the policies of the MMM, some state companies have used more external funds for their projects, and this is the reason for the overall high debt ratios. However, debt ratios have declined during the period under investigation. An analysis of relevant financial statements indicates that a high proportion of the debt of mining companies is comprised of short-term loans. Companies should use more long-term loans for their operation. However, it is important to note that due to the risky nature of mineral activities, long-term financing of mineral projects has become tighter in recent years. Lenders are more interested in low-risk operations. Because of the perceived risks in mining operations, financiers charge higher interest rates on their loans for mineral projects.

Issues of concern to Banks and other financial institutions regarding mining loans can be summarized as follows:

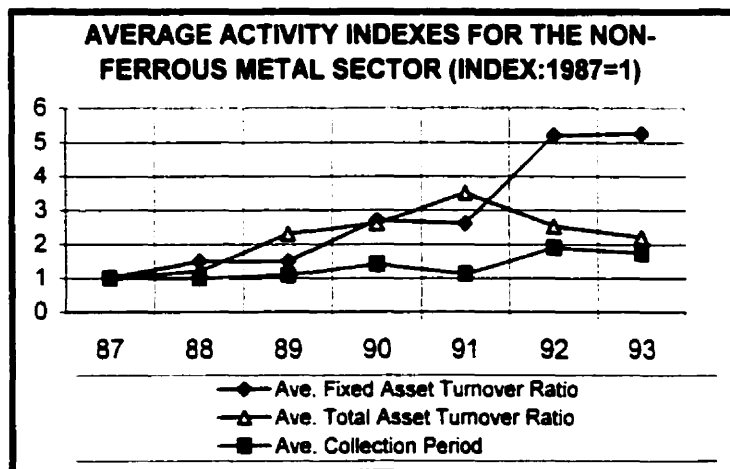
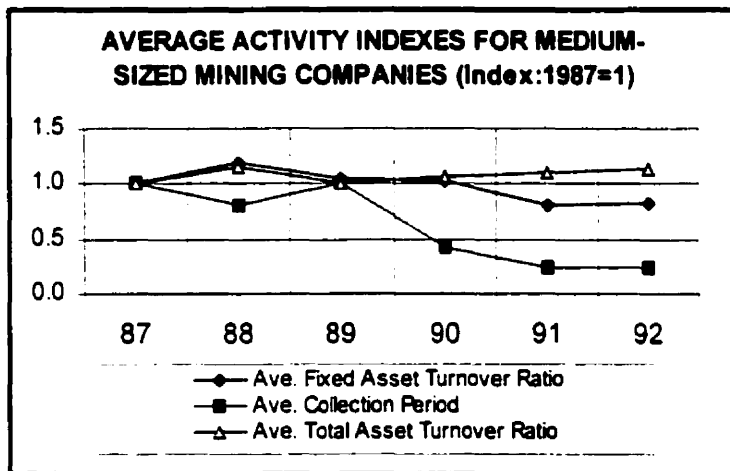
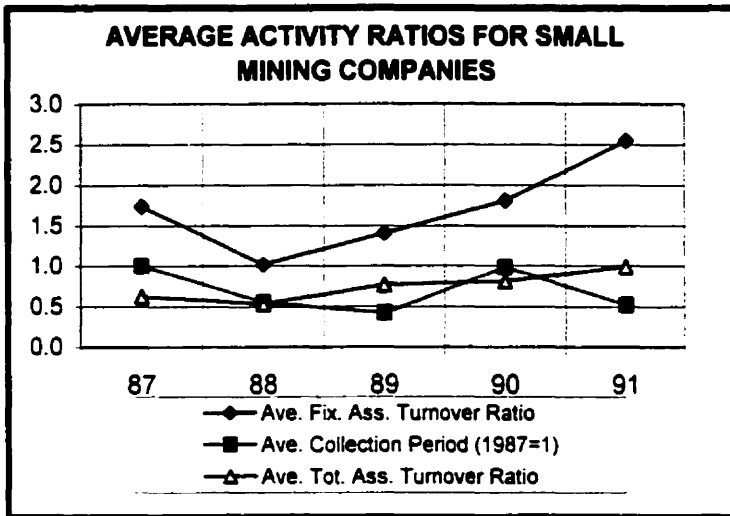
- i. The project's rate of return;
- ii. Large open pits are favoured, as they possess better cash flow streams and are considered less risky than underground operations;
- iii. Geographic location is another important consideration. Banks do not favour projects that operate in remote areas, because, despite tax incentives, they are subject to significant infrastructure investments and externalities;
- iv. A larger and more diversified operation is favoured;

- v. Investors and banks also consider elements of risk such as inaccuracy in reserve calculation, potential delay in revenue flow due to delays in the implementation period, cost overruns, technical failure, price instability of mineral products, mismanagement, poor labour relations, and foreign exchange fluctuations, in decisions concerning the financing a mining ventures;
- vi. In addition to the above-mentioned factors, the quality of a company's financial data has a great impact in establishing a good relationship with a bank. Low-quality financial reports may keep the company from securing credit even though it is financially sound. Therefore, it is in a firm's interest to produce accurate, precise and credible financial data, even if doing so is expensive. As many managerial decisions depend on the numbers recorded in a firm's accounting statements, those numbers should be as accurate as possible.

It is observed that the smaller the mining company, the more it has to borrow to support its activities for the simple reason that it cannot raise funds publicly. As the company grows, it has less difficulty in borrowing, but it appears to prefer to use retained earnings. the transfer of part of its share to the public or the proceeds from the issue of new shares to finance its operations.

1.5.4 Trends in Activity Ratios

Activity ratios measure a company's effectiveness with respect to managing its resources. Usually referred to as "turnover" ratios, they are most commonly used by company management to calibrate the efficiency of various departments and divisions. Three ratios were analysed here: fixed asset turnover ratio, total asset turnover ratio, and average collection period. The following graphs show the trends in these ratios over the study period.



Fixed Asset and Total Asset Turnover Ratio

The fixed Asset Turnover Ratio (FTR) measures the ability of the fixed assets to generate sales, i.e., the turnover of the book value of the fixed assets. A high turnover ratio indicates that the firm's fixed assets are being used in an efficient way, and may suggest that additional capital investment is necessary. Mining being a capital-intensive industry, the FTR is relatively high compared to other industries. The Total Asset Turnover Ratio (ATR) measures the ability of all assets to generate sales, i.e., the turnover of all assets.

A major potential problem exists with the use of the fixed asset turnover ratio for comparative purposes. Fixed assets reflect the historical cost of the assets. Inflation has caused the value of many assets purchased in the past to be understated seriously. Therefore, in comparing an old firm that acquired many of its fixed assets years ago at low prices with a new company that acquired its fixed assets only recently, the old firm may show a higher turnover that reflects rather the inability of accountants to deal with inflation than any inefficiency on the part of the new firm. The analyst should devise ways of making financial statements more reflective of current values, which is difficult³, or simply recognise that the problem exists and use his/her judgement in dealing with it. In the present analysis, however, this issue is not a serious one. Since all firms in each sub-groups of the industry have been expanding at about the same rate, the balance sheets of the firms are indeed comparable. The following discusses the trends in FTR and ATR in all groups of companies under study.

SSMs: The decline in the FTR in 1988 is due to the addition of new equipment, despite the increase in the sales of SSMs, as is evidenced by high gross profits in 1988. From 1988 to 1991, the average FTR increased steadily, which is a sign of improved sales generated by the fixed assets.

³ Financial statements typically do not include the data necessary to make these adjustments.

MMEs: The FTR ratio remained relatively stable during the first 4 years and decreased in 1991, partly due to major purchases of new equipment. The ATR remains relatively stable because it takes into account the total assets, which include the current asset portion that reduces when purchases are made.

Non-Ferrous Metals Group: The FTR curve increased sharply in 1992, which is a good sign of tremendous sale. The ATR does not show any particular move.

Average Collection Period

The timely collection of receivables is very important for a company, since, once collected, the money can be used to pay off loans or can be reinvested. This results in lower interest payments or an improved return on investment. Therefore, companies need to collect their receivables promptly. The average collection period is a very common indicator of efficiency in collecting receivables. It measures the promptness with which a firm's accounts receivables are collected. Company management watches this number very carefully because good receivables management is one of the quickest, and cheapest, methods of improving cash flow. Too high a value indicates loose collection practices that can result in increased bad debts, while too low a value may insinuate a restrictive credit policy that could lead to lost sales.

SSMs: As can be seen from the activity graph, the collection efforts seem to have been strengthened during the FFYDP. The tightening of credit policies can be another reason for an improved average collection period. There is no specific rule for the average collection period. Different companies use different collection policies.

MMEs: The average collection period declined considerably since the end of 1989. This is partly due to the fact that the performance of the accounts receivable departments has improved over time. Another explanation responsible for a declining collection period is,

in fact, the tightening collection practice of different companies in this group. This can be a good sign if the customers are comfortable with the new policy and are willing to pay their bills accordingly. On the other hand, if only some of the companies were applying the new tightened policy, customers would be driven away to other companies with lax credit policies.

Non-Ferrous Metals Group: The average collection period did not move noticeably until 1991. In 1992, the collection period increased slightly, indicating that the companies were loosening their credit policy.

I.6 CONCLUSIONS

Overall, this study reveals that the mining industry has undergone a major change during the FFYDP. In particular, due to rapid changes in the economic environment as well as changes in the management of many state companies, economic performances, and therefore financial ratios, have been inconsistent.

All industry sub-groups had financially troubling times before the FFYDP, due to a low level of profitability. However, the profitability of the entire mineral industry has improved over the FFYDP due to a) an increase in mineral and metal prices in the local market and b) an increase in production levels (lower fixed cost per unit). The profitability of both MMEs and the Non-ferrous metal companies experienced a downward trend after 1991, mainly because of the actions of the government in devaluating the local currency. Net profit ratios were relatively low compared to the gross profit ratios. The relatively large gap between gross profits and net profits is partly due to the high financial costs associated with using external funds (mostly short-term loans) and the loose control of administrative costs. The mining companies needed to focus on increasing sales as well as reducing general, particularly administrative, expenses in order to be more profitable.

Current ratios of the non-ferrous metals group were much higher than that of other sub-groups before the FFYDP (ineffective utilization of current assets). This group, however, has shown signs of improvement during the FFYDP. Liquidity for MMEs seems to be low over the period. Marginally low quick ratios, particularly for SSMs, are an indication of the existence of liquidity problems.

The debt burden of companies seemed higher than average, particularly in the case of SSMs. However, debt ratios have improved during the FFYDP and companies were less exposed to possible bankruptcy. A more detailed analysis of the financial statement indicates that a high proportion of the debt of mining companies is comprised of short-term loans. Companies should be encouraged to use more long-term loans for their operations.

Because of the capital-intensive nature of the mining industry and because of the low prices of mineral commodities in Iran, the overall FTR was low during the FFYDP. The SSMs and MMEs have the most effective utilization of assets. The non-ferrous metal companies have the least effective utilization of assets, because of the high costs of newly purchased machinery and equipment for expansion, coupled with the low prices of saleable products. As well, to boost sales some companies in the non-ferrous metal group were practising loose credit policies.

For the mineral industry, the inflationary years were difficult to contend with because mining firms, in general, found it difficult to pass costs on to consumers. In other words, revenues did not keep up with the rising costs (1992-93 period). High interest rates generated by the higher-than-average inflation rate added to the fixed costs of mining corporations.

In reviewing production costs, it is apparent that the consumption of energy and consequently energy costs, despite the relatively cheap cost of energy in Iran, were high

in the industry. The high consumption of energy suggests that there is a great need for energy conservation plans as well as plant modernization.