EL CERREJON COAL PROJECT: EVALUATION OF A LARGE SCALE, TRANSNATIONAL, PUBLIC/PRIVATE JOINT VENTURE

by

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B.S., Universidad de Los Andes

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Submitted to the Sloan School of Management
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Signature of author: _____
Sloan School of Management, May 8, 1981

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Accepted by: _____
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ABSTRACT

A strategic evaluation was carried out of a large scale coal mining joint venture that was undertaken by the Government of Colombia and Exxon Corporation in December 1976. The evaluation combined the case study method with political, economic, organizational and behavioral analyses. Five important problem areas were addressed:

1. How were the partners' objectives set, how these objectives were then reconciled into one feasible project, and how they may change in the future.
2. How were those objectives operationalized in an association contract, and how the latter distributes the project's benefits, costs and risks.
3. How the application of the contract may affect the partners' shares of benefits, and how the socio-political and economic environments may influence partners' behavior in applying the contract.
4. What organizational structures have resulted from the association, what their implications are, and how they may evolve in the future.
5. How the above considerations influence the partners, project managers and operating personnel in their degree of autonomy, control, cooperation and participation in the project.

Several important elements for the successful implementation of this project were identified, and some crucial factors were discussed at length.

The major results derived from this study were:

1. The objectives of the Colombian Government and of Exxon are consistent in the short run. Long run objectives, however, may diverge in a way detrimental to the project's chances for successful completion.
2. The association type of contract is no longer appropriate to the country's natural resource development needs and is no longer politically acceptable. Future contracts should be Operating or Management contracts.
3. The 1976 association contract is in full legal force now for a 30-year period. The project's success depends on how the partners apply the contract, on the degree of support that will be achieved from all relevant stakeholders, and on the organizations' adaptive capacity.
4. The project should not be stopped because of its timeliness and potential benefits. Instead, the problems mentioned above should be addressed in order to gain long-term general support. Cooperation and commitment should be increased through participation and through a high degree of involvement.

This case study illustrates the challenges facing large scale project managers in today's rapidly changing world.

Thesis supervisor: Mel Horwitch, Assistant Professor of Management.

DEDICATION

To my father, whom I admire and respect most,
even if it sometimes does not show, and

To Julio, from Manaure, the one I did not mention,
the most important future actor in El Cerrejón project.

"Haz las cosas con entusiasmo
Y con amor, o no las hagas.
Busca siempre la belleza y la calidad,
Tanto en gentes y cosas humildes
Como en las grandes.
En la vida nunca te sobrará
Lo verdaderamente bueno,
Pero sí te hará falta."

Mauricio Tirso Obregón
Bogotá, Septiembre 12 de 1978

ACKNOWLEDGEMENTS

Many persons have helped me in this research, and I hope that those whom I forget to mention will accept my apologies.

I should first caution the reader here that I bear complete responsibility for the findings of this study, as well as for all translations. This project IS controversial, and it was my intention to help in the clarification of some of the issues involved. I hope, therefore, that my contribution will not add to the present confusion, and will help resolve the controversy.

I would like to express my appreciation for the cooperation extended to by the executives and personnel of the major organizations involved in the project: Fernando Copete Saldarriaga, Ricardo Cucalón and Guillermo Peña, from Carbocol, were specially helpful and patient, as were Ramón de LaTorre, Roberto Posada, Rafael Sierra and Gustavo Gómez Quin from Intercol and Intercor.

I am indebted to Diego Otero, Guillermo Uruburu, Yesid Obregón and Ignacio Ponce de León, from the National Planning Department, for their initial help and their interesting comments.

I want to thank Roberto Forero Baez, for making available to me many documents without which this research would have been very difficult to conduct.

In the University of The Andes, Edgar Reveiz, Manuel Rodriguez, and Marisol de Melendez and her staff from the libraries were extremely helpful to me in the course of my initial research.

Professor Mel Horwitch, my thesis advisor at the Sloan School, deserves my gratitude, as does professor Peter Brownell. Both helped me greatly with the methodology, conceptualization and preparation of this study. They gave me more of their time than I probably deserved, and were patient with my En-

glish spelling, grammar and style. Two other professors were influential in developing my interest for this topic during the course of my studies: Professor Stephen Kobrin and professor Donald Lessard. To them I feel indebted.

I would like to express my deep appreciation to the following persons who supported and helped me in many ways: Mr. and Mrs. Fernando Gómez Agudelo contributed to my thesis with much more than I can hope to return them. Hernán Echavarría Olozaga, César Simmonds, Germán Castro, Sylvia Dávila and Antonio Uribe were also very helpful: I owe them my thanks.

Finally, Claudia Gómez helped me from start to finish, from the initial conception to the final typing of this thesis, with personal and moral support. To her I must express my warmest feelings of affection and gratitude.

Cambridge, Massachusetts
May 4, 1981

TABLE OF CONTENTS

VI. ECONOMIC ANALYSIS OF THE 1980 DECLARATION OF COMMERCIAL FEASIBILITY

VII. EL CERREJON PROJECT: RECOMMENDATIONS AND GENERAL IMPLICATIONS

-.-.-.-.-.-.-.-.-

LIST OF EXHIBITS, TABLES AND FIGURES

VI. ECONOMIC ANALYSIS OF THE 1980 DECLARATION OF COMMERCIAL FEASIBILITY

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CHAPTER I

INTRODUCTION

Riohacha, September 5, 1980, Press release:

THE NORTHERN CERREJON COAL PROJECT IS INITIATED

Carbones de Colombia S.A. -CARBOCOL, a commercial and industrial State enterprise, and International Colombia Resources Corporation -INTERCOR, a private concern, are pleased to announce to the public that the National Government has approved the commercial feasibility of El Cerrejón's coal project, Northern zone, in La Guajira. Today, the President of the Republic officially announced the initiation of the project, which will bring great economic and social benefits to the Country and to this Department, through generation of foreign exchange and employment, among other positive accomplishments.....

The net foreign exchange flows generated by this project from the end of this decade on, will contribute significantly to the Country's energy balance. This aspect alone justifies the prompt implementation of this project. It also heralds the initiation of (Colombia's) large scale coal mining and, given its magnitude, it will promote the initiation of a new national era of thinking BIG. Taxes collected on the private partner's profits will total some 24,000 million pesos, once full production is attained.

The investments required for its construction, and the costs incurred in its operation,during the life of the association contract, will be shared by CARBOCOL and INTERCOR in equal parts. CARBOCOL will be entitled to one half of the production, plus a royalty of 15%, at the mine mouth, on the other half of the production which will accrue to INTERCOR. The contract also stipulates that INTERCOR will pay to CARBOCOL, as a complement to the

royalties, an additional participation on the incomes that may accrue to INTERCOR, according to an established formula, which is in fact equivalent to a tax on the private partner's excess profits, in the event that this "excess" should appear....

A COMMITMENT FOR ALL

As may be appreciated from the above information, one of the most important accomplishments for the Country's future is being undertaken. It is therefore imperative to count on the decisive collaboration of the authorities and of the Region's, and the Country's, public forces to make this project, of the highest regional and national interest, a reality.

Carbones de Colombia S.A. CARBOCOL — International Colombia Resources Corporation INTERCOR

EL ESPECTADOR, Monday, September 8, 1980. Article by Clemente Forero Pineda

A COUNTRY OF WONDERS: COAL MINERS' BLIND FAITH

Carbocol's professional staff, who was in charge of evaluating the economic characteristics of the contract and the coal project of El Cerrejón, resigned last Thursday (September 4) in protest against the Government's decision to accept the "declaration of commercial feasibility" of the project in the conditions proposed by Intercor.

El Cerrejón's coal will be exploited through an "association" contract between Carbocol, a Colombian State enterprise, and Intercor, a subsidiary of the transnational company Exxon. Cecilia de Sierra, Liliana Jaramillo Velosa and Roberto Forero Baez, in their assignment as technical advisors to the project, had warned Carbocol's director, and through him, the government, before this decision was made, that "the general considerations pres-

ented by Intercor in its declaration of commercial feasibility have negative impacts very important for Carbocol and for the Country". The Government's declaration implies, among other things, acceptance of questionable conditions imposed by Intercor, the granting of ownership rights on the coal to the foreign subsidiary, and the initiation of construction under Intercor's control as the project's operator, but with the Colombian State paying half of the costs reported by Intercor.

In its decision to declare the exploitation commercially feasible, the present Government acted against the recommendations made by Carbocol's economists, opposed the advice of the National Planning Department's staff, disregarded the comments of costly international consultants, and forgot the warnings made in January 26, 1976 by the then general manager of Cerrecarbón, Guillermo Gaviria Echeverri, regarding the undesirability of this kind of contracts for the Country and the 'monstrosity' of guaranteeing to the foreign partner the ownership of 50% of the coal.

The Minister of Development, Andrés Restrepo Londoño, who considered Intercor's contract injurious at the time he was Carbocol's director and who knew the professionals' and the consultants' objections to the declaration of commercial feasibility, had no objection in supporting the decision of CONPES (Consejo Nacional de Política Económica y Social)....

It had taken almost ten years to get El Cerrejón's coal project going, and it took three days to convert it into the most controversial issue in Colombia today. How could this happen ? What is the present status of the project ? What are the most important issues that may affect its future ? It is the aim of this study to propose some answers to these questions.

The key starting concepts for this evaluation were implied in the title of this research topic:

1. El Cerrejón Coal Project has all the characteristics of a large scale enterprise: Total investments required during the project's 30 year legal life are of the order of US$ 7 billion. Total expected revenues are near US$ 87 billion, and total operating costs are estimated at US$ 25 billion. The venture's high stakes indicate that many interest groups stand to be affected by its outcomes, that a competitive environment is rapidly being created for the control of the necessary resources and for the use of the benefits produced, and that project managers need to face a complex set of interrelated environments, economic, political, social and legal.

2. El Cerrejón Coal Project is a multisector undertaking, where public and private entities need to coordinate their efforts in the pursuit of similar, but never identical, objectives. As a result, it is not sufficient to analyze the economics of the project. The interorganizational setting in which it will be implemented determines to a certain extent its outcomes, and project managers have to face a multiplicity of legal and institutional constraints that are sometimes difficult to overcome.

3. El Cerrejón Coal Project is finally a transnational venture, in which the government of Colombia and the multinational oil company Exxon will share investments, costs and benefits. Political and social issues are bound to appear, given the historical development of such large natural resource joint ventures in Latin America.

The approach used in this evaluation takes into account both the OWNERS' points of view in setting and reconciling objectives and in creating viable arrangements for the venture, and the PROJECT MANAGERS'S point of

view in making the project a reality and a success. To this end, the following key issues will be considered:

1. How do the social, political and economic environments in which the partners operate shape their objectives ? Key questions are:
   - Who are the participants ? What are their objectives ?
   - How was the project initiated ? Who championed it ?
   - How does the project contribute to the attainment of partners' objectives ? Can those objectives change ?

2. Once these objectives are defined, how do the partners' contractual agreements address these in a way that common objectives are included, opposing objectives are neutralized, and differing objectives are reconciled ? Key questions are:
   - What type of contract is used ?
   - How is the contract structured ?
   - Does it suit the partners' objectives ? Sometimes ? At all times ?
   - Is it congruent with the partners' cultures and environments ?

   The contract now determines a "project environment" by providing the rules for the game and the "code of conduct" for the partners. These are fixed in the sense that they are legally enforceable. Pressures for changing these rules could be a sign of strong opposition to the project objectives.

3. How does the project environment affect the application of the contract and the partners' decision making relationships ? A smooth policy making process at the owners' level determines to some extent the project's success. Key questions are:
   - How does the contract distribute responsibilities ?
   - How does it distribute benefits and costs ?
   - How does it distribute risks ? Do these change over time ?
   - What are the resulting incentives on the partners' behavior ?

The application of the contract discussed above defines variable operating policies, in which the owners have some degree of decision making freedom, but on which they must agree by concensus.

4. Within the rules set by the owners, and to operationalize their policies, the project managers need to create the organizations required to implement the project successfully. Institutional and interorganizational factors are critical in this area. Key questions are:

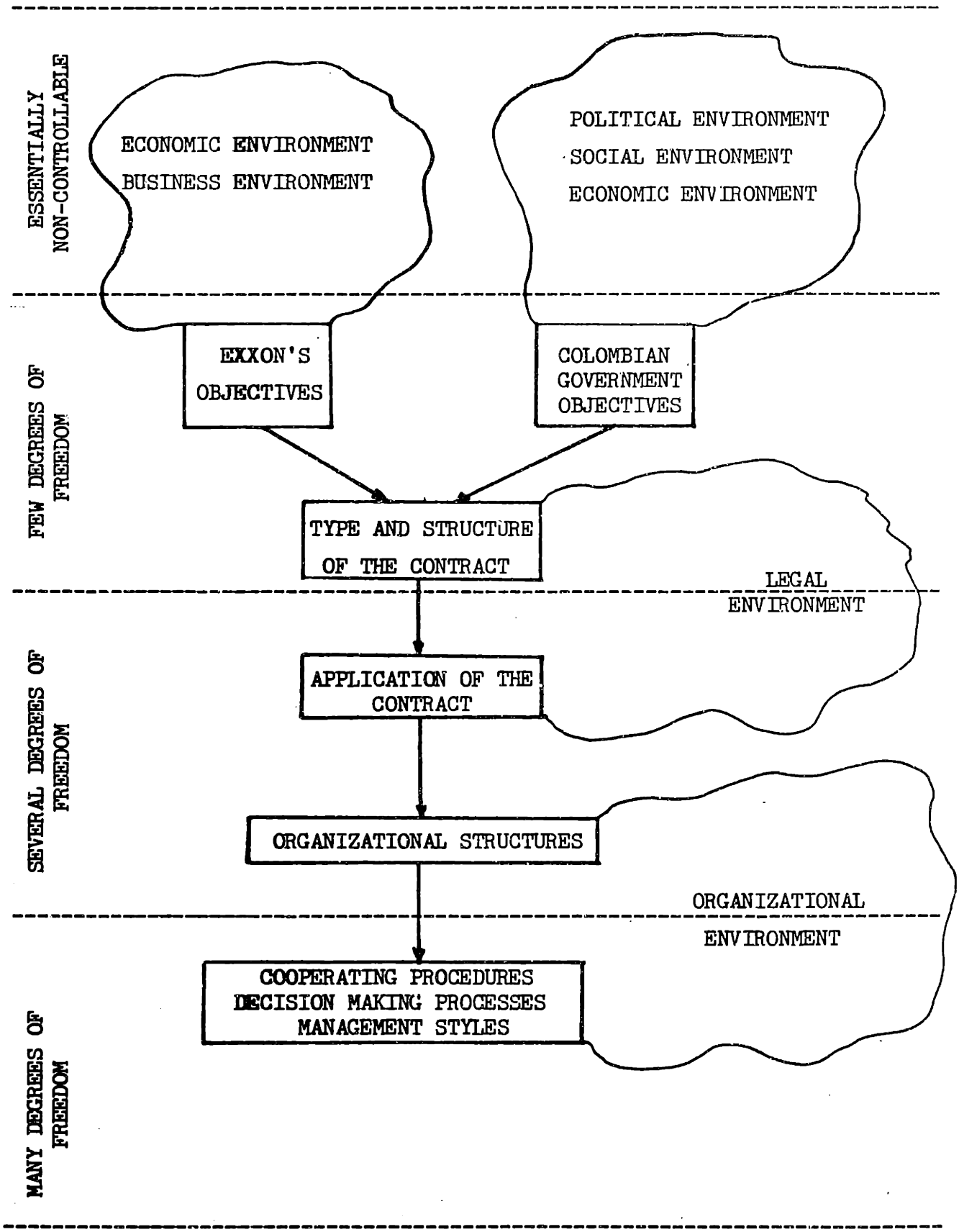
   - Are the organizations congruent with their institutional environments ?
   - Are the organizations congruent with each other ? Are they flexible ?
   - Can they adapt to present and future conditions ?
   - What are the legal constraints faced ?

5. Out of experience with the on-going project must emerge cooperation procedures, decision making processes and management styles that are the result of the above structuring of the enterprise. At this level, how the people involved adapt to the project's environment and operating policies is a final important aspect to be considered in determining the project's chances for success. Key questions are:

   - Do the organizational structures and operating policies create a healthy working climate for the personnel involved ?
   - Does the contract or its application tie the hands of the individuals who participate in the implementation ?
   - Is the resulting working climate conducive to participation, trust and cooperation between the partners, or to withdrawal, mistrust and rivalries ?
   - Are the resulting behavioral pressures on the individuals involved congruent with their social and cultural environment ?

The framework shown in Exhibit I-1 was created for purposes of analysis. It presents the relationships between the five key issues to be studied, and the effects of the different project environments upon them.

Exhibit I-1 MAJOR PROBLEM AREAS AND ENVIRONMENTS



Research methodology

This research is essentially a case study to which the basic framework presented in this introduction was applied. The approach used included:

- An in-depth study of El Cerrejón's history from 1967 to the end of 1980.
- A series of interviews with the major actors involved in the project, in particular in Carbocol, Intercor, the government, the private sector and the academic community.
- An intensive study and economic analysis of the association contract signed in December 1976.
- An exhaustive analysis of the 1975-1976 events, and of the July 1, 1980 declaration of commercial feasibility.
- A close consideration of some of the critical factors affecting the project's future chances for success.

El Cerrejón's history

Three major periods were considered in the study of El Cerrejón's history: The first period, from 1967 to 1974, deals with the early thinking and decisions for Colombian coal development, especially in relation to the international energy situation. The second period, from 1975 to 1979, spans the birth and initial development of the Carbocol-Intercor association contract. The third period, the year 1980, deals with the termination of the project's exploration phase, the declaration of commercial feasibility, and the resulting congressional debates of September and October 1980.

In this study, the project's main actors and major issues were identified, and two key periods were selected for further study, because of their crucial importance for the venture's future: One was the 1975-1976 period (which culminated in the signature of the Carbocol-Intercor contract).

The other was the January-September, 1980 period (which encompassed the declaration of commercial feasibility.)

Information was collected from many sources, including press releases, magazine articles and papers written on the subject, economic studies made by entities involved in the project, congressional documents, annual reports and personal interviews conducted over a two-week period in Bogotá, in January 1981. The public controversy surrounding the project in 1980 was useful to this research becuase of the wealth of information available, but the controversy also had one important drawback: the different accounts given of the story were often biased towards extreme positions, one defending the project and one opposing it. As a result, the several available accounts had to be cross-checked and compared to one another, and some inferences had to be made regarding critical issues and events. Maintaining a balanced and objective approach to each issue was therefore very difficult. Where an inference is made, I try to make clear my reasons for doing it, and whenever an extreme opinion surfaces, I try to present it with the corresponding opposed opinion.

Chapter II presents a composite historical account of the project, with special emphasis on presenting all possible different points of view, and on minimizing undocumented inferences.

Interviews with the major actors

The major actors interviewed included managers and staff personnel of both Carbocol and Intercor, public and private parties defending or opposing the project, and indirectly involved persons in the academic and governmen-

tal communities. (I should mention that several important interviews could not be conducted, in particular with Jaime García Parra, former Minister of Mines and Energy and Minister of the Treasury; Andrés Restrepo Londoño, a former director of Carbocol and Minister of Development; Guillermo Gaviria Echeverri, former director of Cerrecarbón and presently a member of the Republic's Senate; Luis Carlos Galán, another member of the Republic's Senate. Fortunately, their points of view were abundantly illustrated in their own writings on this subject).

Analysis of the 1975-1976 events and the 1980 declaration

Chapters III and V present an analysis of the key forces during the 1975-1976 and 1980 periods. These chapters also identify the relevant political, social, economic, organizational and legal environments of each period, using the framework proposed in this introduction (see Exhibit I-1). The birth of the project and each actor's objectives are analyzed in detail in chapter III. Chapter V explores the issues surrounding the 1980 declaration of commercial feasibility and the congressional debates of October 1980 which had their origins in the three-year (1977-1979) exploration phase of the project.

Economic analysis of the project

The 1976 association contract between Carbocol and Intercor is analyzed in detail in chapter IV, and a computerized model is developed to simulate the distribution of the partners' shares in the project (investments, costs and revenues). Chapter VI analyzes the effects of the 1980 declaration on those shares. (The basic data used for analysis purposes included Intercor's end of 1979 projections and Intercor's July 1980 data supporting its declaration. It must be emphasized that this information was provided

to me by Roberto Forero Báez, one of Carbocol's economists who resigned in September 1980, and who is actively involved in the opposition to the project. IN NO CASE WAS ANY ECONOMIC OR FINANCIAL INFORMATION PROVIDED BY CARBOCOL, INTERCOR OR OTHER GOVERNMENT ENTITIES. ALL THE RESULTS REPORTED IN THIS STUDY ARE MY OWN ESTIMATES OF THE PROJECT'S COSTS AND BENEFITS. In any case, although these estimates are rough estimates of the true figures, most of them correspond closely to publicly available figures, in particular those recently reported in: "El Cerrejón -Zona Norte-: Un proyecto para pensar en grande", Lampara 80, Vol XVIII.)

The results of this analysis include:

- Determination of the basic variables affecting the partners' shares in the project.
- A computation of the main project value indicators, including revenues, costs, depreciation, royalties, basic income, participation incomes, tax, cash flows and internal rates of return.
- A sensitivity analysis to determine the effects of variations of those variables on the project's economic returns.
- An incentive analysis to determine possible behavioral effects of changes in the variables involved on the partner controlling them and on the partner bearing the risk of those changes.
- Determination of the pressures likely to exist on the partners and project managers regarding the critical variables.

Major results of this study

In my conclusion (chapter VII) I present some overall findings, recommendations, and a general discussion of the meaning of El Cerrejón. Four major conclusions are rendered; two are pessimistic; two are optimistic:

1. Although the project is clearly attractive for both partners in the short run, their objectives stand to change in the long run in a manner detrimental to the project's successful completion. This is mainly due to the fact that future coal prices may become independent from oil prices, making the Colombian government's strategy of "swapping" (or exchanging) coal for oil uneconomic, and therefore, very expensive to maintain the country's energy balance. Should this occur in the future, the project would lose the government's support, and, because the contract is too rigid, Colombia's sovereignty would be on the balance.

2. Although association types of contracts may have served Colombia well for the last twenty years for oil exploration, this kind of contract is no longer adapted to the country's present political and economic conditions. It is even less adapted to the development of the country's coal industry for the following reasons:
   - The contract does not provide a fair distribution of the project's exploration, implementation, operation, and commercial RISKS, although it seems to distribute benefits, under ideal conditions, in a way agreeable to both partners.
   - The contract is structured in such a way that the partners' incentives for action and control are bound to find themselves in direct conflict and opposition, in particular regarding investments and production levels. For example, it is in Exxon's interest to maximize investments in infrastructure and production capacity (subject to financing constraints), while it is in Carbocol's interest to minimize investments (subject to minimum long term capacity requirements). Also, it is in Exxon's interest to maximize production levels (subject to market constraints), while it is in Carbocol's interest to minimize production,

(subject to balance of payments' requirements and to the cost of swap).

3. The Cerrejón project should be highly successful, given the current growing world export market for steam coal. El Cerrejón stands to be the first large addition of production capacity to serve those markets. Furthermore, coal prices are expected to continue to increase for some time, and the swapping strategy that Colombian policy makers have chosen will be economically and politically feasible in the short run (hopefully in the long run also, through substitution). As a result, and if the mine becomes operational in 1986 as expected, both Colombia and Exxon stand to gain a maximum advantage for the commercialization and sale of the mineral, especially to European countries. It is my opinion that the project should not be stopped at this point. An effort should be made instead, between now and 1986, to solve the issues raised in this thesis.

4. The possibility exists for resolution of the negative aspects of the project through the application of the association contract. Critical for success is the restructuring of both Carbocol and Intercor into flexible and adaptive organizations.

   Carbocol should aim to improve its long term capabilities as the country's coal policy executive arm. To achieve this objective, Carbocol's structure must respond to the multiple goals assigned to it by the Colombian government and must accomodate the multiple levels of decision making imposed by institutional constraints, in order to achieve two goals: Carbocol must have both maximum involvement in the operator's activities to enhance control, and maximum rate of technological transfer from Intercor to enhance its capabilities for project management.

   Intercor's structure must respond to a duality of objectives and assignments as owner and operator of the project. To do this, it must decouple

the responsibilities and activities associated with ownership and operatorship and facilitate technology transfers to Carbocol (especially in project management), in order to minimize informational breakdowns of the July 1980 type and maximize cooperation and participation on Carbocol's side in all aspects of the project.

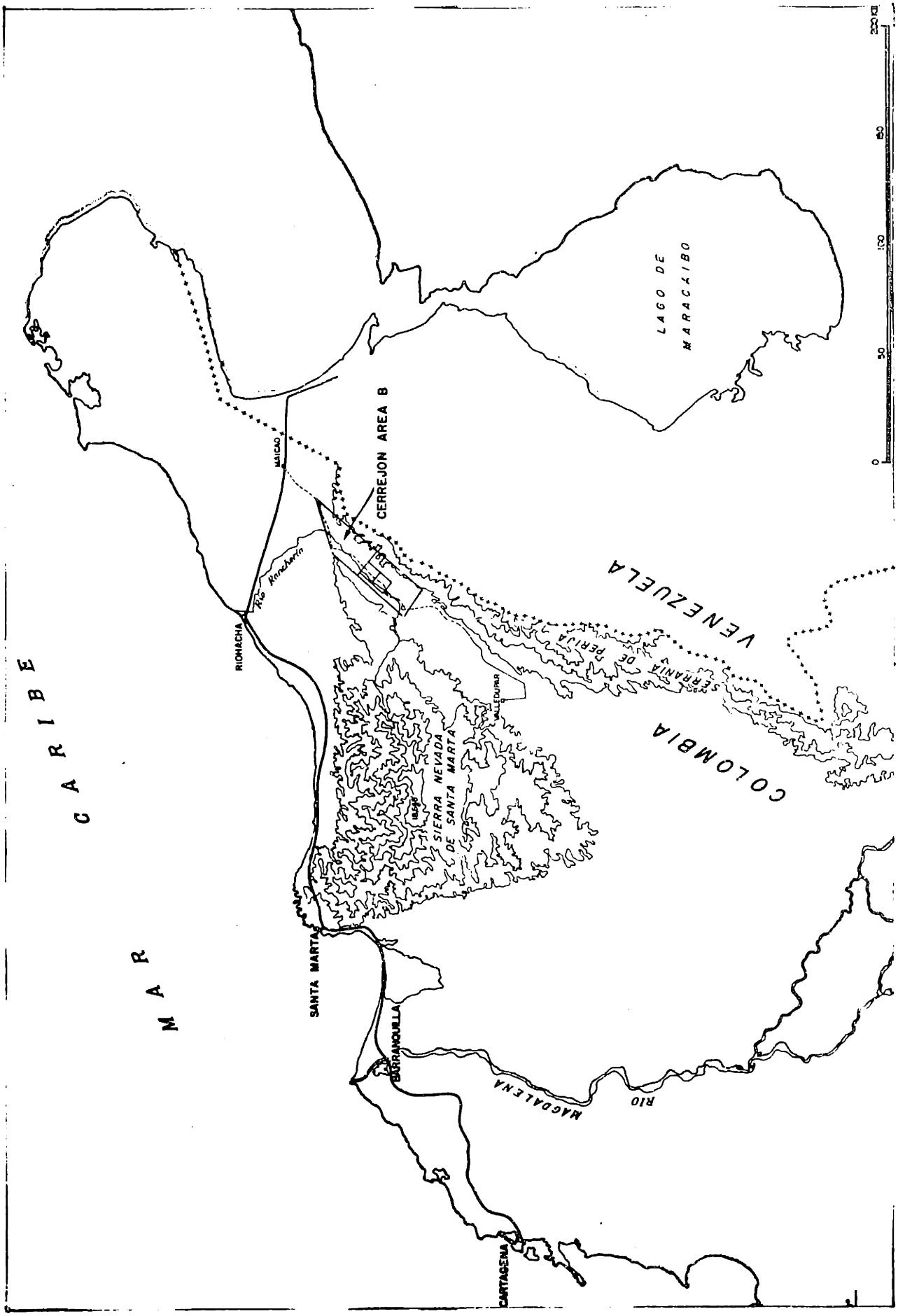
The situation has changed radically since the Carbocol-Intercor association contract was signed in December 1976. The public is alerted to the project's characteristics and will closely follow the project's future developments. Political opposition to the government will keep the government on its toes and will monitor the project closely. Project managers will be under public scrutiny because of the stakes involved in the project. Consequently, the managers will need better control over important project areas. Carbocol and Intercor are now, in the eyes of the public, accountable for specific results in monetary terms: No more foreign exchange should be needed to buy oil ! Flaws in the type of contract used and in its application have been found: The contract will be examined, criticized, scrutinized.

However, the contract is a reality, and it is now legally enforceable. The application of the contract must offset the flaws that exist or that may appear later in the project. What can be done ?

The public must be enlisted with the project's cause by ensuring that the swap of oil for coal is, and will stay, economically feasible; by showing the degree of national control over the project; by making the project environmentally clean, and by creating regional support for the project in the Atlantic coast and in the Guajira. Political opposition must be appeased: The project must involve the government's bureaucracy which is increasing its political influence. New support must be built within the government before elections or party reshufflings remove the present project champions.

The main lesson applicable to the study of large scale, transnational, public/private projects similar to the one analyzed in this thesis is that "economic evaluations", "social evaluations" and "political assessments" of such projects cannot be considered separately. A complete evaluation is made possible only by the joint consideration of all, and especially by making explicit their interrelatedness.

El Cerrejón project has a magnificent potential, but its future depends on quite subtle political, economic, institutional and organizational factors. Perhaps this is what large scale project management is all about.....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LAGO DE MARACAIBO
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RIOHACHA
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VENEZUELA
COLOMBIA
SERRANIA DE PERIJA
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SIERRA NEVADA DE SANTA MARTA
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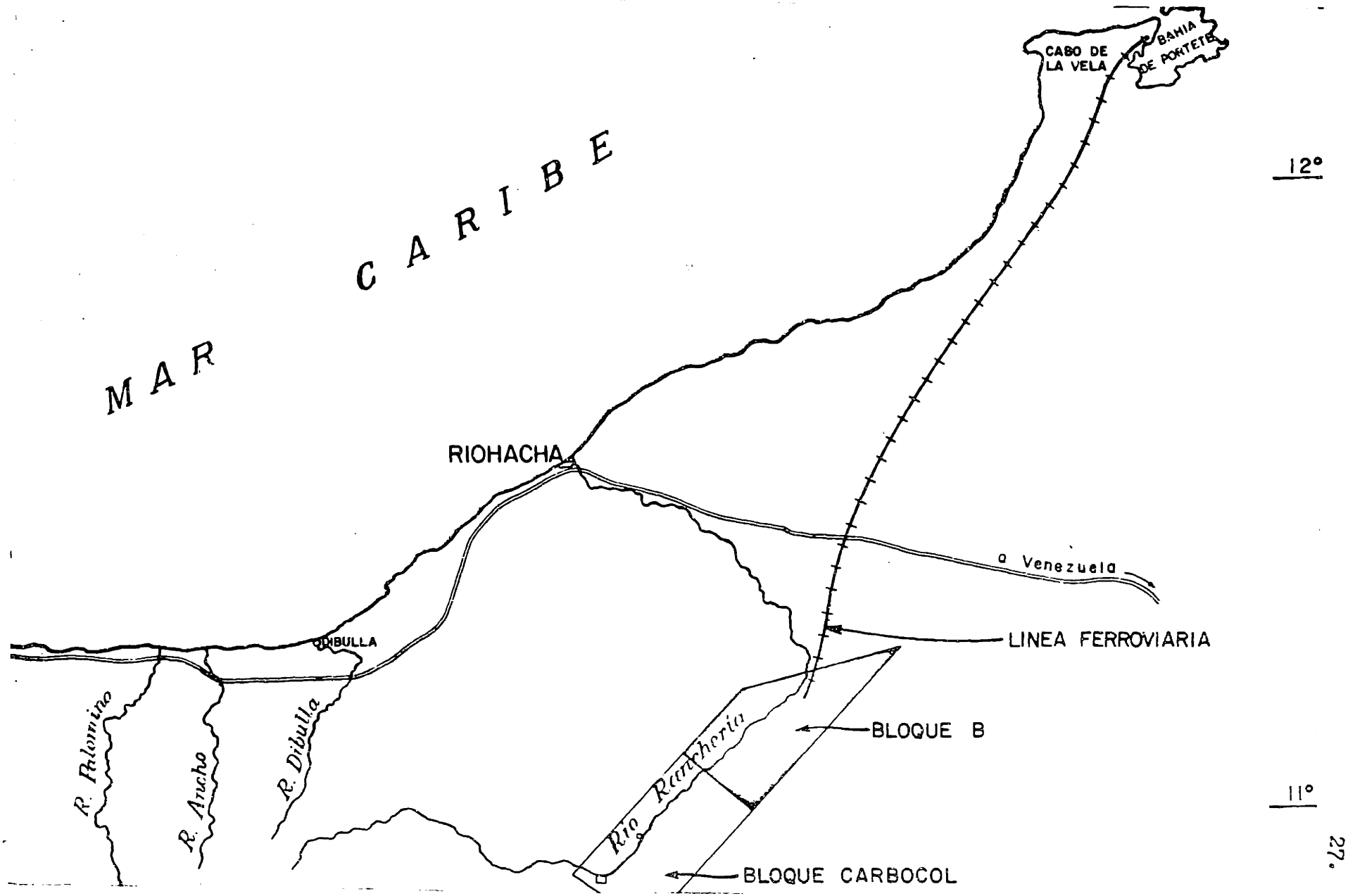
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R. Ancho
R. Palomino
BLOQUE B
11°
Río Ranchería
BLOQUE CARBOCOL
27°

CHAPTER II

HISTORY OF EL CERREJON COAL PROJECT

El Cerrejón coal project is the largest undertaking ever attempted in Colombia. By the end of the century coal from El Cerrejón should surpass coffee as the country's main export (coffee being today the source of about 45 percent of the country's foreign exchange). From an economic development point of view, this project implies the creation of an infrastructure for the whole northern part of the country (the Guajira Peninsula), which is a semi-arid, sparsely populated region whose few (but important) contributions to the national economy include natural gas, crafts and marijuana. This infrastructure will include roads, airports, the largest ocean port of the country, and 150 Kms. of railroads, which are to be built from scratch. From the point of view of energy resources, although La Guajira is just across from the border of Venezuela's oil-rich lake Maracaibo, no oil has been discovered in La Guajira, and Colombia is no longer self-sufficient in oil. On the other hand, some natural gas fields have been exploited since 1978, and La Guajira coal is considered extremely good both in quality and in access. The Guajira Peninsula is now considered the most likely alternate new energy-producing region for Colombia.

La Guajira, moreover, has long been the source of territoriality disputes between Colombia and Venezuela. So, to a certain extent, national security considerations are at stake, given the extremely rapid development of Colombia's petrodollar-rich neighbor.

The story of El Cerrejón is also the story of a long struggle between governmental bureaucracies to achieve control over Colombia's most signifi-

cant development project in years. This is the story of the development of the nation's energy institutions. No coal has ever been exploited in the country in such large quantities as is contemplated in La Guajira, and there is no machinery (public or private) commanding the resources needed for the large scale development of coal mining. El Cerrejón is then at least partly the result of Colombian government's past experiences in developing its oil industry. Today, this oil industry is controlled by the state-owned company Ecopetrol. When gas was discovered in La Guajira, Ecopetrol was the organization best suited to control its exploitation, but when Ecopetrol recognized the imminence of an energy shortage in 1975 and turned to alternate sources, another state organization, the national institute for the promotion of industrial growth, IFI, had taken the lead in exploring the feasibility of large scale coal mining.

The story of El Cerrejón is finally closely linked to the entry of Exxon Corporation into the coal industry. Exxon's association with Colombian energy development started with its acquisition of The Tropical Oil Company in 1920. Since then, Exxon has provided almost all of the country's energy-related infrastructure, including refineries, pipelines and port facilities. Ecopetrol itself is the direct outgrowth of The Tropical Oil organization, which was transferred to government ownership in 1951. Collaboration between Exxon and Ecopetrol has thus been always close and Exxon itself still largely controls Colombia's downstream gasoline market. But in relation to the coal in La Guajira, Exxon's bidding efforts started somewhat late. Peabody Coal Co. (at the time a subsidiary of Kennecott Copper Corporation) was the first, in collaboration with IFI since 1972, to explore El Cerrejón coal deposits. El Cerrejón then is also a story about the struggle of two big foreign names in energy, Exxon and Peabody, to win in

the "Colombian coal rush."

This chapter will explore the key issues, the resources at stake and the roles the different actors played from 1970 to 1980 in relation to Colombia's current commitment to large-scale coal exploitation.

Three distinct periods are identified:

1. Background of energy developments in Colombia until 1974, when the world energy crisis directly affected the country under the administration of President Alfonso López Michelsen.
2. The period from 1974 to 1977 when the government struggled to adopt a clear energy policy and to establish the institutions necessary for national energy management. This period also marked Exxon's worldwide expansion into coal mining, which led in 1976 to the association contract for development of El Cerrejón coal deposits.
3. From 1977 to the present: the exploration of El Cerrejón deposits was undertaken, culminating in the declaration of commercial feasibility in September 1980. In the aftermath of this event, a scandal exploded with the resignation of the economic staff of Exxon's partner in the joint venture, the state-owned Carbocol (Carbones de Colombia S.A.), which precipitated the congressional hearings of October 1980. But the project was not stopped, and implementation began in March 1981, with the selection of the main contractor, Morrison-Knudsen.

II.1. Setting the stage for Colombian coal development: 1969-1974

National (and international) interest in El Cerrejón's coal deposits is not new. The first studies in the area were reported in the 1940s, when Exxon's subsidiary, Tropical Oil Company, conducted exploratory drillings in search for oil in the Guajira region, the northernmost tip of South America (see maps). During the following two decades, several other studies were made, each of them reporting larger findings, until Colombia's coal reserves were proved to be the largest in the South American continent.

From 1966 on, during the administration of President Carlos Lleras Restrepo, a series of coal mining regulations were introduced. Coal exploitation was also extensively discussed in the First National Mining Congress of 1969. The Lleras administration's interest in coal resulted in the creation of Cerrejón Carboneras, a state enterprise organized under IFI, which in turn reported to the Ministry of Development. Cerrejón Carboneras (Cerrecarbón) was given the task of exploring the area, which it did with the help of other national institutes (Ingeominas) and several foreign companies. In 1972, Peabody Coal Company, then a subsidiary of Kennecott Copper Co., signed a contract with IFI to invest US$ 2.5 million in the exploration and possible exploitation of El Cerrejón's central area. In the meantime, and independently from these developments, Exxon's top management was also thinking about coal. Balaji Chakravarthy from Harvard Business School reported:

> "Exxon had recognized in the early 1960s that the projected domestic (U.S.) production of oil and gas would peak in the 1970s....
> In 1965, Exxon began to acquire coal reserves on private lands through the Coal and Oil Shale department of Exxon Company U.S.A. Later, Exxon's domestic coal, shale oil and synthetic fuel interests were assigned to an affiliate, the Carter Oil Company. Carter Oil entered a stagnating coal in

> dustry. The average price of coal in 1965 was nearly the same as in 1945, at $ 4.44 per ton. Though Carter Oil had aspirations to sell steam coal, given the adverse industry conditions in 1965 its management decided to focus on the synthetic business and keep its steam coal business aspirations in temporary abeyance." (1)

The Monterey Coal Company, a subsidiary of the Carter Oil Company, was created in 1969. However, when Carter executives realized that the commercial development of synthetic fuels would take longer than what was initially predicted, Monterey was given the task of mining and selling coal as a boiler fuel. Its first mine was opened in 1970 in Illinois, and Carter Oil started accumulating the operating experience necessary to eventually support the production of synthetics out of coal. Unfortunately for Monterey, by 1970 the Federal Health and Mine Safety Act had been passed, further constraining the Company's activities. Carter Oil then turned its attention to the American West.

In South America, Exxon's Colombian subsidiary, Intercol, was also concerned about the country's oil supply situation, as a result of a Colombian government decision to regulate oil prices. This decision was in part the result of a drive of Enrique Pardo Parra, the Minister of Mines and Petroleum, against "excessive profits" of petroleum companies. (Minister Pardo Parra was to participate later, as a senator, in the national debate staged in congress in relation to El Cerrejón project.) In the opinion of Intercol's top managers, price controls greatly decreased oil companies' incentives to explore:

> "The result of this was that the oil Colombia enjoyed during the first half of the 1970s was the one found in the 1930s. Exxon warned the government, but they did not believe us: 'Terrorism' they said ! Exxon foresaw that Colombian oil demand would surpass oil supply in the mid-seventies." (2)

This is not the only interpretation regarding the oil shortage. An-

other commonplace interpretation was given in Alternativa:

> "Colombia has had an oil policy forced by multinational oil monopolies. The fact that petroleum fields are located at considerable distances from sea ports, and that the same enterprises have also extracted Venezuela's oil which is near the sea, has determined that we have been earmarked as a gigantic oil reserve." (3)

The oil crisis

Exxon's fears became a reality in 1973, a reality much more critical than anyone had probably expected. Prompted by the Arab oil embargo, the administration of President Misael Pastrana Borrero (1970-1974) introduced new legislation regarding coal deposits. Minister of Mines and Petroleum Gerardo Silva Valderrama declared as "special reserves" a series of zones with potential coal reserves in the Atlantic coast, including El Cerrejón. A newly created National Energy Commission studied the country's energy balance and declared that the situation would not become critical if development of new energy sources was hastened. The administration's energy policy making center of gravity then turned away from the Ministry of Development and IFI and toward the Ministry of Mines and Petroleum and its oil company Ecopetrol because the latter institutions controlled the country's oil resources and were most experienced in energy resource development.

Needless to say, the oil embargo also changed the situation for U.S. coal companies, including Exxon. Spot prices of coal trebled in 1973. In 1974, Carter Oil created a new coal subsidiary, the Carter Mining Company, to develop newly acquired western coal reserves. However, the weakness of the U.S. coal market and the environmentalist movement again hindered Exxon's efforts in the West and increased the level of uncertainty regarding the feasibility of domestic, open pit coal mining. Exxon's Colombian subsidiary, Intercol, was in 1974 in the middle of important negotiations for the

nationalization of the Cartagena oil refinery. The possibility for joint exploration of coal deposits was discussed with the Minister of Mines and Petroleum, Gerardo Silva Valderrama and Ecopetrol's officials. Exxon geologists reported encouraging coal findings in El Cerrejón's northern area. Following these conversations, Exxon presented a proposal to Ecopetrol and the Ministry of Mines and Petroleum which was reportedly "almost formalized" in a joint-development contract under the Presidency of Pastrana. However, there was a problem: in the meantime, Peabody had almost completed the exploration of central Cerrejón and was negotiating its own contract with the Ministry of Development and IFI's coal company Cerrecarbón ! The interests of Exxon and the Ministry of Mines and Petroleum on one side, and of Peabody Co. and the Ministry of Development on the other side, were clearly at odds. The stage was set for a bureaucratic power struggle that went practically unnoticed at the time because of the political climate that surrounded the coming presidential elections of 1974.

The National Front experiment

In fact, during those last few months of Pastrana's administration, all attention (public and private, within the government or outside of it) was focused on the end of Colombia's National Front. 1974 marked the end of 16 years of this quite unsual political experiment by all Latin American standards. After almost a century of continuing political strife between Colombia's two traditional political parties,conservative and liberal, Colombians staged an open civil war from 1948 to the early 1950's. This war ended with the military dictatorship of General Gustavo Rojas Pinilla. In 1957, however, a general uprising led to the downfall of this regime, and the traditional parties returned to power. This time they joined forces and agreed to share the Presidency and important government posts for 12 years

(later extended to 16). This experiment brought a relatively calm political era to the country, when the presidency alternated between Conservative and Liberal leaders, until the 1974 elections.

The political climate in 1974, was thus one of great uncertainty concerning the outcome of this election, as the parties tried to regain the political momentum and support that they had not needed for a long time. Within all government institutions, the relative security of shared posts was coming to an end. Many important economic and political decisions were postponed until the struggle for power between the two parties was over. If coming elections were won by a Conservative Leader, the present Pastrana administration would probably not have changed greatly. But if a Liberal candidate was elected, many key government officials would probably have been replaced by Liberal candidates.

Foreign companies were also anxious about the results of the elections: the Liberal candidate promised far-reaching social reforms while the Conservatives generally took a much more pro-business stance. Multinationals, then, were also holding off committments until the new administration took office. Commented one of Intercol's officials:

> "Exxon's proposal was almost formalized with Pastrana's administration, but we preferred to wait and sign the contract with the next administration. The government approved..."(4)

II.2. The Carbocol-Exxon Association Contract: 1975-1976

After the largest electoral turnover in a long time, Alfonso López Michelsen, the Liberal candidate, was elected to office for the period 1974 to 1978. However, it became clear that the "liberal takeover" threat to governmental bureaucracies would not materialize. López took a low profile approach to the problem of shared power between parties, allowing the conservatives to keep several posts in the administration. His administration, however, immediately suffered the shock wave of the oil crisis and the associated downturn of national oil production (as Exxon had reportedly foreseen). Domestic oil prices were already far below the international price, and López faced the troubling prospect of accelerating inflation imported from abroad and additional inflation created by letting domestic oil prices increase. In these circumstances, a great deal of pressure was created for initiating the development of alternative energy sources and in particular of El Cerrejón's coal mines.(5)

As we have seen before, what López inherited in coal prospects was a potential strife between the Ministries of Mines and Petroleum and of Development, and the two associated offers from large foreign companies. This state of affairs is shown in Exhibit II-1. At the same time, related strategies began to take shape at Exxon. On July 23, 1974 in Delaware, INTERCOR (International Colombia Resources Corporation) was created as its wholly owned subsidiary, and three weeks later, in Coral Gables, a decision was made to establish Intercor's branch office in Colombia, which was done in February 1975 (6). Exxon's coal organization was then as shown in Exhibit II-2. The decision to diversify into foreign sources of coal may have been hastened by the fact that the environmentalist movement in the U.S.A. was

Exhibit II-1 ORGANIZATIONAL CHART OF MAJOR ACTORS INVOLVED

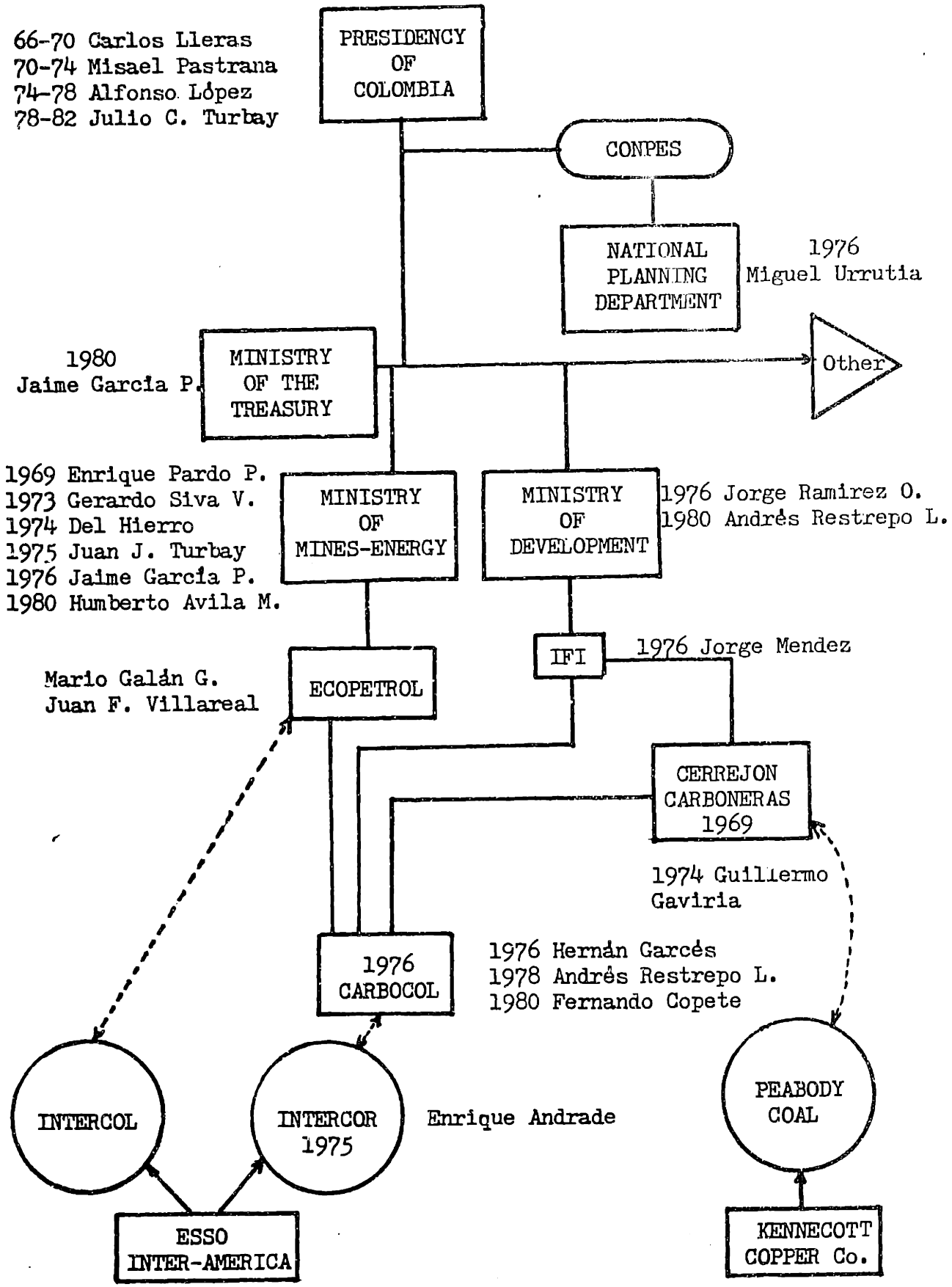
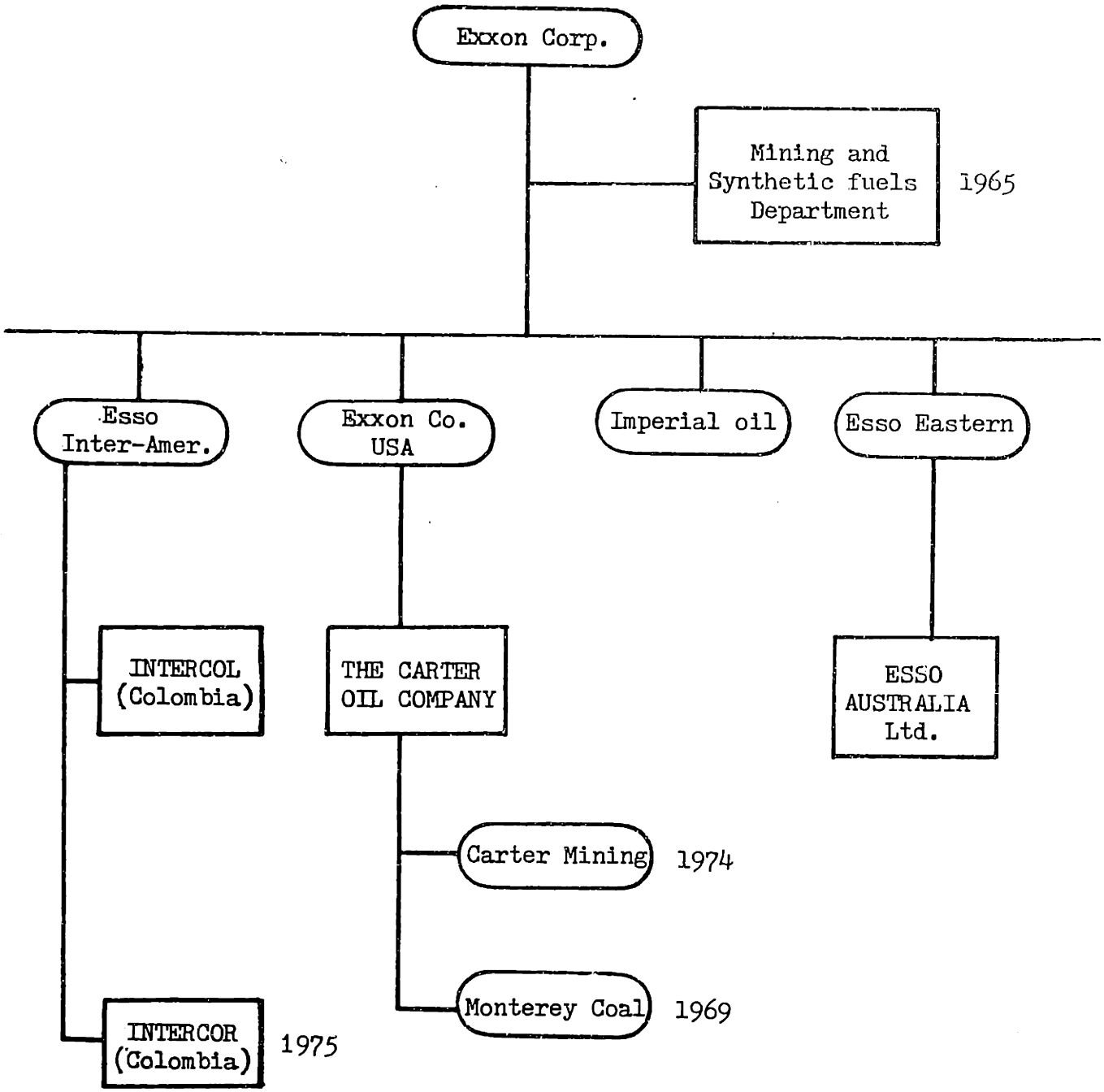


Exhibit II-2 EXXON'S 1978 PARTIAL ORGANIZATION STRUCTURE



Source: Balah Srinivasan Chakravarthy
"Adapting to changes in the coal industry: A managerial prospective"
1978, Harvard Business School, DBA Thesis.

gaining in importance. The Sierra Club, according to Chakravarthy, obtained a court order in 1975 restraining the Secretary of the Interior from issuing any mining permits in the west, until a revised environmental impact statement was filed by the U.S. Geological survey (7). Colombian coal deposits were clearly an interesting alternative for Exxon resource base diversification drive. The importance of El Cerrejón coal was probably heightened, given the environmental constraints existing in the U.S. West, by a comparison of coal qualities and quantities:

Carter Mining Sites:	Nature of mining:	Surface
	Avg. Btu/lb.:	8,000
	Avg.% sulphur:	Less than 0.5
	Peak production:	24 M Tons/yr.
El Cerrejón Deposits:	Nature of mining:	Surface
	Avg. Btu/lb.:	12,000
	Avg.% sulphur:	Less than 0.6
	Peak Production:	15 M Tons/yr.

Source for Carter Mining: B.S.Chakravarthy, Op. Cit.

Source for El Cerrejón: Andrés Restrepo, El Carbón en Colombia, Carbocol SA., 1979.

Exxon and Peabody: the contract impasse

President López brought in new Ministers. The new Minister of Mines and Petroleum believed that Ecopetrol should not have control over Colombia's coal development, and, according to Intercor's officials, announced that Exxon should deal with the Ministry of Development and IFI. But Exxon kept on dealing with Ecopetrol, as they had already reached an agreement on the terms of an association contract similar to the ones both Ecopetrol and Intercol (Exxon's oil subsidiary) had used for oil exploration and extraction. On the side of the Ministry of Development, Guillermo Gaviria was appointed

by President López to head IFI's Cerrecarbón. Gaviria's stakes were high, as Cerrecarbón did not make any practical sense as an organization unless the new coal contract was given to Peabody under Cerrecarbón's supervision. Peabody's exploration contract with IFI expired in 1975. 300 M tons of high quality steam coal were identified in the central area mineable through open pits in the proximity of ocean ports. Peabody proposed to go ahead with the contract signed in 1972 involving an investment of US$ 350 million to extract 3 to 5 million tons of coal per year. However, this coal was now very attractive in international markets, and El Cerrejón's northern area became more attractive for export, while the central area, explored by Peabody became more suited to domestic use. But Gaviria did not seem satisfied with the type of contract proposed by Peabody. While opposing Exxon's proposal as presented to the Pastrana administration on the grounds of their similarity with the more risky oil contracts, he also encountered difficulties in settling for Peabody's offer. Business Week (February 1976 issue) explained the problem in the following terms: "Since coal was less attractive when the (IFI-Peabody) project was launched, the U.S. company wrote a renegotiation clause into the contract that is now working against it. Under the original agreement, Peabody would have had equal ownership with IFI, plus up to 40% of the joint profits. Now the Colombians are invoking the reopener and trying to impose much stiffer terms, including majority control. Says Byron E. Grant, chairman of Peabody: 'Negotiations are going on, but it just may be that we do not fit.'"(8)

A technical impasse was reached, thus, on the terms of the contract, which clearly had its origins in the inter-ministry rivalry. Three different contracts seemed to be involved: the oil-type contract Exxon was offering to Ecopetrol, the old Peabody contract the terms of which were no longer

considered acceptable in view of the changed world energy conditions, and the new, mixed-enterprise contract that Gaviria was now trying to negotiate. Intercol's officials explained the differences in the following way:

> "In the (new) mixed-enterprise type of contract, the government has a majority of the shares (51%). This is designed so that, officially, the government controls the enterprise. This does not make much sense, but it looks good in the eyes of politicians....The problem for the foreign investor here is that, according to the Colombian commercial laws, the government also has the right to buy the shares of the foreign partner at any time. If, in addition, agreement is not reached regarding share price, then the government can expropriate the concern at book value. Clearly, no foreign firm is going to accept those terms. To solve the impasse, the government's solution was to allow the foreign firm to own 50% of the shares, in which case the Code of Commerce would not be applied. As a result, the association contract is the same as the mixed-enterprise contract with the exception of the expropriation clause. The other difference is that the association contract gives the foreign firm the operation of the business: politicians therefore have no hiring power in the enterprise. The mixed-enterprise contract is indeed great source of political power through control of hiring policies, but very inconvenient in terms of productivity...." (9)

Political solution to a technical impasse

The events of the last few months of 1975 were confusing. The stakes were also high. The then Minister of Mines and Petroleum (the third since the beginning of this story) resigned, and Juan José Turbay was appointed in his place. Turbay transferred the northern part of El Cerrejón's coal deposits, where the best exportable deposits are located, to Ecopetrol through Resolution 2118 of October 6, 1975. He left, however, the on-going negotiations with Peabody to IFI and Cerrecarbón for the central part of the deposits.

Ecopetrol immediately opened an international bidding competition and requested bids from 17 different foreign companies for the exploitation of those reserves. This happened on October 9, 1975 and proposals were due on February 9, 1976. Between these two dates, the Minister of Mines was re-

placed again and Jaime Garcia Parra (who would be Minister of the Treasury at the time of the 1980 congressional debates) took over control of the Ministry of Mines and of Ecopetrol. Gaviria of Cerrecarbón was understandably furious about these moves. Minister García Parra suggested, however, that Peabody's offer for central Cerrejón be maintained and be compared to the winning bidder's proposal for northern Cerrejón. This was a proposal that Gaviria could not refuse, but which basically gave him, and Peabody, a clear disadvantage in the competition. Peabody's proposal had been put together four years earlier, before the escalation of world oil prices ! It is my contention that Peabody Co. did not give much attention to this negotiation, further complicating Gaviria's position, because of the difficulties the company was encountering in the U.S.. Kennecott Copper was at the time selling Peabody ! Business Week (issue of November 1, 1976) reported:

> "Like 200 other companies, Newmont in mid-1974 received a letter from Kennecott, inviting bids on Peabody Coal. Despite numerous appeals, Kennecott has been unable to upset a Federal Trade Commission order to divest Peabody, which it acquired in 1968...
> Altogether, there have been seven bidders for Peabody. In late 1975, the Newmont group got a go-ahead from Kennecott to do its (organizational) studies. For three months in late 1975 and early 1976, a team of some two dozen consultants, engineers, accountants and attorneys poked into Peabody's operations." (10)

How could Peabody devote time to El Cerrejón in the middle of this examination ! This unfortunate bad timing surely contributed to Cerrecarbón's position becoming untenable.

Finally, on February 9, 1976 (the same day in which proposals for Northern Cerrejón were due to Ecopetrol), Guillermo Gaviria resigned from Cerrecarbón after making public a memorandum to President López in which he attacked the association type of contract that Ecopetrol wanted to use.

His battle, however, (and Peabody's) was lost: Resignation was capitulation and Peabody lost its principal supporter within the government. Mr. Gaviria would not forgive either García Parra or Exxon, and he would be in 1980 at the forefront of the congressional debates regarding the commercial feasibility of the project.

The creation of Carbocol

Minister Jaime García Parra was finally free to move ahead in the selection process. The Ministry was reorganized under the name of Ministry of Mines and Energy to unify all energy-related administration in one institution (11). Ecopetrol initiated the study of the five proposals that were presented, but Exxon had now the advantage provided by its long association with Ecopetrol. On March 1, Minister García Parra announced:

> The past administration had initiated negotiations with Peabody Company, when coal prices were low in international markets. Because circumstances have changed, the present Administration has decided to change the terms of the negotiation, and as a consequence, has accepted proposals from foreign companies to choose the firm which is going to work in El Cerrejón..." (12).

During the rest of 1976, the pace was hectic in the Ministry of Mines and Energy. On March 5, President Alfonso López, Minister García Parra, the Minister of Development Jorge Ramirez Ocampo, the General Manager of IFI Jorge Mendez Munevar and the President of Ecopetrol Juan Francisco Villareal created CARBOCOL (Carbones de Colombia S.A.) with an initial capital of Col $ 100 million. The coordination for Carbocol's initial activities was entrusted to Hernán Garcés Gonzalez, an engineer from Antioquia (13).

Carbocol was to be the government's new instrument for making the Cerrejón Coal Project a reality. During those months, three proposals were given further consideration by several institutions (in particular the National Planning Department). Although those evaluations were kept confi-

dential, agreement was reached that Intercor's (Exxon's) offer was the best. It is not known, however, if Peadody's proposal for central Cerrejón was also considered. In July, finally, CONPES, the main economic policy making body of the government, selected the proposal made by Intercor. The National Planning Department also recommended at this time to cancel the contract between IFI and Peabody, to give central Cerrejón area (area C) to Carbocol for further studies, to assign the northern Cerrejón area (area B) to Intercor, and to keep the southern Cerrejón area (area A) as a national reserve (14). Exhibit II-3 shows the basic project characteristics, as proposed by Intercor, at the time of the award.

Exhibit II-3: Intercor Proposal, July 1976

A. Contract phases and investment costs

1. Exploration	3 years		US$ 4 M.
2. Construction	4 years		US$ 350 M.
Including: Electric utility		35M.	
Railroad		50M.	
Port facilities		55M.	
Other infrastructure		20M.	
3. Exploitation	23 years		US$ 145 M.

B. Production schedule (in metric tons)

1984 1 M. tons
1985 2,5 M. tons
1986 5 M. tons (and the remaining 20 years)

C. Estimated Coal price 1984: US$ 71/Ton FOB

D. Royalties 15% on Intercor's 50% of production payable in coal or in cash, plus a participation income dependent upon coal prices in international markets.

Source: Luis C. Galán: "Los Carbones de El Cerrejón." Nueva Frontera, 9,22,'80.

Signature of the Carbocol-Exxon Association contract

As we saw before, the decision to create Carbocol finally resolved the confrontation between IFI and Ecopetrol. On November 16, 1976, Carbocol was oficially created with an initial capital base distributed as follows: 49% Ecopetrol, 38% IFI, 11% Ingeominas, and 1% Cerrecarbón. The board of directors included the Minister of Mines and Energy, two representatives of the President, the new general manager of Cerrecarbón and one representative from Ecopetrol and Ingeominas. This effectively gave Ecopetrol decisive power over Carbocol, and eliminated the inter-ministerial rivalries that had lasted for so long (15). A month later, on December 17, 1976, Hernán Garcés of Carbocol and Guillermo Pardo, legal representative of Intercor, signed the contract for the exploration and exploitation of area B of El Cerrejón. On that same date, CONPES approved a new foreign exchange regime applicable to foreign enterprises in the sector of coal mining, and simultaneously made this treatment applicable to Intercor in relation to the contract. January 1, 1977 was to be the effective date of the contract, in which the first three years would be dedicated to the detailed exploration of El Cerrejón. After that first phase was to come the final decision on project implementation originally scheduled for 1979, but which was later extended until July 1980.

Exhibit II-4 : Basic contract structure (December 17,1976)

CHAPTER I GENERAL

An equal shares Association between Carbocol and Intercor is defined. The two companies will share work on exploration, construction and exploitation in the contracted area. They will share the costs and risks of the venture and will be owners of the installations and of the coal produced in the proportions stipulated in the contract. Intercor will be both owner and operator in the project.

CHAPTER II EXPLORATION

Intercor will assume exploration risks and will present a preliminary feasibility study and mining plan. Exploration will stop when Intercor presents a commercial feasibility declaration, but can withdraw from the project at the end of at most four years of exploration.

CHAPTER III CONSTRUCTION

The operator will build the mine and port installations, the transportation network and will present the final feasibility analysis. This phase will end on the day of the first coal shipment. Production levels will be set depending upon sales contracts available. Royalties will be 15% of Intercor's share of production.

Royalties = Sales revenues (port FOB) - mine/port transport fee agreed upon by the partners. (If royalties are paid in cash: Carbocol may choose coal)

Participation income: Corresponds to an excess profit tax
= Intercor's total income- Basic income.

Basic income = Royalties + operating costs + dollar depreciation + 35% return on cumulative investment for Intercor.

Participation income will be shared between the partners in the proportions shown in a tax table (page 17 of the contract).

Tax clause: If Colombian tax regulations vary, the participation shares will be changed so that Intercor's effective tax will not be larger than 52%.

CHAPTER IV THE EXECUTIVE COMMITTEE

The committee will be composed of one representative of each partner and will meet four times per year to approve the extraction program and the budget. Each representative will vote for 50% of the total interests in the

project. Procedures are set for the resolution of ties (Arbitration).

CHAPTER V COMMON ACCOUNT

Procedures are defined for the operation's accounting system in detail. All costs and investments will be charged in equal parts to the partners, and all revenues, royalties and participation incomes will be credited to those accounts. Special procedures are defined for manipulating Peso and Dollar accounts.

CHAPTER VI CONTRACT DURATION

Maximum contract duration depends upon the actual length of the exploration and construction phases. Provisions for non-normal termination of the contract are provided.

CHAPTER VII VARIOUS DISPOSITIONS

This chapter includes a variety of clauses referring to legal and environmental aspects, labour relations, taxation, patents and repatriation of profits.

ANNEXES

-Map of the contracted area.
-Accounting procedures.
-Explanation of the calculations relative to participation income.
-Patents.

LETTERS AND OFFICIAL DECREES

- August 12, 1976
-September 22, 1976
-December 17, 1976
-February14, 1977

Source: Carbocol S.A. Intercor (International Colombia Resources Corp.)
Association contract for El Cerrejón, Block B December 17, 1976
Coal Project.
Contract signed by Hernán Garcés Gonzalez (Carbocol)
Guillermo Pardo Venegas (Intercor)

Witnesses Jaime García Parra, Miguel Urrutia M.,
William J. Nutt, John Naranjo D.
Bernardo Taborda, Nicolás Beltrán.

II.3. Declaration of commercial feasibility, and congressional debates: 1977-1980

The three following years (1977 to 1979) were relatively quiet and little information on the project was made publicly available. One significant event took place on June 8, 1977. The Ministry of Mines and Energy published resolution 1870 authorizing Ecopetrol to cede in favor of Carbocol all property rights relating to the northern Cerrejón area (Aporte No. 389). It appeared that, in the original participation agreement, legal ownership of the area was overlooked and Ecopetrol was forced to correct the problem after the contract had been signed. This would become in 1980 a major argument for the opposition to the project.

In 1978, the liberal leader Julio Cesar Turbay Ayala was elected new President of Colombia. His administration would deal with the 1980 declaration of commercial feasibility of the project.

Also in 1978, Exxon contracted with Morrison-Knudsen for planning El Cerrejón's infrastructure and developing a complete mine plan. (It is not surprising that the same firm would be awarded, in February 1981, the prime contract for the implementation phase). Business Week (June 20, 1977) commented:

> "The western (US) coal properties are mined by the openpit method, which requires the same earth-moving and engineering expertise that Morrison-Knudsen uses on its heavy construction projects (dams, bridges, roads, etc).... The company is also moving into....railroad repair and operations, and power generator fabrication....
> Morrison-Knudsen has moved from its reliance on government work, coordinated its engineering and construction talents to compete for big turnkey projects...." (16)

Morrison-Knudsen did, then, much of the necessary planning work needed for the preparation of the Design Basis Memorandum (DBM) that Intercor would present to Carbocol with its declaration of commercial feasibility

in July 1980.

In September 1978, The University of The Andes conducted for Intercor a socio-economic study of the project. But the results of this study were kept confidential.

In March 1979, Andrés Restrepo Londoño, the current manager of Carbocol, presented to The University of The Andes' seminar on energy the paper "Coal in Colombia" which gave new information on the project. As can be seen from the differences in proposed investments, (shown in Exhibits II-4, II-5, and II-6) expectations were rapidly increasing about El Cerrejón coal potential.

Exhibit II-5: El Cerrejón Project at the end of 1979

Proven Coal reserves: 1,000 million tons down to 100 meters deep. 80% mineable through open pits.

Extraction Plan: 15 million tons per year.

Investment: US$ 1,000 million, distributed as follows:

Mine	240 M.
Railway	170 M.
Port	270 M.
Living quarters	160 M.
Pre-operational expenses	160 M.
Include: Excavations	100 M.
Working Capital	60 M.

"These investments would be those required by the project during the implementation years, and during the first year of production. That is, they represent the amount of money which will have to be invested before the project starts financing itself; they are expressed in constant 1978 dollars."

Source: Restrepo, Londoño Andrés: "El Carbón en Colombia." Carbocol, Bogotá, 1979 (paper presented in The Andes University Energy Seminar in March 1979).

In May 1979, Parsons-Brickenhof Consultants was contracted by the government using United Nations funds to oversee the development of the exploration phase and to advise Carbocol accordingly. This contract, according to Luis Carlos Galán, was arranged with the World Bank as a condition for the obtention of US$ 370 to 500 million in credit lines by Colombia.

On August 28, 1979, Carbocol's statutes were changed and an IFI representative replaced the one from Cerrecarbón on Carbocol's board of directors. Thus the Ministry of Mines and Energy consolidated its power over the enterprise. Authorized capital was also increased to Col $ 370 million (17) signalling that Carbocol's scope of activities was being expanded.

In the meantime, Exxon's 1979 annual report stated that for the first time the company's US coal business was profitable, even if " it did not offset costs of its coal activities abroad." Exxon's coal production in 1979 was 8.6 million tons, all of it in the U.S.A. Also in 1979, Carbocol authorized Intercor to continue exploration for one additional year. It was not until July 1, 1980, therefore, that Intercor sent a letter to Carbocol declaring the project to be commercially feasible and proposing to initiate the construction phase. The scope of Intercor's 1980 proposal was indeed enormous, as can be seen in Exhibit II-6.

According to the 1976 contract, Carbocol then had 60 days in which to decide about this proposal. If the answer was positive, the project would enter its second phase with both partners sharing equally all costs arising from the project. When Intercor presented the declaration of commercial feasibility, Humberto Avila Mora, new Minister of Mines and Energy, had been in office for only three weeks, and Carbocol's general manager Fernando Copete Saldarriaga, less than a week.

Exhibit II-6: Intercor's July 1, 1980 Declaration of Commercial Feasibility

Reserves: 1,600 million tons down to 200 meters deep.

Minimum Production: 15 million tons/year.

Export Market: Estimated to duplicate in the next five years, reaching 105 M tons/year in 1985, and 400 M tons/ year in 2000.

"Total investment required until the project attains the said production will be US$ 1,935 M (in constant 1979 dollars) or US$ 2,928 M in current dollars, distributed as follows:

	Current dollars
Mine	619 M.
Railway	405 M .
Port	410 M.
Living quarters	203 M.
Management	61 M.
Pre-operating costs	650 M.
Other	150 M.

Source: Andrade,Enrique: President, International Colombia Resources Co. "Declaration of Commercial Feasibility.", July 1, 1980

The going gets rough

At this point, several government entities, or rather their corresponding technical departments, began raising questions about the project and the contract. The National Planning Department complained that some of the costs mentioned by Intercor could not be proved reasonable, and that the commercial feasibility should be accepted only after the project was proved to be socially desirable (18).

The Ministry of Mines and Energy's planning department stated in a July 23 letter to the (new) Minister Humberto Avila Mora, that a complete analysis of the proposal would require more time for evaluation than was available. It further criticized Intercor's costs calculations, transport fees setting procedures, and the mining program. The contract itself was also criticized, as the following excerpts show: "Regarding 'required in-

vestments' US$ 408 million are said to be needed for pre-operation activities. A detailed explanation of these should be provided before approval. ....Transport, energy and infrastructure fees should be decided upon before going ahead with the project.... The proposal does not include the mining program which is indispensable for evaluating the project. This Ministry should analyze it....Should Intercor be the only operator in this project ? Association contracts normally include operator rotation to insure an adequate level of technological transfer...." The report concluded by stating that "It is imperative to clarify these issues before accepting the commercial feasibility....as a complement, it is important to make use of the government's present negotiating position to correct the disadvantages built into the contract, like royalty payment procedures and operation and management of the project...." (19)

Even the consulting firm Parsons-Brickenhof, in its August 15 report to Carbocol, made the following statements: ...The coverage of Intercor's activities is incomplete and uncertain because, since January, Intercor has not furnished progress reports to Carbocol,....a limited and insufficient financial analysis was furnished with the letter of declaration. Elements of a complete feasibility study not covered are economic, environmental and social....Of particular concern are huge increases in the estimated capital investment over those last reported as of October 1979. The then estimated investment to full production at current prices, including a 20% contingency, was US$ 1,700 million. It has now risen, without a change in project scope, to US$ 2,835 million, an increase of US$ 1,135 million or 67%. Elsewhere the total is US$ 2,928 million. The estimated total capital investment over the length of the contract is about US$ 6,818 million..."(20)

To complete the picture, Carbocol's economic and financial staff pre-

pared in August 27 a long report for Fernando Copete Saldarriaga (Carbocol's manager since June 1980), and sent a copy of it to Minister of Mines Avila Mora. In this report, Roberto Forero, Liliana Jaramillo, and Cecilia de Sierra strongly criticized the contract,and recommended that Carbocol refused to accept Exxon's proposal. All this happened five days before the September 1, deadline ! The report's final lines were as follows: "Declaring the project commercially feasible with the idea that, if the project is good for Exxon, then it will be good for Carbocol and for the country implies ignoring the fact that the fundamental is to safeguard Carbocol's and the country's rights on participation income, royalties, fees and investment costs that correspond to them as partner and initial owner of the natural resource...."(21)

In spite of this opposition, a decision was made by CONPES (The National economic policy board) and President Turbay to accept the declaration of commerciality, and on September 1, 1980, Mr. Copete Saldarriaga responded to Intercor's proposal as follows: "Carbocol, based on the circumstances and facts put forth in your letter of July 1, accepts the commercial viability declaration and agrees to initiate the construction phase following the terms established in the association contract....This our answer implies only, as it is obvious, the acceptance of the commercial viability and the ratification of the obligations incurred by us in accordance with the contract clauses." (22)

The explosion

Four days later, the project was publicly announced by President Turbay in Riohacha (Guajira), and Intercor issued a press release (23). This announcement precipitated the September 5 collective resignation of

Carbocol's economic and financial unit , and this was in the news on September 8 (24). The stage was set, not only for the implementation of the project, but also for the national debate that would take place in the following months.

Starting September 15, former President Carlos Lleras Restrepo published a series of articles in his magazine Nueva Frontera, in which Senator Luis Carlos Galán discussed and criticized the project and the terms of the contract (25). The press filled up with references to the project.

In congress, Senators Luis Carlos Galán, Guillermo Gaviria (former manager of Cerrecarbón) and Enrique Pardo Parra, former Minister of Mines, staged a 14 hour debate in which the now Minister of Treasury Jaime García Parra (former Minister of Mines and Energy), the Minister of Development Andrés Restrepo Londoño (a former manager of Carbocol) and the Minister of Mines and Energy Humberto Avila Mora were called to testify. On November 17, at the end of the debate, two opposing resolutions were presented: one recommended that the government reexamine the contract to solve the issues raised in the debate. The other, made by conservative Senator Alvaro Gómez Hurtado and liberal Senator Alberto Santofimio Botero, stated that "The Senate is satisfied with all the explanations given by the Ministers."

The debates were not conclusive because, "quorum was not met in the following sessions", according to Luis Carlos Galán. Clearly, the debates were strongly politically motivated, as shown by the presence of Guillermo Gaviria. But several important criticisms to the contract were ignored. These criticisms had been raised by the government's technical personnel who saw their reports and their comments continually overruled by political decision making at the top of government bureaucracies.

The opposition was again silenced, and the project was given a green

light: Morrison-Knudsen, who had been consultants to Intercor since 1978, were awarded, in February 1981, the prime contract for implementation (26). However, the debates in Congress increased enormously public discussion about the project. From now on, the project will be subjected to public scrutiny, and Intercor will have to deal with political opposition and public suspicion. In these conditions, what are the project's chances of success ? The future will tell, and in the next chapters I shall try to explore the critical issues upon which the future of this project depends.

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CHAPTER III

AN EXPLANATION OF THE 1975-1976 EVENTS

Three major facts arise from the study of El Cerrejón project history. First is its very long gestation period: Decades have elapsed since the first studies were done in La Guajira by the Tropical Oil Company and other institutions. Only in November 1980 was the project approved, and this in the middle of considerable controversy. On September 23, 1980, issue of El Espectador, an editorial expressed this as follows:

> "Our correspondent in Riohacha, Hilario Ariza, recalls that the pretense of exploiting El Cerrejón's coal deposits is one hundred years old. 'One hundred years of indecision' is the title that should be given to a monograph bearing upon this aspect of the economy and state policy in Colombia."(1)

Second, is the fact that both the motivation for this project and its outcomes were not only economic in nature. Political issues, both domestic and international in character, appeared repeatedly during the whole gestation period, sometimes hindering its course, sometimes helping it. Even though the final go-ahead was given by the government in September 1980, the controversy is still raging, and opposition to the project has not subsided. Politicians and economists are still discussing, via the national press, the advantages and disadvantages of this association contract (2), (3). This is an indication of the difficulty encountered in any large-scale, public/private project to reconcile the partner's objectives, and to smooth out conflicts of interest between the parties involved.

Third is the fact that transnational projects produce further problems in addition to those already mentioned, due to the differences in problem-

solving approaches of the different cultures involved.

This chapter will analyze in detail how the project came to life, and what were the main issues involved in the initial implementation of the project, during 1975 and 1976.

III.1. The birth of a large scale, public/private, transnational venture

A long gestation period

Both domestic and external factors contributed to the late inception of this project. On the international side, the post-war development of a global economy based on oil, with prices maintained at controlled levels, was responsible for having displaced coal as an important source of energy, making the development of Colombia's coal resources uneconomic (4). The October 1973 events changed considerably the situation, and the industrialized world is now leading the way into other sources of energy, and coal in particular, with the participation of multinational oil companies. Today, El Cerrejón's coal is clearly economically viable, and its future in both the country's economy and in international markets looks bright in comparison with alternative sources of energy. On the domestic side, Colombian policy makers seem to have taken too long to react to the 1973 events, as was the case for most of the world's policy makers. Says former Minister of Mines and Energy, Alberto Vazquez Restrepo:

> "...After having been self-sufficient in oil for the first 75 years of the present century, Colombia lost its self sufficiency, and since then the country has shown a tendency towards ever greater dependency on external sources of oil. This is because, as happened with most other countries, the country created a pattern of energy consumptions based on oil, given our reserves and its low international price... As a result local exploration for oil was hindered, no steps were taken toward coal exploitation, and our immense hydroelectric potential was not tapped adequately. The above facts show that the energy difficulties which this country is experiencing correspond to a specific conjucture, direct consequences of a delay in decision making, because paradoxically, Colombia possesses the energy resources (renewable and non renewable) to satisfy present and future needs." (5)

By 1975, Colombia had to start importing crude oil, as Table III-1 shows:

Table III-1

IMPORTS AND EXPORTS OF OIL

COLOMBIA

(Barrels per day)

YEAR	CRUDE OIL		GASOLINE	FUEL OIL	
	EXPORTS	IMPORTS	IMPORTS a/	EXPORTS	IMPORTS
1970	85,605	-	-	2,875	-
1971	69,605	-	2,228	2,578	159
1972	40,888	-	600	6,656	-
1973	25,751	-	374	2,981	-
1974	1,000 b/	-	567	3,134	-
1975	-	-	4,825	-	-
1976	-	18,427	7,169	-	110
1977	-	25,750	9,458	-	577
1978	-	24,197	21,988	-	211
1979	-	30,000 b/	25,000 b/	-	500 b/

a/ No exports

b/ CEDE approximations

Source: Torres,J.E., Viera,D., Beltrán,R. "Bases para un modelo de planeación energética -el caso Colombiano-." In: "Colombia y la Crisis Energética", Otero,D.,Reveiz, E. Editors, Colección debates CEDE No. 2 University of The Andes, Bogotá, 1981.

The above researchers explain:

> "A common explanation has been that this has occured because of the low internal prices maintained during the last 15 to 20 years which did not stimulate exploration activities of foreign companies owning oil concessions. However, vigorous exploration activities have never characterized this country: between 1908 and 1978, only 951 exploratory wells have been drilled, most of those after 1956. In that sense the state may be responsible for not having stimulated national organizations like ECOPETROL to increase their exploratory activities instead of waiting for the multinational companies to do it at their own pace." (6)

Whatever the reasons for this poor performance, the situation is rapidly

deteriorating. Comments former Minister Vazquez Restrepo:

> "The country has...sufficient conventional energy resources to accomodate demand with the exception of oil, of which we presently import some 30% of own consumption. This represents an expense of 12% to 15% of our foreign exchange generation capacity; this expense shows a growth which could become equivalent, in a few years, to 25% of the total value of our exports, if the exploration and substitution efforts we are making...do not accrue in satisfactory results." (7)

Table III-2 shows the value of Colombian oil imports during the last few years, which are indicative of this dangerous trend about which the government finally began taking corrective measures.

Table III-2

CRUDE OIL AND GASOLINE
IMPORTS AND PRICES
COLOMBIA

	CRUDE OIL IMPORTS			GASOLINE IMPORTS		
YEAR	Millions of barrels	Average US$/BL	Millions of dollars	Millions of barrels	US$/BL	Millions of dollars
1975	-	-	-	1,8	12,95	23,3
1976	,7	12,47	83,5	2,6	14,17	36,8
1977	9,4	13,88	130,4	3,4	14,81	50,3
1978	8,8	13,63	119,9	8,0	15,49	123,9
1979*	8,9	23,12	207,3	9,2	33,70	310,0

*Based on data until September 30, 1979

Source: National Planning Department, Republic of Colombia."Plan de Integración Nacional 1979-1982." Vol.II, Industria Continental gráfica ltda. & Cia. S.C.A., Bogotá.

Something had to be done to redress the country's energy balance, and the alternative was there for all to see: COAL.

Private or Public ?

Although Colombia has the largest coal deposits in South America,large

scale coal exploitation was never undertaken for the reasons specified above. Total production has never exceeded 5 million tons per year. It is a small scale industry, distributed in some 630 mines, and using traditional methods of mining. According to the National Planning Department, 86% of those mines produce less than 500 metric tons per month, and only 6% of them produce more than 1,000 metric tons per month (8).

Table III-3 shows the production, consumption and exports of Colombian coal from 1970 to 1978.

Table III-3

CONSUMPTION OF COLOMBIAN
COAL FROM 1970 to 1978
(Millions of metric tons)

YEAR	PRODUCTION	INTERNAL CONSUMPTION					EXPORTS
		TOTAL	ELECTRICITY	CEMENT	SIDERURGY	OTHER	
1970	3,317	3,308	358	451	732	1,767	9
1971	2,800	2,788	348	472	772	1,196	12
1972	2,900	2,863	337	512	567	1,447	37
1973	3,360	3,325	429	507	630	1,759	35
1974	3,600	3,545	342	525	630	2,048	55
1975	3,800	3,757	259	447	661	2,390	43
1976	4,000	3,947	520	496	661	2,270	53
1977	4,200	4,041	631	538	787	2,085	159
1978	4,930	4,570	629	577	883	2,481	360

Source: National Planning Department, Republic of Colombia. "Plan de Integración Nacional 1979-1982." Vol.II, Industria Continental gráfica ltda. & Cia. S.C.A. Bogotá.

Domestic producers clearly lack the technology and experience in large scale coal mining of the sort needed for a 1.5 million tons per year operation as the one contemplated in El Cerrejón.

The Colombian private sector did not seem interested in undertaking such a project. This may be because of the great capital investment required, which the private sector was not in capacity to provide. The geographical location of El Cerrejón and its isolation also contributed to this lack of interest: private industries which could use coal as a factor of production, like cement, were far from the Guajira region and had preferred so far other sources of energy, the transportation of which did not depend upon the ailing and extremely unreliable national railroads. Says one Colombian industrialist:

> "Private industrialists, especially in Antioquia, have been saying for years 'we are going to develop coal resources' but this has never become a reality. May be they are right after all. What would you do with this coal ? At the national level, no transportation facilities exist. The national railway system is in the path to extintion, and nobody would want to rely on it. Sell it in the international markets ? I don't think anybody in Colombia has the organization and the marketing know-how to do it.
> Besides, this is a big business ! Large scale coal development requires technical personnel which we don't have, and machinery which we have never used..." (9)

The factors above indicate that only the government had the resources and the incentives to undertake a project of this nature, as had been the case for all of Colombia's natural resources in the past. It was also the government which, in the eyes of the public, was held responsible for developments in the area of energy. Politicians had something to lose if the balance of energy deteriorated and forced energy price rises, as was clearly demonstrated by the 1978-1979 decisions of the López Michelsen administration to double gasoline prices. Social instability increases dramatically with such moves, precipitating great swings in the political preferences of the voters. As always, multinational companies received, with the government, the flack from the press and the public:

> "All the above facts, plus the very much commented association

> contracts, with which are left in the hands of the multinationals the exploration and exploitation of our natural resources, are clear indicators of the chaotic policies of the national government, the effects of which we are experiencing now, and the cost of which is finally assumed by Colombian consumers..."(10)

As the balance of payment figures indicate, however, the government was since 1975 hard pressed to boost oil prices at an increasing rate, if new sources of energy were not quickly developed. The effects of oil price rises unfortunately combined with a decreasing rate of domestic oil discovery to give this problem the proportions of a crisis. The government was forced to take on the responsibility for finding new energy sources and making them available, and the sooner this was done, the less negative would be the political impacts of new price hikes and rationing measures. On the other hand, at least in the short term, the effort needed to promote a domestic shift from oil toward alternative sources of energy would be great indeed. Especially in the case of coal, this would imply an immense program to revamp the national railroads, which still today seems more than a difficult proposition. The solution, for good or for bad, appeared quickly: export coal and use the proceeds to import oil ! The Guajira coal was suddenly viewed in its international dimension. Moreover who could the government start such an enterprise with, except the multinational companies ? The private sector, as we have seen, was unwilling to commit to coal. Well, the multinationals would of course! They were all waiting at the door, according to Business Week (February 16, 1976):

> "An international coal rush is developing in Colombia, which has two-thirds of the Latin America's known coal reserves. Companies from the U.S. Japan, Europe, Brazil and even the East bloc are trying to get a foothold, offering capital and expertise for a share of the deposits. Competition is keen not only because of the renaissance that coal is enjoying in the wake of the oil crisis but also because Colombia's coal is low in sulphur and high in Btus." (11)

Quite apart from top government officials and planners, the public bureaucracies were bound to get interested: the opportunity to create a whole new bureaucracy to control the nation's coal resources and to participate in a new area of policy making was clearly appealing to several ministries. Cerrecarbón, that timid organization created in 1969 to promote private industrial investment in coal was, in the 1975 juncture, bound to encounter stiff competition from other government bureaucracies ! (it should be remembered that Cerrecarbón was created under the aegis of IFI, the national institute for the promotion of industry, an organization oriented toward the financing of new, private, industrial investments). It is understandable, then, that official institutes entered the competition to get the responsibility for such a project, especially when no bureaucracy was already set up to do it, and official responsibilities for the management of different energy sectors were scattered throughout the governmental institutions. Even today this institutional problem is still felt:

> "Formal mechanisms exist in Colombia for coordinating the energy sector..... However, the sector is divided into several entities, partially or completely autonomous, which have responsibility over specific sources of energy, from wood to nuclear energy...
> Unfortunately, the outside observer soon realizes the lack of integrated programs and strategies, the lack of a consistent data base, and the scarce attention paid to alternatives to supply basic energy needs...
> Only very recently an effort has been made to correct these deficiencies which are administrative and institutional in nature. We are still a long way from a desirable state of affairs." (12)

Thus, a problem generated in the lack of concerted policies regarding the energy sector had organizational repercussions in the government bureaucracies, in the form of unclear guidelines on who should do what, with the resulting inevitable competitive environment.

Exxon ? Peabody ? or...?

Exxon Corporation was finally selected by the government's highest policy making body, CONPES, as the foreign partner in a venture which became transnational for the reasons explained before. The selection process, as we saw in chapter II, was controversial but the controversy died when Cerrecarbón's manager, Guillermo Gaviria, resigned from his post in February 1976. During the rest of 1976 and until the signature of Carbocol's association contract with Exxon in December 1976, nobody to my knowledge raised questions about the selection process related to Ecopetrol's October 1975 bidding competition. The story of this episode points to several factors which contributed to Exxon winning the bid and which were not only economic in nature.

Organizational factors, as we shall presently see, were crucial in deciding the outcome of this process. On one hand, Peabody had actually signed a contract with Cerrecarbón and IFI in 1972 for the exploration of the central Cerrejón deposits, and for the possible exploitation of those deposits SUBJECT TO A RENEGOTIATION CLAUSE. According to Business Week (13) this contract involved "equal ownership with IFI, plus up to 40% of the joint profits."

I have been unable to get this contract, and it appears that it was never made public. But, if we are to believe the Business Week report, this renegotiation clause was used by "the government" (in my view, by Guillermo Gaviria himself, and possibly with the best of intentions) to try to extract better terms from the deal. According to this article:

> "With coal now a premium fuel, Colombia feels it can afford to call the shots any way it wants. 'For once, we are in a position to establish economic, technological and ecological guidelines for the exploitation of an important natural resource', a Colombian engineer says with satisfaction." (14)

Unfortunately for Peabody, the timing of this negotiation was very poor, because, while Peabody conducted explorations, Exxon had perfected an association contract with Ecopetrol, based on oil exploration and extraction contracts already practiced by the state oil company. It is my contention that Mr. Gaviria tried to impose on Peabody stiffer terms than the company was willing to accept: "negotiations are going on, but it just may be that we do not fit."(15)

In addition to this, the problems Peabody was encountering at home (see chapter II) must have been important enough to distract their attention from this deal and to create a gloomy atmosphere within their own organization. On the other hand, it was clearly in the interest of Gaviria and his organization that Peabody be selected as a partner. Their basic survival as a government bureaucracy depend upon this. Unfortunately, it was also in the political interest of Ecopetrol, Exxon, and the Ministry of Mines and Petroleum to have this contract awarded through a bidding competition organized by Ecopetrol. What was really at stake here was CONTROL over the project, and CONTROL over the creation of the new governmental coal enterprise, which was proposed by all the actors, including Gaviria. It is clear that whichever entity, Cerrecarbón or Ecopetrol, was given ownership of the deposits would gain control over a) the deposits, b) the selection process, c) the creation of the new CARBOCOL and through this, d) the policy-making process in the area of coal.

Again, the odds were against Gaviria and Cerrecarbón regarding ownership of the coal deposits. Even though Cerrecarbón was still the owner of the central Cerrejón, it was the Ministry of Mines which owned the northern and southern deposits. As an owner, it had complete discretion over who to transfer this ownership to. In this competitive environment, and given the

fact that Ecopetrol had an attractive proposal from Exxon, it was in the interest of the Ministry of Mines to transfer ownership of northern Cerrejón to its own enterprise, Ecopetrol. This is precisely what Juan José Turbay did on October 6, 1975 (resolution 2118), within the limits of the law, and without touching Cerrecarbón's ownership of Central Cerrejón. As a result, the competition was now in the open, and Ecopetrol immediately proceeded to ask for bids from foreign companies, even if it already had a firm proposal from Exxon. This happened on October 9, 1975 and, as we saw, proposals were due on February 9, 1976. This was also a hard thing to swallow for Gaviria, Peabody and Cerrecarbón. Let us remember again that Peabody's contract was signed four years before, when the international coal market was still relatively depressed, and coal prices were low. Exxon thus had now a clear advantage over Peabody, paradoxically due to their late arrival on the scene. Exxon had another clear advantage over new potential competitors: when the bidding competition was opened, Exxon already had a good knowledge of the geology of El Cerrejón (due to their old oil explorations) and an attractive proposal perfected with Ecopetrol (which was done during the former administration of President Misael Pastrana). Although they possibly had to redraw their proposal to make it more competitive with the ones due on February 9, 1976, they had a distinct advantage over the newcomers (BP, Shell, etc) because the latter had only four months available to put together their proposal. It is not surprising that Exxon's proposal was the best, and was finally chosen in 1976 by CONPES.

In conclusion, Exxon chose the right supporter, Ecopetrol. Having been in Colombia for 60 years, company officials in Bogotá (most of them Colombian) knew the environment, and knew how to deal with it. Exxon took advantage of the Cartagena refinery negotiations to win support of the

powerful Ecopetrol. They came into the bidding contest with a crucial advantage over prospective competitors, and an association proposal which met the current needs of the government. In addition, they found a champion in Jaime García Parra, who had just been appointed Minister of Mines and Petroleum.

Legal aspects of the selection process

With the opening, by Ecopetrol, of an international bidding competition, the situation became critical for Gaviria and Cerrecarbón. From October 1975 to February 1976, Guillermo Gaviria openly criticized Ecopetrol for forcing the introduction of an association contract in the area of coal mining. He had good legal reasons to do so (as we shall see below), as well as political reasons to react against Ecopetrol's intrusion in the selection process.

Colombian legislation regarding coal has its roots in the Spanish Novissima Recopilación (Circa 1789), and its evolution has followed an erratic pattern during the Confederación Granadina (1858) and the United States of Colombia (1863). Legislation was, at the time Carlos Lleras took office in 1966, a loose compilation of superimposed decrees and regulations. Carlos Lleras introduced in 1967 and 1969 the so called "Estatuto Minero" which basically simplified coal legislation to conform to the norms applying in general to all other non-metallic minerals (16).

In a paper presented to the first international seminar on the integrated utilization of coal (Bogotá, March 1974), Wilds W. Olive, from the US Geological Survey, foresaw the problems of this legislation for the large scale exploitation of coal:

> "Regulation pertaining to coal mining in Colombia poses little if any problem to the numerous small mines current-

> ly operating in Colombia; however, some of the legislation appears to impose restrictions that could prevent or deter investment of private capital in large scale mining operations...
> According to the mining code...a licence to explore for coal can be obtained...on application to the Ministerio de Minas y Petroleos...
> A permit which authorizes further exploration work, development and exploitation is also obtainable from the Ministerio.
> A permit is available to foreign entities, (if) an operation base in Colombia is established...
> Presumably, larger areas (larger than 1,000 hectares) could be mined under provisions of law 20 of 1969, Articles 12 and 13, which state that the government can declare as a national reserve any area containing hydrocarbons and assign such areas to ECOPETROL to explore, exploit and administer directly or in association with public or private capital, national or foreign. Both these regulations pose problems to large-scale mining of coal...
> A harmonious and productive relationship between government and business will require a clear understanding by both sides of many issues such as majority control, disposition of working capital and profits, salaries, appointment of officials and key personnel, and authority for policy-making decisions and general operation." (17)

This prediction,made two years before the events of our interest, seems like it was extracted directly from a Delphi oracle. This statement also points to a possible explanation for the CERRECARBON-ECOPETROL confrontation:

1. The "contract" signed between Peabody and IFI corresponded to an exploration permit like the one described by Mr. Olive, and it was precisely at the end of 1975 that Cerrecarbón and Peabody initiated negotiations for a follow-up project, with a little hitch: any further permit had to be obtained from the Ministry of Mines and Petroleum !
2. In the meantime, President Pastrana had declared "special reserve" El Cerrejón deposits, which meant that any such areas had to be transferred to Ecopetrol for further exploration ! The central Cerrejón area, however, having been already transferred to Cerrecarbón, could not be subjected to this clause of Law 20 of 1969.

Another issue needs to be explained: What were the possible forms

which a development and explcitation contract could take at that moment ? Opinions here are as varied as the participants in the 1975-76 events. Carlos Lleras Restrepo, author of the law 20 of 1969, explained on his September 15, 1980 editorial of Nueva Frontera:

> "The mining statute considers three forms of exploitation of mineral deposits: the PERMIT, the CONCESSION and the CONTRIBUTION (Aporte). According to Article 163, the contributions will be made to the COLOMBIAN MINING ENTERPRISE or to other state, industrial or commercial,enterprises....Article 31 of this same mining statute regulated the form of exploitation for "the mines which are declared special national reserves", and says that it will be done directly by the nation or through concessions or contributions, by commercial or industrial state enterprises, or by MIXED ECONOMY enterprises which should have a MINIMUM OFFICIAL PARTICIPATION OF 51% IN THEIR CAPITAL. " (18)

This points to the possibility, already mentioned in chapter II, of there being in reality three contracts involved in this controversy:

1. A PERMIT awarded to Peabody in 1972,
2. A CONTRIBUTION with the creation of a MIXED ECONOMY ENTERPRISE (official participation of 51%), proposed by Guillermo Gaviria to Peabody.
3. A CONTRIBUTION with a corresponding ASSOCIATION contract proposed by Exxon to Ecopetrol, and supported by the new Minister of Mines and Petroleum, Jaime García Parra.

It is my contention that Peabody lost to Exxon because they were reluctant to go ahead with Gaviria's proposal of a MIXED ECONOMY enterprise. Exxon's officials themselves gave the reason why no foreign company would want to go ahead with the mixed economy enterprise. Such an enterprise would be subject, according to Colombian commercial laws, to national majority control and to the possibility of expropriation at book value ! In a book entitled "Colombian Coals" published by the Ministry of Mines and Petroleum in 1974, Ernesto Beltrán Cortés also described the CONTRIBUTION system:

> "Coal can also be explored for, and exploited, through the system of contribution awarded to industrial and commercial enterprises of the state, and which will be able to associate themselves with private parties...
> According to law 60 of 1969 and the decrees 3161 of 1968, the government can award areas for geological-mining studies, if these are done directly through decentralized entities and with special contracts to private parties. These areas can be, after study, the object of contributions or concessions."(19)

This paragraph also points to the possibility proposed above, but does not help in finding out whether association contracts were allowed in the mining statute or not. Andrés Restrepo, former manager of Carbocol, provided some additional evidence in his paper "Coal in Colombia" presented to Los Andes University's seminar on energy (March 1979):

> "Mineral coal is part of the nation's reserves, and as such its exploration and exploitation is awarded to official entities or to private parties through exploration licences, exploitation permits, concession contracts and contributions. This last form is exceptional and used only for certain very important deposits, as will be seen later....
> Contributions are made to decentralized entities which have as principal or secondary objectives the exploration or exploitation of coal. Because the goal is to take advantage of a special reserve, a contribution can also be made to MIXED ECONOMY enterprises with official, state, majority capital...The exploratory and extraction activities of the entity entitled to such contributions may be done directly or in association with third parties within a variety of legal relationships like ASSOCIATION, operating contract, service contract, assistance contract, etc..." (20)

It becomes clear, looking at the above interpretations, that the type of contract to be used in the case of contributions was simply not defined by the law, and that several types could be applied, including:

1. The MIXED ECONOMY type of contract propounded by Guillermo Gaviria, which would give more control over the project to the government, but would probably not be accepted by foreign companies at that time,
2. The CONCESSION type of contract which Peabody probably hoped for, but was no longer acceptable to the government, and
3. The ASSOCIATION type of contract which was sought by Exxon and favored

by Ecopetrol and the Ministry of Mines and Petroleum.

The situation becomes clear now. Ecopetrol was the only state enterprise with long experience in association contracts, Peabody would not accept the mixed economy type of contract offered by Gaviria, and the government and CONPES would finally go ahead with the BEST PROPOSAL AT HAND. The rest is history. Ecopetrol's bidding competition was based on the association type of model.Exxon had its proposal ready, three bids were accepted for further study upon receipt of the proposals on February 9,1976. Guillermo Gaviria resigned from Cerrecarbón, and Peabody did not make any proposal to Ecopetrol, therefore losing its chance to get the contract. Exxon had had two years to perfect its own proposal and in July 1976 became the clear winner of the bidding contest. One thing may have helped Exxon, in addition to having a competitive proposal: the participation income clause, equivalent to an EXCESS PROFIT TAX clause (according to Intercor's officials),which was proposed for the first time in Colombia. This clause will be discussed in detail in chapter IV.

Another thing becomes clear: once Ecopetrol determined that association would be the model for all proposals, Peabody's proposal (be it for a concession or a permit) became disadvantageous for the country in comparison. Guillermo Gaviria must be given credit, in my opinion, for having tried to get better terms for Colombia through a mixed enterprise, although it is not yet clear whether such contract would be better than association. Competition between government bureaucracies deprived the government of most of its negotiating leverage. Ecopetrol, the older and most powerful of those bureaucracies, gained that control and prevailed over Cerrecarbón.

III.2. The central actors and their objectives

The next few pages will be devoted to review the main (and secondary) actors in this project after the 1975-76 events. The intrinsic value of this project would not by itself make it happen, after all. It is people, by themselves or within organizations, who can make this project a reality, or change the rules of the game, or even bring it to a halt. The objectives of these actors, and the pressures exerted upon them by the political, social and economic environments, will to some extent determine their behavior, and will change or maintain their subjective appreciation of the value of the project. The personal or organizational evolution of those actors will influence their objectives, and these in turn will influence their behavior with respect to the project. How those actors and their objectives may change over time will be explored in chapter VII.

Exxon Corporation

Exxon Corporation became in 1976, through its subsidiary Intercor, the foreign, private partner in El Cerrejón coal project. Exxon's objectives are considered to be multiple: a) diversify their sources of energy is the main strategic objective b) assure a diversified source of coal to serve as inputs for the new coal transformation process and to guarantee direct supply to their costumers, c) overcome the infrastructure and transportation bottlenecks to international marketing of coal, d) take advantage of proprietary new advanced coal technology and of its support by the U.S. government to become a leader in the field, e) achieve some degree of control over the rapidly growing international coal market (market share), and f) invest in a new, promising business, the excess cash the corporation has been accumu-

lating due to OPEC's oil price increases.

El Cerrejón project clearly makes business sense in the context of these broad objectives, as we shall presently see.

1. Diversification of energy sources: Exxon's 1979 annual report states, in the letter to the shareholders:

> "A decade ago, Exxon's investments were almost entirely concentrated in traditional oil and gas and related petro-chemical businesses. Today it is well on the way to becoming a broadly based energy company. It has substancial reserves of coal, oil shale and uranium, and important investments in oil sands operations and synthetic fuel programs. It has a stake in solar energy and is pursuing research on other renewable energy forms...However, Exxon is, and will remain primarily an energy company with an emphasis on advanced technologies. Investments in coal, oil sands, oil shale and synthetic fuels are expected to represent much larger proportions of Exxon's capital base than they do today. " (21)

2. Diversification of coal resources: three elements seem to be involved here. One is the fact that the U.S.A. will obviously become a major user and supplier of coal to the world. Exports of coal from the U.S.A. may then become constrained for capacity reasons, and international coal trade will have to rely more on non-US sources of coal. According to Exxon's 1979 report "World Energy Outlook":

> "Production capacity for export markets will increase in Latin America (meaning Colombia and perhaps Mexico), Africa, the Far East and the United States, and major increases are anticipated in the amount of coal entering international trade." (22)

Second is the continuing environmental problems related to open pit coal mining, which is more profitable than underground mining, but carries with it the burden of land reclamation (23). Exxon recognizes:

> "The greatest constraints on use of coal arise from environmental problems and the cost of overcoming them. Some accomodation with environmental concerns, either through technological change or revised regulations, will be required to achieve the demand levels shown on the world coal demand chart." (24)

Implied is the fact that if this accomodation fails to happen, diversifying geographically becomes both an imperative and a competitive asset.

Third comes the question of the social aspects of coal mining: According to the Energy Project's report from the Harvard Business School:

> "The great 1977-78 coal strike underscored another significant problem with coal: People....
> To understand the coal work force, one must remember the decades of mutual distrust between labor and management, the historic stark poverty of the Eastern coal fields, the dangerous and humanly exhausting nature of the work itself and the miners' feelings of long term exploitation. Coping successfully with the enduring posture of confrontation of the coal work force is critical for stable, growing coal production." (25)

In the U.S.A., Exxon has not been exempted from such problems. According to Exxon's 1978 annual report:

> "Exxon produced 5.2 million tons of coal from four mines in Illinois and Wyoming. This production was achieved even though a United Mine Workers' strike shut down both Illinois mines in the first quarter of the year, with a production loss of 900,000 tons...
> Construction continues on an underground mine in Wayne County, West Virginia, but mine opening has been delayed into 1979 by strikes involving UMW construction personnel."

These pressures contribute to make geographic diversification of coal resources a key aspect of Exxon's strategy.

3. Overcoming infrastructural and transportation bottlenecks to the flow of coal from its sources to its markets is also an important element. Mel Horwitch, a participant to the Energy Project, comments:

> "Geographic distribution of coal profoundly affects another systemic barrier, the transportation network that links the production and consumption of coal... The increasing dependence on the railroad will be especially great in the West, which is estimated to be the major growth area in coal production (Western coal mines being also the most productive and profitable). Can the railroads deliver ?...
> More uncertain is the ability of the railroads to carry the expected growth of coal traffic in the West." (26)

This points to the fact that coal from open pit mines not dependent upon railroad transportation will have a competitive advantage over coal from

the western U.S.A., especially in the European markets.

4. Exxon has achieved a leading position in coal conversion technologies, which will need additional inputs and which may be sold to other producing countries in the future. Exxon's 1978 Annual Report states:

> "A synthetic fuels industry may emerge toward the end of the decade, primarily in North America... An investment base can be laid for significant production of these fuels in the 90s and beyond."

This prospect, combined with the help received by the US government, does make it attractive for Exxon to stay a leader in the field and to assure coal supplies for its conversion plants:

> "Construction began in Baytown, Texas, on a 250 ton-a-day pilot plant to continue the development of the Exxon Donor Solvent (EDS) process for making liquid fuel from coal... This US$ 240 million R&D project is funded jointly by the Department of Energy and industry participants including Exxon, which has a 23.3% share and manages the program... Exxon was awarded a Department of Energy contract for US$ 16.8 million to develop the company's catalytic gasification process for converting coal to pipeline-quality natural gas." (27)

5. An oil company rush on coal resources has developed in the last few years and Exxon is being probably pressured by the competition to establish a respectable market share in the emerging international coal market. Mel Horwitch explains:

> "To understand the long term importance of the newcomers (to the coal industry), it is necessary to review briefly the dramatic changes that have taken place in the coal industry since 1960. Until then, the coal industry consisted primarily of coal mining companies and a few steel firms and utilities... By 1974, at least 17 of the 25 largest petroleum companies had entered the coal business in some fashion, and it was clear that a new group of firms with strong managements and massive financial and technological resources had a large stake in coal." (28)

The extremely good coal market prospects have not gone undetected by any of those 25 companies, including Exxon. Its 1978 Annual Report states:

> "Coal and nuclear power, the only readily available alter-

natives to oil and gas, will therefore have to meet the bulk of the growth in the world's energy needs during the 1980s."

6. Finally, what makes it possible for Exxon (as for other large oil companies) to enter the coal business "en masse" is its excess cash position. Exxon's total estimated capital investment in El Cerrejón project is approximately equal to one year's worth of corporate net income (US$ 3B in 1978, US$ 4 billion in 1979) to be distributed over the next 30 years. Definitely not an extremely large outlay of funds, considering other projects it has on the making, as opposed to Colombia's "never heard of" financial effort.

In reviewing each of these objectives, we find that El Cerrejón will contribute significantly to their attainment. El Cerrejón's reserves will add a potential 1,760 million short tons to Exxon's 1979 recoverable reserves of 9,500 million short tons. El Cerrejón's production will increase its production capacity by a minimum of 8.25 million short tons per year (it was 8.6 million in 1979). Significant coal resources that Exxon would probably have committed for export from the U.S.A. will probably be diverted back to the domestic market, especially given El Cerrejón's logistic competitive advantage in the European markets. El Cerrejón's coal could also turn out to be competitive in the United States' Southeast, where utilities can be expected to increase their demand for thermal coal, because of its geographic proximity and ease of access via maritime routes. With respect to social and environmental problems, it also appears that El Cerrejón project could avoid some of the characteristics of the US coal industry environment. Being the first large scale coal mine in Colombia, no labor organization exists that would have to be dealt with, at least during part of the exploitation period. Furthermore, because El Cerrejón is located in a relatively remote, and sparcely populated, area, environmental effects will be less evident than

in heavily populated areas of the United States. A strong environmental movement does not exist in Colombia, and the government's regulations stand to be less obstrusive than in other countries for the foreseeable future. Finally, there is potential for selling coal gasification technology to Colombia in the future (as was indicated in the 1976 contract), and this would be a logical spin-off from this large scale project. All of the above advantages come in addition to the excellent quality of El Cerrejón's coal, which gives it from the start a distinct competitive advantage over other internationally traded coals.

International Colombia Resources Corporation (INTERCOR)

Intercor is the Colombian subsidiary of Exxon in charge of developing the Cerrejón project. Being initially only one of the operating units in Exxon's Colombian organization, Intercor is expected to grow manyfold in the next few years. Being the project's operator, many resources will be shifted to Intercor for the foreseeable future. Its Colombian personnel will not be sufficient for the task ahead, and a very large recruiting drive is being promoted presently. It is worth mentioning Intercor as a separate actor, I think, because of the widespread enthousiasm I have found to exist in Intercor for the project. In a sense, Intercor may have an independent moving force of its own: El Cerrejón is expected to mobilize, during the next ten years, about 30% of all Exxon's capital investment in Latin America. "It is time to go BIG" seems to be the motto in Intercor, and with some reason: The organization stands to become very influential within Exxon, and powerful among its Latin American subsidiaries.

The Colombian government and Carbocol.

Several of the Colombian government's objectives were explored in the first section of this chapter, but they should be emphasized again. The government's principal concern today lies in the deteriorating energy balance of the Country, due to the increasingly costly oil imports, and to the increasingly weak domestic production. Especially problematic is the great inflationary effects of disequilibriums on the economy. Some reasons were presented before as to the decision to sell coal abroad and use the foreign currency proceeds to import oil. Many criticisms have been directed at this policy, and here is the government's answer, in the words of Eduardo Wiesner Durán, current director of the National Planning Department:

> "Let us take the area of balance of payments, which has been so important in our country's history of inflation. How can we neutralize the inflationary impact originated in the ever costlier import of energy resources ? The answer is simple and obvious: Let us export energy at international prices. But, if energy is exported, why import it ? Because it does not seem reasonable to aspire to autarchy in each and all of the country's energy supply sources. What appears to be more logical is to use our comparative advantage in the production of metallurgical coal, for example, to export it and generate the necessary foreign currency needed to pay for oil imports or other special energy needs." (29)

The necessary condition for this strategy to work is, according to Mr. Wiesner Durán, that domestic prices and fees for energy use be increased to reasonable levels (that is, to international levels). This is because low energy prices do not stimulate production from other (substitutable) sources. However, it appears that this objective of exporting coal to import oil is only part of the long run answer. According to Minister of Mines and Energy Alberto Vazquez:

> "The coal deposits... will contribute significantly to alleviate our energy problems in two different ways: By substituting, starting in 1982, considerable volumes of natural gas and fuel oil, and by generating during the

> 1980s an amount of foreign currency between US$ 8,100 and US$ 10,000 million, which would compensate for much of our foreign currency expenses in that sector. Moreover, the technological developments....related to coal liquefaction and gasification should allow us, in the course of the next decade, to substitute coal for increasing amounts of gasoline and other energy sources." (30)

We have seen that the Colombian industry (like industries everywhere else), is pessimistic about the prospects of using coal directly (except possibly the cement industry and the coast's electric utilities), so the government may again be driven into undertaking large scale coal conversion projects, especially if future market conditions determine coal prices lower than are presently expected. Also, if this happens, the government would become reluctant to export El Cerrejón's coal, for once the gasification technology is in place, it may become more attractive to process the coal domestically.

As a conclusion, it can be said that the objectives of the Colombian government and of Exxon are relatively congruent in the short term, but may become opposed in the long term. The important issues on which this depends are: How soon will conversion technologies be available at affordable prices, and how rapidly can Colombia expect to see its industries turning towards coal usage ? How will future prices of coal behave ? If those prices turn out to be lower than expected, the government's strategy may change. Also, part of the answer lies in Exxon's hands, and the contract itself considers the free transfer of Exxon's gasification technologies to Carbocol. To the extent that Carbocol itself is organized for the absorption of those technologies, then the joint venture will be productive in the long run, and convenient for both partners.

Other, more general, objectives appear to be involved in the government's decision to proceed with the development of El Cerrejón. The economic development of a relatively backward region is important, as President Tu-

bay stressed during his inaugural trip to Riohacha (Guajira) on September 5, 1980. This also corresponds to the government's general strategy of economic decentralization and regional autonomy. The said objectives are clearly defined in the 1979-1982 national integration plan (Plan de Integración Nacional -PIN) published by the National Planning Department in 1979. (31)

Carbocol's objectives were clearly spelled out by its general manager Fernando Copete Saldarriaga, in a January 1981 interview. In accordance with the basic policies embodied in the National Integration Plan, and following CONPES' directives, Carbocol's main short term objective is to implement the project in the shortest possible time, to address the balance of payments' threat. This may help explaining the apparent precipitation with which the 1976 and 1980 decisions were made. In any event, this is certainly consistent with the government's sense of urgency about the deteriorating energy balance. In the long run, however, Carbocol's objectives are greater in scope. Law 61 of 1979 establishes clear long range guidelines with respect to the control and management of the Country's coal resources:

1. Establish directions for local investments in coal.
2. Control foreign investments in this area.
3. Manage other coal projects within the national territory. For example, the Central Cerrejón area will be developed through an operating contract (as opposed to association contract) to cover the Country's expected domestic needs for energy, especially on the Atlantic coast.
4. Ensure the transfer of technology to the country's public and private enterprises, related to coal extraction, transformation and use.

According to Mr. Copete, some of these objectives can be temporary in nature: For example, the time will come when Carbocol should be capable of handling alone the large scale production of coal. In this sense, it is safe

to argue that congruence of objectives between Carbocol and Intercor has its limits, provided that the transfer of technology actually takes place at an acceptable rate. However, the political objectives of the government do not seem to have time limits. For example, national economic activity in La Guajira is a timeless objective. As long as the mine is functioning, the objective of national economic integration and regional development will be met. As long as the project provides employment opportunities, the national policy of increasing employment levels will be served.

As a conclusion, it appears that several levels of governmental objectives exist, which Carbocol is expected to meet in the short, medium, and long term with the association contract, as it grows into a powerful bureaucracy:

1. The short term objective of implementing as quickly as possible this project to address the balance of payments' threat, and to provide the minimum level of infrastructure necessary to allow future coal developments;
2. The medium term objective of preparing Carbocol for the future (autonomous) management of the country's coal resources; and
3. The long term national objectives related to regional economic development of La Guajira, national integration and national sovereignty.

This multiplicity of objectives will become critical to understand Carbocol's organizational development needs to be studied in Chapter VII.

Carbocol itself can be mentioned, as was Intercor, for having an independent will to promote this project: The resources involved are great, and Carbocol stands to become powerful among government bureaucracies. Political appointments in Carbocol can be expected to be coveted, and competition will develop to get control of this organization. This will happen independently of its size in terms of personnel, and management turnover will be a problem

Political opposition to the project.

Political opposition to the project cristallized from three different types of actors: First, politicians opposed to the government's energy policies, and in particular to the theory of "swapping" coal for oil through the international marketplace. Second, politicians opposed to Ecopetrol's association contracts, and in particular to their being transferred to other energy resources, and who want to see a shift towards operating or management contracts. Finally, the three economists who resigned from Carbocol have become heroes of the 1980 events in the eyes of the public, and continue to be active in the protests and discussions going on in the national press. These persons receive the tacit support of professionals in all governmental bureaucracies, and are leading what we could call a "technocratic movement".

The main short term objective of this opposition has been to attract the public's attention on the project, which they have successfully achieved until now, taking advantage of their nationalist sentiments and of their natural mistrust of multinational oil companies. They also have kept the controversy alive after the closing of the congressional debates, and they will undoubtedly continue their activities. The next important occasion to raise those issues will come, in my view, as the project's implementation comes to an end and extraction begins in 1986. Will there be a strong organized opposition at that time ? It is very difficult to say, but the possibility can not be overlooked. Comments one of Intercor's executives: "The best demonstration of the project's desirability will be made when the mine becomes operational in 1986. Its positive effects on the balance of payments will then become apparent."

In the meantime, this opposition will exert enough pressure for the government to shelve all forthcoming association contracts in coal mining.

The government's professional and technical staffs

This group includes professionals from different governmental institutions like the National Planning Department, Carbocol and the several Ministries, who resent being excluded from decision-making regarding the viability of this (and other) project. They seek more involvement in decision-making, and because their professional advice is not always taken into account, have sided with the political opposition to the project. Except in the case of the three economists who resigned from Carbocol in September 1980, and publicly joined the opposition, technocratic opposition to the project is subdued and does not surface. But it does influence public opinion.

The Colombian private sector

Its involvement in the project has been very low. For example, the private sector did not present any proposals for the exploration or the exploitation of the Cerrejón mines. Luis Carlos Galán mentioned, in his article in Nueva Frontera, an offer reportedly made by a group of industrialists to "associate with Carbocol and provide the opportunity to exploit the mines with Colombian capital, in the terms of the contract proposed to foreign enterprises". It appears, however, that no further efforts were made to explore the possibility of private participation in the project.

The private sector naturally distrusts the capacity of governmental institutions like Carbocol to implement such a project by themselves. Especially in the area of natural resources, the private sector does not want to get involved with the public entities which are seen as instruments of political power:

"Such an enterprise cannot operate properly. In ten years,

> we shall find that Intercor's operation in northern Cerrejón will be run efficiently and successfully, but Carbocol's operation in central Cerrejón will be a disaster!"

As a result of this, the private sector believes more in letting multinational companies initiate the project, and then pressuring the government to acquire a going concern. Ecopetrol's example is frequently cited to support this view:

> "The state acquired Ecopetrol as a going concern after the concession of Mares. Ecopetrol later acquired the Cartagena refinery once it was operating successfully. Both enterprises function more or less properly precisely because they were transfered to state ownership as going concerns. In the case of coal, we should do the same thing, and we won't have to wait for twenty years this time: Carbocol will probably be ready to take over the operation sooner, and Colombia is in a better position now to assert its national sovereignty."

Private sector interest in the project is therefore restricted, for the time being, to subcontracting opportunities, especially in the case of engineering companies, and to the project's impact on the country's foreign exchange situation and energy balance.

This chapter has described the 1975-76 events that led to the celebration of the Carbocol-Intercor contract. Important differences of opinion were found to exist among the major actors as to the desirability of an association contract. Furthermore, a strong inter-governmental competition was detected, which decreased Colombia's negotiating power at a time when clear policy guidelines and a coherent organizational structure were needed to distribute responsibilities properly among the ministries and state organizations involved in coal exploration and exploitation. Chapter IV will describe in detail how the association contract works, and will explore its long run economic consequences for the partners involved in the project.

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CHAPTER IV

ECONOMIC ANALYSIS: HOW THE ASSOCIATION CONTRACT WORKS

As we saw in chapter II, the 1976 Association contract was criticized since its inception as being unfair in coal investments (as opposed to the much riskier oil investments). Also, the 1980 events showed that Intercor's proposed changes were not accepted by Carbocol's staff as fair, and many questions were raised by several government bureaucracies as to the estimates used for the declaration of commercial feasibility. The congressional debates, however, did not solve any of those issues, because their motivation was political, and no detailed economic analysis of the contract was made. As the controversy has not died down, it is worth analyzing in detail the economic consequences of the contract. This chapter will make this analysis based on Intercor's end of 1979 estimates of investments, costs and revenues, and will explore how the contract itself can affect the partner's behavior during the project's life. Chapter VI will analyze the economic consequences of the 1980 declaration of commercial feasibility for the distribution of project benefits and costs over time.

Several extremely important results appear from the contract analysis. Contrary to the opinions shared by opponents to the contract, the distribution of revenues is indeed approximately 86% for Colombia and 14% for Intercor. But the risk associated with those benefits is very different for both partners: all of Carbocol's revenues depend on uncertain future prices of coal in international markets. Intercor's revenues, however, are mostly independent of international coal prices, because they are a function of Intercor's INVESTMENTS in the project. Intercor's return on investment is a

CERTAIN 35%, and if coal prices turn out to be high, an additional return is assured through participation incomes. Intercor's risk is then very small while Carbocol's risk is very high.

A second important result relates to the distribution of participation incomes during the life of the project. Carboco[illegible]cipation income is not regressive, as opponents to the project argued (especially Carbocol's economists who resigned in September 1980). However, the "tax table" used in the contract is such that, if coal prices are not very high, most of the participation income will accrue to Intercor (as can be expected to happen during the first years of operation). It is only in the last years of operation that participation income accrues to Carbocol, and only if coal prices are very high (which is by itself an uncertain proposition). Also, greater production levels do not assure for Carbocol a greater portion (percentage-wise) of any participation income. As a result of this, participation income is in itself very uncertain, and only in the extremely remote case of astronomic coal prices will more than 50% of it accrue to Carbocol. Moreover, much of the controversy appeared because of the difficulty to interpret the contract's clauses related to the distribution of participation incomes.

A third important result is that Carbocol's interests will be at odds with Intercor's regarding the level of investments and costs, transportation and handling fees, and production levels to be agreed on by the partners. As a sensitivity analysis shows, it is in Intercor's interest to increase both production and investment levels indefinitely, while it is in Carbocol's interest to minimize investments and production subject to external constraints e.g. foreign exchange needs. Partner's interests are also in conflict in the case of transportation and handling fees, as their negoti-

ation is strictly a zero sum game. To complicate matters, it seems clear that Carbocol has little control over investments and costs, because Intercor is the operator of the mine and infrastructure, and because Carbocol has little or no experience in coal mining while Intercor is backed by all of Exxon's mining expertise.

The behavioral implications of these results are clear: several possible sources of conflict exist between Carbocol and Intercor, which could surface and hinder the project in the future (as they already did in 1980). These conflicts must be resolved by the "Executive Committee", and the consequences of such decisions will be different depending on the partner's negotiating positions. Many external influences will appear over those decisions (for example international coal prices or the country's balance of payments' position) and their consequences will be explored in Chapter VII.

My aim in this Chapter is to examine in detail the elements of this association contract. I have used a computerized project evaluation model (IFPS-Interactive Financial Planning System), which allows the simulation of the distribution of the project benefits between the partners, and features powerful instruments for analysis like changing values of variables or doing sensitivity analysis. IFPS was also chosen because of its ease of use and because of its report and graph making capabilities. With IFPS, the project as a whole was evaluated, and then the distribution of investments, costs and revenues between the partners (Carbocol and Intercor) was simulated according to the December 1976 contract. The important variables affecting these flows were established, and a sensitivity analysis was performed to determine which of those variables are critical in terms of their effect on the partners' shares.

IV.1. Modelling the contract: purpose, structure and assumptions

The data used for modelling purposes were extracted from preliminary economic projections presented by Intercor to Carbocol at the beginning of 1980. The projections themselves were elaborated toward the end of 1979. Source data include:

1. Investment estimates of exploration, mining, transportation and infrastructure, and nondepreciable investment, on a year by year basis.
2. Revenue estimates, with annual figures for FOB coal prices and projected production levels (presently 15 million metric tonnes per year).
3. Operating cost estimates, including yearly unit mining costs and yearly unit transportation and handling costs.

Two models were used for analysis purposes: The first model describes the project itself, and computes total revenues and costs over the 32-year life of the project (including the four exploratory years). Gross margin, net cash flow, net present value, benefit cost ratio and internal rate of return are also computed (using 10% as the base rate). Accumulated values are computed in addition to yearly values. The results obtained with this model were checked against Intercor's available projected results, and the model appears to give satisfactory degree of accuracy.

The second model is based on the December 1976 contract itself, and is designed to evaluate the projected shares accruing to each partner. The following projections are computed:

1. Total investment and depreciation figures for each partner.
2. Revenues and operating costs accruing to each partner.
3. Royalties accruing to Carbocol as a function of the agreed-upon transportation and handling fee.

4. Basic profits accruing to Intercor as a function of investment levels.
5. Basic income as a function of operating costs, depreciation, royalties, and basic profits.
6. Participation income as a function of revenues and basic income, and its distribution between the two partners according to the contract's tax tables.
7. Total costs (including operations, depreciation, royalties and Carbocol's participation), gross margin, net taxes, net margin,and net cash flow for Intercor. Net present value, benefit cost ratio, and internal rate of return were also computed (again using 10% discount rate as base).
8. Total revenues and costs for Carbocol (including own revenues, royalties and participation, and operating costs, depreciation). Gross margin, net cash flow, net present value, benefit cost ratios and internal rate of return were also calculated.
9. Finally, total taxes accruing to Colombia, and the country's net cash flows were computed (net cash flows including Carbocol's and total tax revenues).

As for the first model, the results of this last model were checked against Intercor's end of 1979 estimates provided by Roberto Forero. Although absolute model results differed somewhat from those initial projections, results appeared to be also satisfactory from a sensitivity analysis point of view. Before presenting the results of this analysis, the basic assumptions used in both models will be presented.

Modelling assumptions

Listed below are the important modelling assumptions used in the study:

1. The project was evaluated from an operational point of view exclusively. Financial issues were not considered at all due to the lack of information. It also appears that Carbocol is still evaluating possible financing sources (including the World Bank), but has not yet reached a decision in this respect (as of January 1981.)
2. Exchange rate issues were not considered for this evaluation. All projections were made in current dollars, based on 1979 estimates. Although part of the operating costs will be in Colombian pesos, all data were manipulated in dollars as was done in Intercor's 1979 preliminary studies. This was also due to the lack of information on currency issues.
3. Base production levels considered are the ones agreed upon by the partners in September 1980 (gradual increases starting in 1986 up to a peak production of 15 million metric tonnes per year.)
4. Mining and transportation costs are considered in a per-ton basis. No economies of scale were considered on analyzing sensitivities to production levels. Intercor's implied estimates of cost-related learning curves were included in the analysis, however. Costs are also a function of investment levels.
5. Depreciation is defined in the 1976 contract as follows: double declining balance for the first five years of equipment life, and straight line depreciation thereafter; depreciation for the year 2008 should include all remaining depreciable investments for Intercor. This method is to be used in determining basic income, basic profits and participation income. It is also specified in the contract that the usual Colombian tax rules for depreciation will be used to compute Intercor's taxes.

   For the purposes of this model, and having found that the variation in "bottom line" figures is small with respect to changes in depreciation

rules, double declining balance depreciation was used throughout, with a switch to straight line depreciation at the point in time where remaining depreciable investment using the latter method becomes higher than the corresponding value computed with the first method. A weighed average useful life of 14 years was used, computed from Intercor's 1979 investment projections. This approximation has been judged to be acceptable by comparing model depreciation figures with Intercor's year by year estimates.

6. Sensitivity to production levels was computed assuming that all mining and infrastructure investments and costs vary in proportion to projected production variations. Therefore, no investment economies (or diseconomies) of scale were considered.
7. In modelling the shares accruing to the partners, the 1976 contract specified that royalties would paid on the basis of FOB coal prices less a transportation and handling fee to be agreed upon by the partners. In its 1980 declaration of commercial feasibility, Intercor proposed that this fee be computed in the same way basic profits were to be computed. This fee would be set so that transportation and handling of coal should have a 35% return on all infrastructural investment. As the partners have not yet agreed on a basis for calculation, Intercor's proposal was used to provide the base case, and then the effects of changes in that base fee were analyzed.
8. Participation income shares were computed in strict accordance with the rules specified in the contract (formulas and "tax table".)
9. Taxes on both basic profits and participation profits were assumed to be 52% net in the 1976 contract. A clause is also included whereby Carbocol's participations would be increased or decreased according to changes in

Colombian tax regulations in such a way that Intercor's total after tax profits would not vary with respect to expected results if the 52% tax rate was maintained. 52% was then used throughout the modelling process, and no sensitivities to tax rates were computed, as Intercor is effectively immune to variations in tax rules.

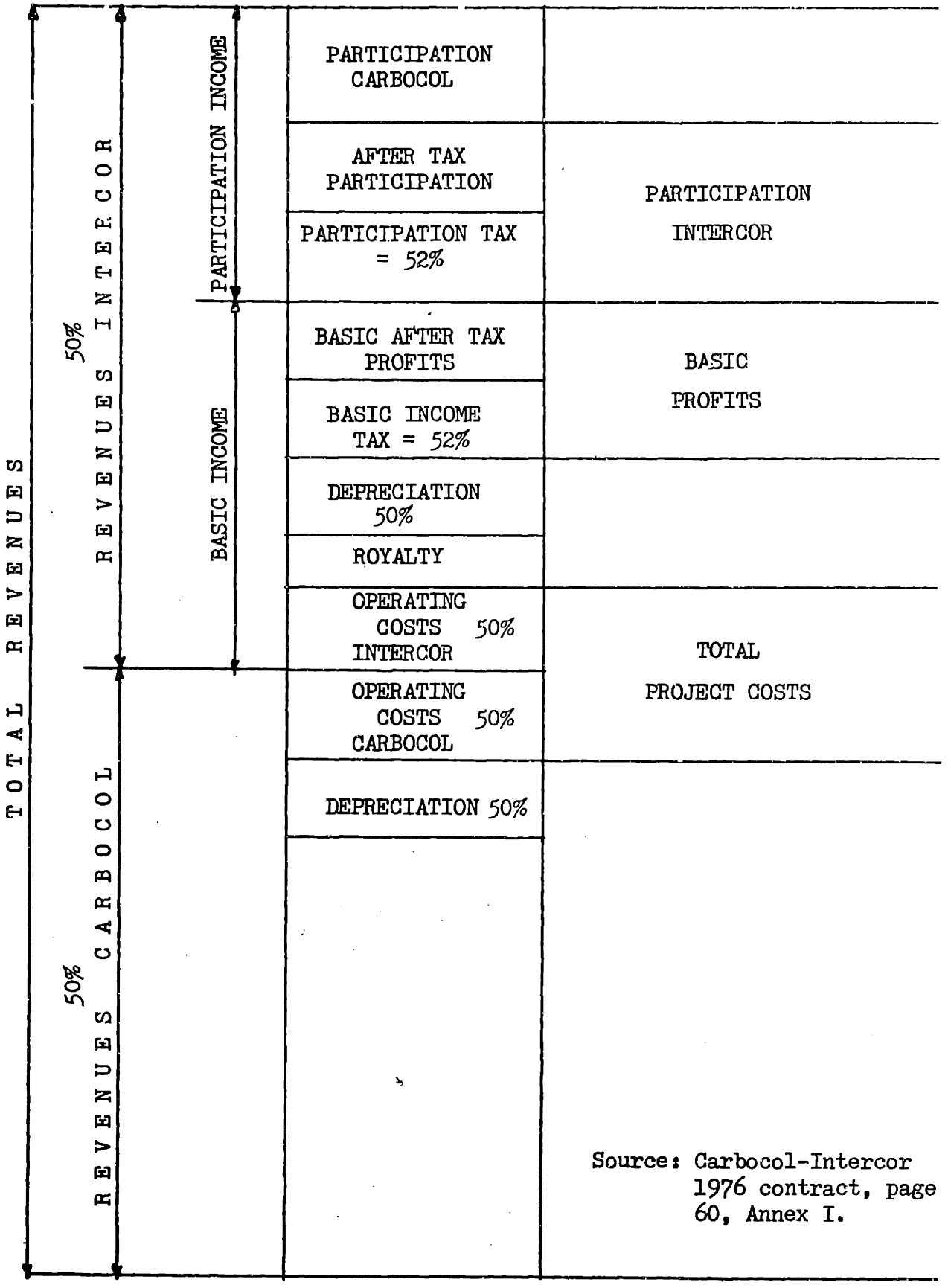
10. Finally, and most importantly, the contract does not explicitly determine what happens when costs are greater than revenues: are royalties paid ? Do basic profits accrue ? Can participation income be negative? The matter was brought to the attention of Intercor's managers, and the seemingly agreed-on procedure is: royalties are considered part of Intercor's costs and paid regardless of the revenues. Basic profits do not accrue until Intercor's revenues surpass operating costs plus depreciation plus royalties. Intercor's 35% return on investment is then an upper limit to its basic profits.

The 1976 contract: sharing of project benefits

As was mentioned before, El Cerrejón "Zone B" contract is an association contract, and its structure is basically the same as the one used for oil exploration and exploitation contracts that Ecopetrol has been using for some time now. In these contracts, the OPERATOR has everyday management control over the project, but the partners have more direct control over important project issues than if they were members of a board of directors. In this case, both Carbocol and Intercor are owners of 50% of the operation, but Intercor is also the operator, in addition to being owner. In reality then, no distinction can be made between the two roles Intercor will play in the project. Operator rotation, even if it could have been considered in this type of contract, was not included as a possibility, except as stated

in clauses 26 and 10.6: Intercor will have the right to cede its rights and obligations with Carbocol's consent. Also, Intercor (the operator) will have the right to renounce the role of operator, and both partners will then jointly choose the new operator. This Chapter will deal specifically with the 1976 contract's Chapter III, which defines the procedures to be followed during the implementation of the project. Exhibit IV-1 reproduces (with some additions) the distribution of project incomes that appears in Annex I of the contract. To this illustration were added Carbocol's revenues from coal sales on its share (50%). Total revenues then refer to revenues from the sale of total production, irrespective of its ownership. One important assumption has been made here; namely that the price Carbocol will be able to get for its share of production will be the same as the one Exxon can command in international markets. This assumption has several components to it. First, it is clear that, at least for a few years after the start of extraction, Carbocol will depend upon Exxon's marketing and selling organization for providing an output for its coal. This is so because Carbocol has no expertise in those areas. But the contract in its clause No. 15 allows for the possibility of each partner being free to sell its share of production as it sees fit. Each partner, however, has the obligation to offer a 50% participation in the sales contracts it will get to the other partner, who will be free to take it IN THE SAME TERMS AS ARE SPECIFIED IN THOSE SALES CONTRACTS, or leave it. The possibility of transfer pricing in relation to this clause was raised by critics to the project, and this will be analyzed elsewhere. Finally, Carbocol could also choose to market its coal within the country, in which case coal prices could turn out to be different than those in international markets. However, this eventuality can be discounted for the time being, as was made clear by Carbocol's offi-

Exhibit IV-1 DISTRIBUTION OF THE PROJECT'S INCOMES AND COSTS



Source: Carbocol-Intercor 1976 contract, page 60, Annex I.

cials during the interviews, especially because another area of El Cerrejón deposits (area C) will be developed for this purpose.

Let us turn now to the definition of each of the elements in Exhibit IV-1.

Total Revenues : These are defined as quantity of coal sold times its sale price. The whole production of El Cerrejón is assumed to be sellable and actually sold in an international market which is admittedly hungry for new sources of the mineral. These revenues are shared between the owners in equal parts: 50% correspond to Carbocol and 50% to Intercor.

Carbocol's revenues: These are the 50% of sales revenues plus royalties and participation income (if these arise), which are deduced from Intercor's sales revenues. Carbocol's costs are one half of the total operating costs including depreciation. Carbocol's gross margin is then total revenues minus total costs. It should be mentioned that Carbocol's administrative costs and costs due to other activities were not considered here, as no information is presently available for this purpose.

REVENUES CARBOCOL = $\frac{1}{2}$ TOTAL SALES REVENUES+ROYALTIES+PARTICIPATION CARBOCOL

TOTAL COSTS CARBOCOL = $\frac{1}{2}$ TOTAL OPERATING COSTS + $\frac{1}{2}$ TOTAL DEPRECIATION

GROSS MARGIN CARBOCOL = REVENUES CARBOCOL - TOTAL COSTS CARBOCOL

Intercor's revenues: The composition of these is more complex, as they do not depend exclusively on the revenues from coal sales. They have two components: basic profits, which are fixed at 35% of Intercor's accumulated investment in the project, and participation income, which will arise if coal prices are sufficiently high. Intercor's total costs include one half of total operating costs, one half of total depreciation, royalties paid to Carbocol, and participation income paid to Carbocol (if it arises.)

REVENUES INTERCOR = $\frac{1}{2}$ TOTAL SALES REVENUES

TOTAL COSTS INTERCOR = $\frac{1}{2}$ TOTAL OPERATING COSTS + $\frac{1}{2}$ TOTAL DEPRECIATION + ROYALTIES CARBOCOL + PARTICIPATION CARBOCOL

GROSS MARGIN INTERCOR = REVENUES INTERCOR - TOTAL COSTS INTERCOR

NET MARGIN AFTER TAX INTERCOR = GROSS MARGIN INTERCOR - TOTAL TAXES

TOTAL TAXES = BASIC PROFIT TAX (52%) + PARTICIPATION INCOME TAX (52%)

Royalties= 15% of Intercor's share of coal valued at FOB price less a transportation and handling FEE.

FEE = 35% of Intercor's accumulated investment in infrastructure (direct or indirect) after operating costs and depreciation. Again, this fee has yet to be agreed on, but in the absence of such agreement, this basis for calculation (proposed by Intercor in July 1980) is used.

BASIC PROFITS = 35% of Intercor's accumulated investment in the project. These investments include personnel training, exploration, implementation, exploitation, transportation, infrastructure, and mean annual inventories.

Participation income: As we have seen, all of Carbocol's revenues depend on coal price levels, except for royalties which are paid by Intercor regardless of revenues generated by the project. On the other hand, most of Intercor's revenues are fixed by contract (so that R.O.I. = 35%), except for participation.

PARTICIPATION INCOME = $\frac{1}{2}$ TOTAL SALES REVENUES - BASIC INCOME

BASIC INCOME = $\frac{1}{2}$ TOTAL OPERATING COSTS + $\frac{1}{2}$ TOTAL DEPRECIATION + ROYALTIES + BASIC PROFITS INTERCOR

Participation income will then arise if sales revenues are greater than basic income. The problem is that basic profit is computed independently of Intercor's revenues, so it does not depend on coal prices or percentage of sales over production. As mentioned before, however, Intercor's managers

have confirmed that royalty is paid as a cost for Intercor. If sales revenues are less or equal than (Op.Costs+Depr.+Royalty), then basic profits and participation income are zero. If revenues are greater than (Op.Costs + Depr. + Royalties), then basic profits are positive, with an upper limit of 35% on accumulated investment. For levels above the 35% upper limit, participation income will accrue. Participation income is to be distributed between the partners according to the tables and formulas appearing on page 17 of the contract. If Intercor's share of production is less than 2.5 million tons in that year, only the tables are used as shown in Exhibit IV-2. If it is greater than 2.5 million tons in that year, the procedure is the following:

PARTICIPATION INCOME = $\frac{1}{2}$ TOTAL SALES REVENUES - BASIC INCOME

EFFECTIVE PARTICIPATION INCOME (IPE) = PARTICIPATION INCOME times (2.5 ÷ PRODUCTION INTERCOR)

CARBOCOL'S EFFECTIVE PARTICIPATION = Found through the table in Exhibit IV-2, using IPE instead of PARTICIPATION INCOME.

Carbocol's participation is then converted back to the previous units by using the following formula:

PARTICIPATION CARBOCOL = CARBOCOL'S EFFECTIVE PARTICIPATION times (PRODUCTION INTERCOR ÷ 2.5)

These formulas are very important, as their interpretation caused a great deal of misunderstandings during the last few months of 1980. Basically, as total participation income increases with time due to expected price increases, Carbocol's share of participation income becomes progressively larger, and Intercor's share decreases accordingly. The progression, however, is very slow, and Intercor can be expected to get most of it during the first years of operation, and in no case less than 50% of those, unless coal prices jump to truly astronomical levels. In the following sections we

shall analyze variations in those participation income shares due to changes in coal prices.

Cash flows: The computation of the partners' cash flows is straightforward:

NET CASH FLOW INTERCOR = NET MARGIN AFTER TAX INTERCOR + $\frac{1}{2}$ TOTAL DEPRECIATION - $\frac{1}{2}$ TOTAL INVESTMENTS

NET CASH FLOW CARBOCOL = GROSS MARGIN CARBOCOL + $\frac{1}{2}$ TOTAL DEPRECIATION - $\frac{1}{2}$ TOTAL INVESTMENTS

We assume here that no taxes are levied on Carbocol by the government. If taxes are actually levied, the results for the country are the same as this implies only a transfer of funds between governmental entities. Intercor's taxes, however, constitute revenues for the government.

Total revenues for Colombia: As can be seen above, it was assumed that no taxes are levied on Carbocol's total income. Tax revenues for Colombia are the basic income tax and the participation tax.

COLOMBIA NET CASH FLOW = NET CASH FLOW CARBOCOL + TOTAL TAXES

It should be remembered that this net cash flow does NOT include other cash flows due to, for example, infrastructure, which may accrue to the government independently from the Carbocol-Intercor contract.

Exhibit IV-2: DISTRIBUTION OF PARTICIPATION INCOMES

EFFECTIVE PARTICIPATION INCOME (IPe)		EFFECTIVE PARTICIPATION INCOME FOR CARBOCOL (IPCe)	
GREATER THAN US$M	LESS OR EQUAL THAN US$M	US$M + % of	(IPe - Quantity)
0	25	0.00	+ 0.02 * (IPe - 0)
25	50	0.50	+ 0.09 * (IPe - 25)
50	60	2.75	+ 0.16 * (IPe - 50)
60	70	4.35	+ 0.24 * (IPe - 60)
70	80	6.75	+ 0.32 * (IPe - 70)
80	90	9.95	+ 0.40 * (IPe - 80)
90	100	13.95	+ 0.50 * (IPe - 90)
100	150	18.95	+ 0.60 * (IPe - 100)
150	200	48.95	+ 0.70 * (IPe - 150)
200	250	83.95	+ 0.80 * (IPe - 200)
250	oo	123.95	+ 0.90 * (IPe - 250)

If Intercor's share of production is greater than 2.5 million tons per year, the following formulas are used:

IPe = Total participation income * (2.5 / Intercor production)

Then, IPCe is computed according to the table above, and finally:

PARTICIPATION CARBOCOL = IPCe * (Intercor production / 2.5)

Source: December 1976 Association contract for Zone B of El Cerrejón page 17.

IV.2. Analysis of the project per se: Is the venture worth the effort?

The first model was used to evaluate the project as a whole, without consideration to the sharing of revenues and costs. Figures IV-1, IV-2 and IV-3 plot, on a year by year basis, revenues, operating costs and total costs (Figure IV-1), projected net cash flow (Figure IV-2) and internal rate of return (Figure IV-3).

Gross Margin: On a year by year basis, gross margin is negative until year 1986 (start of operations), and then grows steadily until the end of the project's life. On a cumulative basis, gross margin becomes positive in 1989, at the end of four years of extraction.

Net Cash Flow: On a year by year basis, net cash flow is negative until the end of 1987. On a cumulative basis, net cash flow becomes positive at the end of 1989, that is, four years after the first coal shipment.

Net Present Value: using a 10% discount rate, the project's net present value becomes positive at the end of 1992, and reaches 3.3 billion US$ at the end of the project (2008). Internal rate of return growth follows an S-curve, reaching a plateau around year 2000. It is 24% at the end of the project's life.

Sensitivity to coal prices

Increases (or decreases) in project gross margin and net cash flow will be more than proportional, on a percentage basis, to increases (or decreases) in coal prices. Internal rate of return, on the other hand, will be less than proportionally sensitive to changes in coal prices. For example, if prices in every year of the project were to be 15% lower than expected, total gross margin would decrease by 20%, net cash flow by 20% and

internal rate of return would decrease by 11%.

Sensitivity to Operating Costs

The sensitivity of the project returns to transportation costs are much lower than sensitivities to mining costs, although the absolute magnitudes can be relatively large. For example, an increase of 10% in annual transportation costs would decrease gross margin by US$ 161 million (0.4%). Internal rate of return decreases due to that same transportation cost increase would be 0.28%. In comparison, an increase of 10% in yearly mining costs would decrease gross margin by US$ 946 million (2.4%). Internal rate of return in this case would decrease by 1.67%.

Sensitivity to total investment (without changes in production)

Project returns will vary less than proportionately to investment variations. Again, however, absolute magnitudes can be large. If production does not vary, an increase of 15% in total investment (on an annual basis) would decrease project gross margin by US$ 386 million and net cash flow by US$ 427 million (1.1%). Internal rate of return in this case would decrease by 6.5%. We assume here that operating costs do not vary in response to investment levels, so these figures give us the floor (minimum) sensitivities. Actual effects will combine sensitivities to investment and costs together. Project sensitivities are shown in Table IV-1. In the next paragraphs will be analyzed Carbocol's and Intercor's returns sensitivities separately.

Let us repeat again that the absolute dollar values have changed during 1980, so those should be taken to be rough estimates of the magnitudes involved.

TABLE IV-1

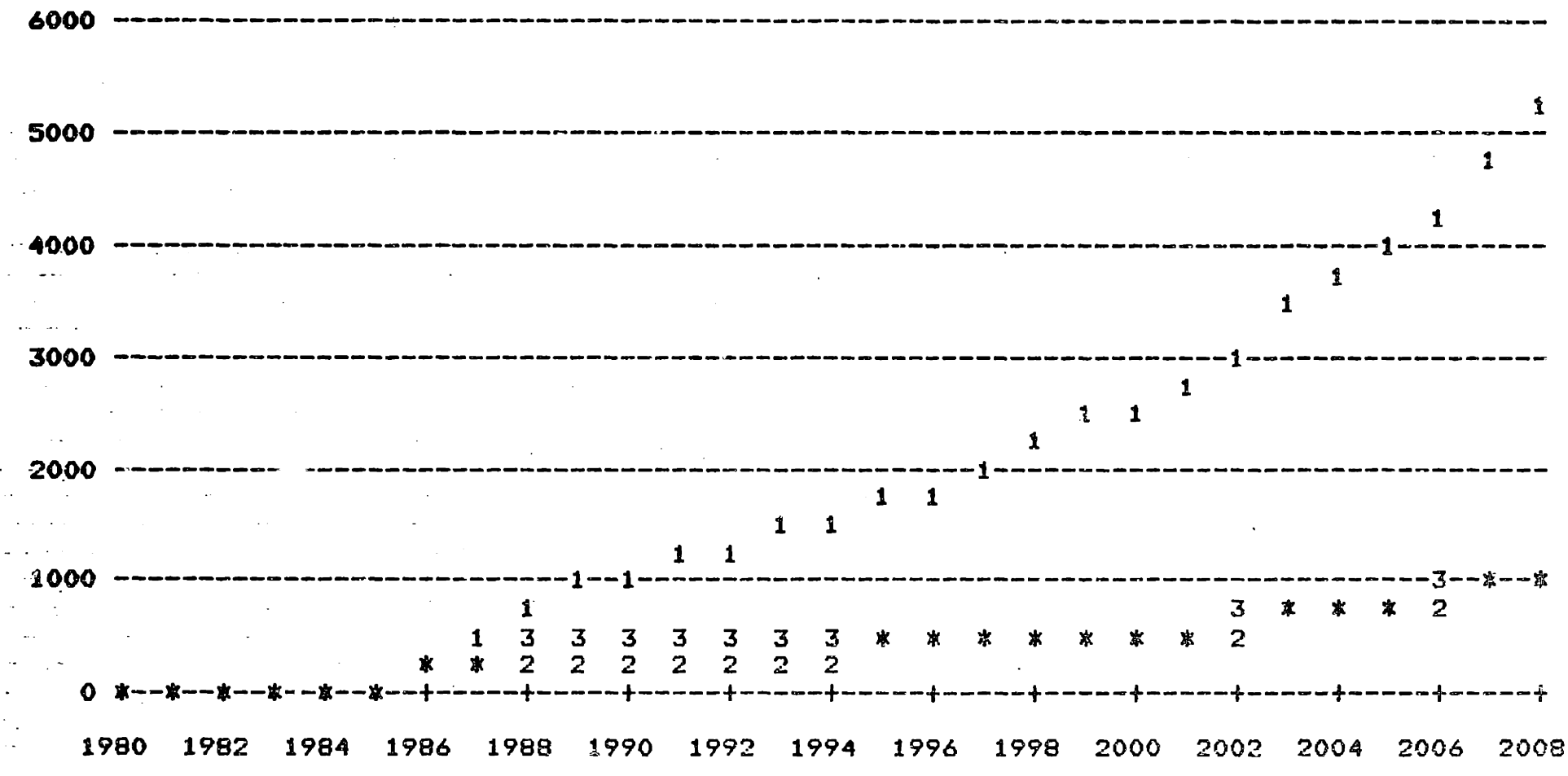
SENSITIVITY ANALYSIS:TOTAL PROJECT

Presented as % changes from the base case (current US$)

Sensitivity to Coal Prices	-30%	-15%	BASE US$M	15%	30%
Revenues	-30	-15	52,858	15	30
Gross Margin	-40.22	-20.11	39,428	20.11	40.22
Net Cash Flow	-40.79	-20.4	38,872	20.4	40.79
Net Present Value @ 10%	-51.6	-25.8	3,377	25.8	51.6
Internal Rate of Return	-23.57	-10.8	24%	9.44	17.86
Sensitivity to Mining Cost	**-20%**	**-10%**	**BASE US$M**	**10%**	**20%**
Total Costs	-14.12	-7.06	13,430	7.06	14.12
Gross Margin	4.81	2.4	39,428	-2.4	-4.81
Net Cash Flow	4.87	2.43	38,872	-2.43	-4.87
Net Present Value @ 10%	7.02	3.51	3,377	-3.51	-7.02
Internal Rate of Return	3.28	1.65	24%	-1.67	-3.37
Sensitivity to Transport Cost	**-20%**	**-10%**	**BASE US$M**	**10%**	**20%**
Total Costs	-2.44	-1.22	13,430	1.22	2.44
Gross Margin	.83	.41	39,428	-.41	-.83
Net Cash Flow	.85	.42	38,872	-.42	-.84
Net Present Value @ 10%	1.22	.61	3,777	-.61	-1.22
Internal Rate of Return	.57	.28	24%	-.28	-.57
Sensitivity to Total Investment (without changes in production)	**-30%**	**-15%**	**BASE US$M**	**15%**	**30%**
Total Costs	-5.79	-2.89	13,430	2.89	5.79
Gross Margin	1.97	.98	39,428	-.98	-1.97
Net Cash Flow	2.2	1.1	38,872	-1.10	-2.2
Net Present Value @ 10%	9.23	4.61	3,377	-4.61	-9.23
Internal Rate of Return	17.73	7.88	24%	-6.52	-12.06

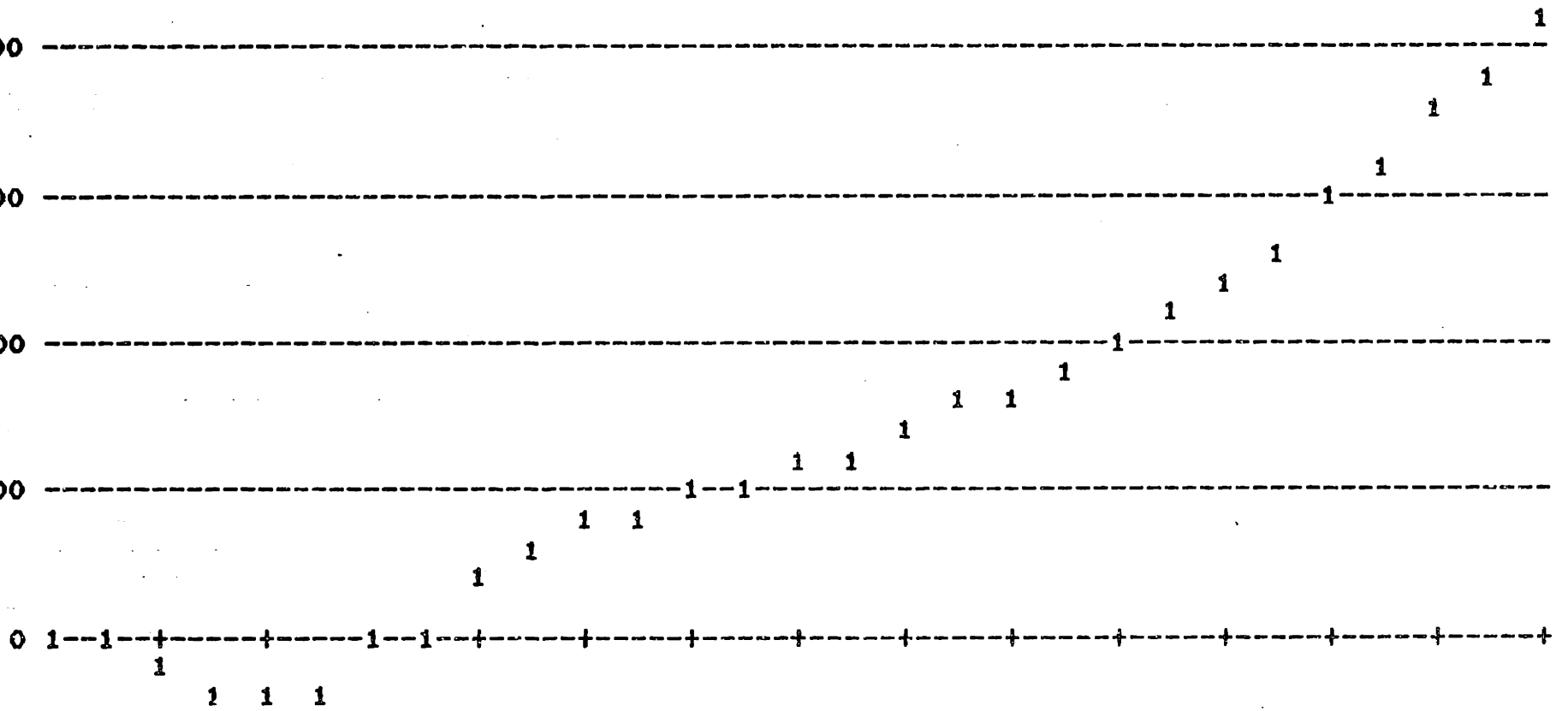
Source: Intercor's end of 1979 preliminary economic projections provided by Roberto Forero. Calculations performed using IFPS (Prime 400).

FIGURE IV-1 1979 ESTIMATES (US$ Million)



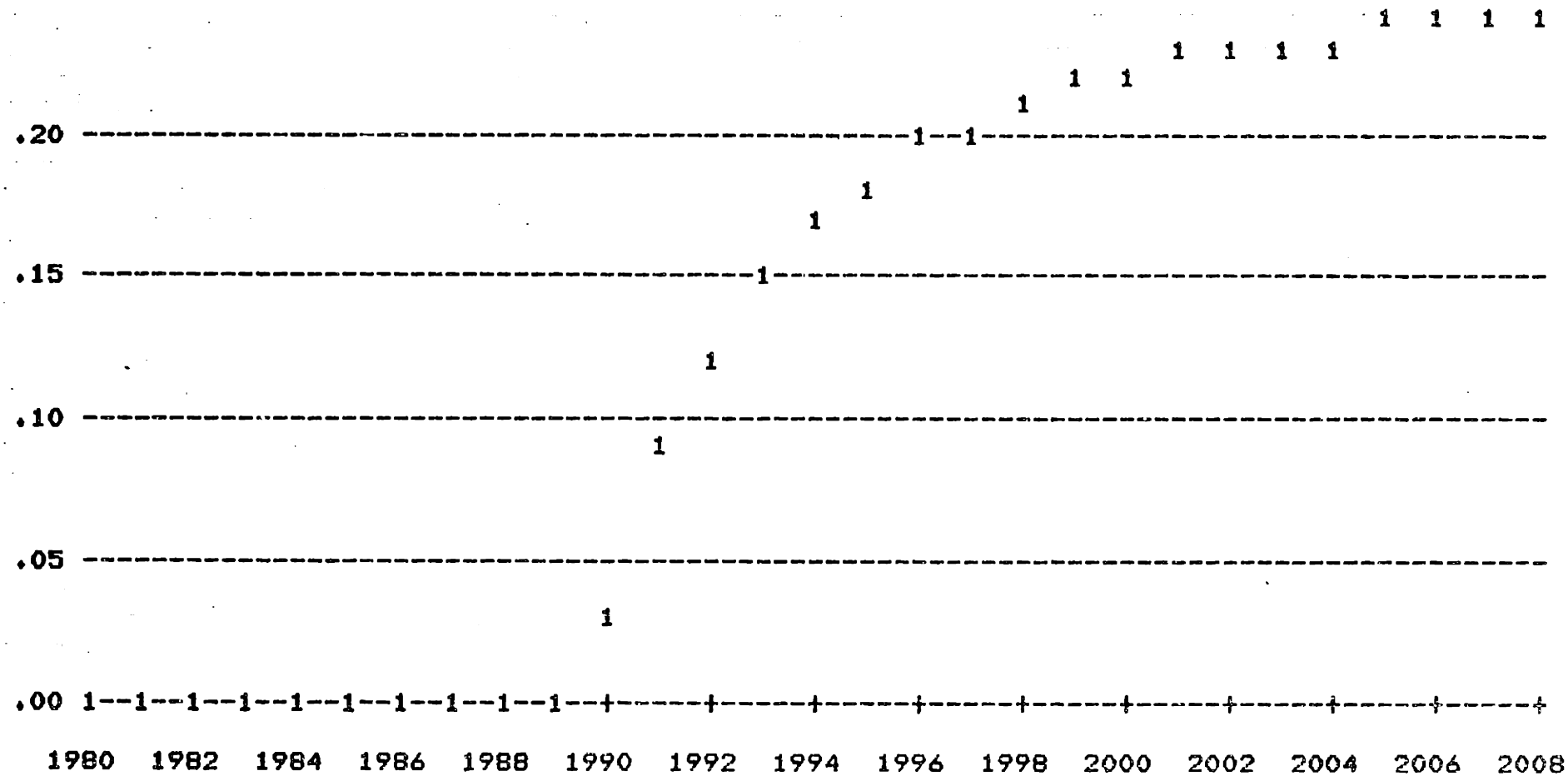
1 - REVENUES
2 - OPERATING COST
3 - TOTAL COSTS

FIGURE IV-2 1979 ESTIMATES (US$ Million)



1 - NET CASH FLOW

FIGURE IV-3 1979 ESTIMATES



1 - INTERNAL RATE OF RETURN

IV.3. Analysis of the sharing characteristics of the contract

What are the implications of the complex sharing arrangements provided by the 1976 contract? As a first step, general cumulative results for the base case (based upon the 1979 estimates used in model one) are discussed. Second, a longitudinal (year by year) asessment of the project is made, which results in the determination of two quite different periods (1977-1995 and 1996-2008), showing important differences in the shares available to each partner. Finally, a sensitivity analysis is performed, and the combined implications of all analyses are explored.

General analysis

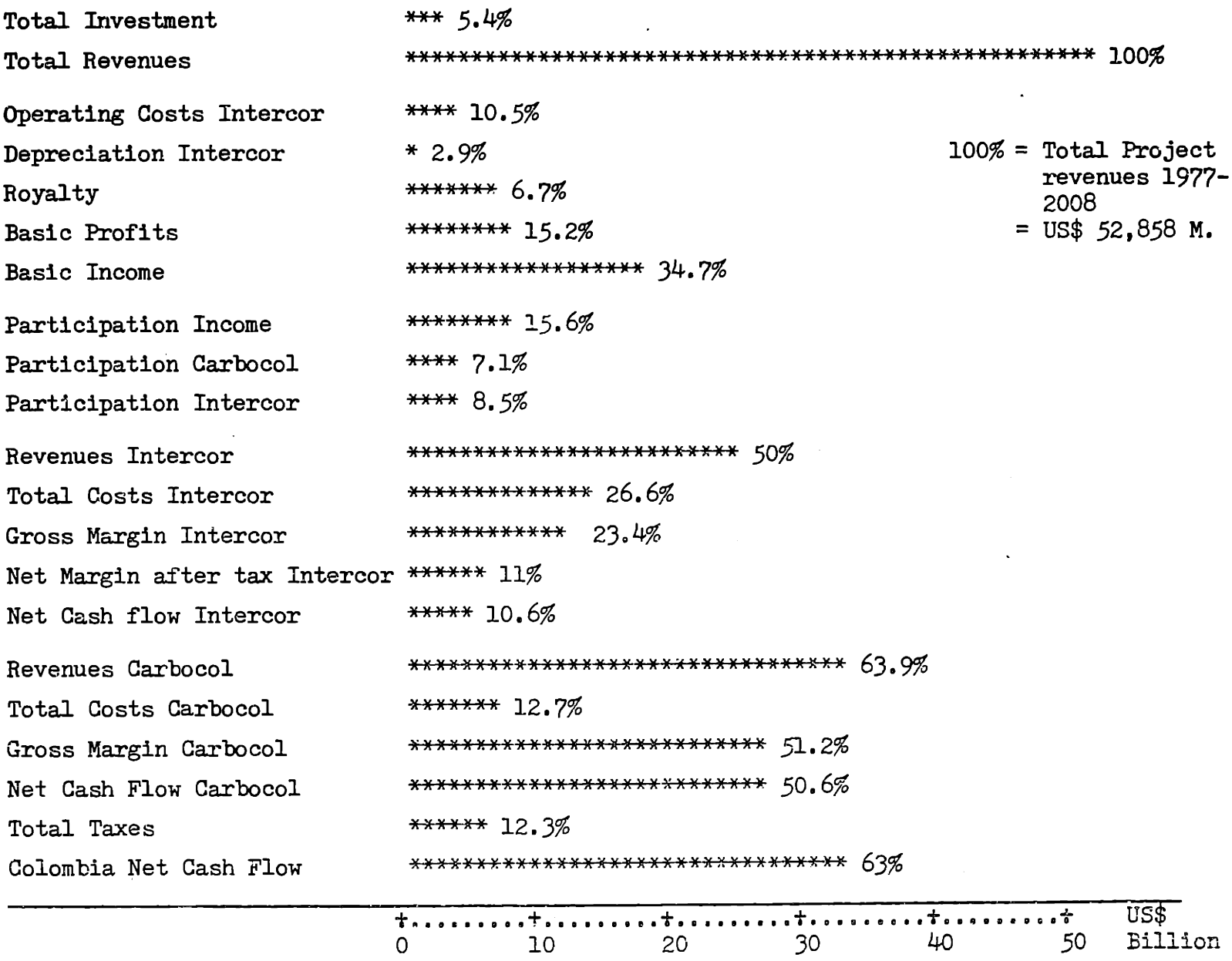
Exhibit IV-3 shows the results of the second model. The bar graph is helpful in comparing the partners' shares in the project. The percentages appearing beside each bar give the corresponding bar value as a percentage of total project revenues from sales of coal. The"bottom lines" are such that Intercor's net cash flow after taxes is 10.6% of total project revenues, and Colombia's net cash flow (which includes Carbocol's net cash flows and total taxes levied on Intercor) is 63% of total revenues.

Intercor's gross margin is 23.4%, while Carbocol's gross margin is 51% of total project revenues.

The differences in total costs between Carbocol and Intercor appear because Carbocol's costs include only operating costs and depreciation, while Intercor's costs include in addition royalties and Carbocol's participation income.

Basic income, which includes Intercor's operating costs, depreciation, royalties and basic profits, amounts to 34.7% of total project revenues.

Exhibit IV-3: BENEFIT AND COST SHARING: 1979 RESULTS



Intercor's basic profits (dependent, as we saw, on investment levels) are 15.2% of total project revenues, almost half of basic income. Royalties paid to Carbocol amount to 6.7% of total project revenues (again assuming Intercor's "transportation and handling fee" basis for calculation is accepted.) Royalties amount to 19% of basic income.

Regarding participation incomes, their total value for the entire life of the project is 15.6% of total project revenues. Carbocol's participation is 45.5% of total participation, while Intercor gets 54.5% of it. In terms of internal rates of return, Intercor shows an IRR of 15%, and Carbocol shows an IRR of 26% (without considering tax revenues.)

As a preliminary conclusion, both partners get a positive rate of return, and the 100% revenues accruing from the project are distributed roughly as follows:

TOTAL REVENUES	100%	(US$ 52 Billion)
Carbocol*	50.7%	of total revenues
Taxes**	12.3%	" " "
Intercor***	10.6%	" " "
Total Costs****	26.4%	" " "

*Includes sales revenues, royalties and participation.
**Includes basic income taxes and participation taxes.
***Includes basic profits plus participation income, less total taxes.
****Includes investments and total costs.

Longitudinal analysis

A closer look at year by year results provides new insight into the project's sharing characteristics. Figures IV-4 to IV-9 show the basic parameters plotted against time.

Figure IV-4 shows Intercor's revenues (which are one half of total project revenues) and its main components; basic income and participation

income. Clearly, basic income is equal to revenues until 1992 (and until 2000 on a cumulative basis). This happens because Intercor's basic profits are computed according to INVESTMENT LEVELS instead of revenues. The contract does not specify what should be done during that time, but Intercor's officials suggested that the following procedures would be used:

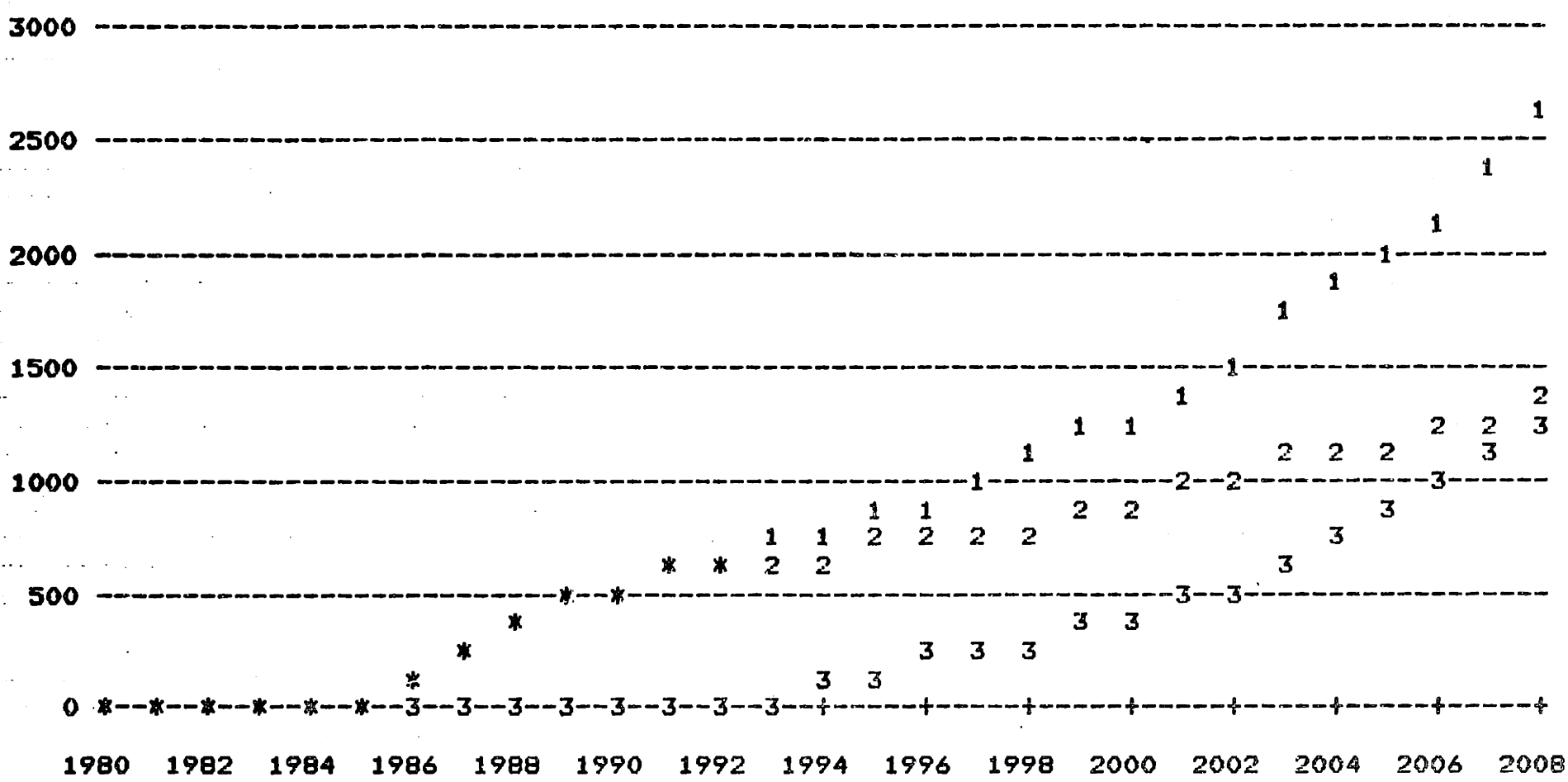
1. No basic profits accrue to Intercor until sales revenues cover Intercor's costs (operating costs, royalties and depreciation.)
2. Royalties are paid to Carbocol starting in 1986, and Intercor bears those as a cost, even if revenues do not cover them.
3. When revenues are greater than operating costs plus depreciation plus royalties, Intercor's basic income will be the difference, up to a maximum of 35% on Intercor's accumulated investment.
4. Participation income starts accruing when revenues are greater than basic income.

Figure IV-5 depicts in yearly detail the composition of basic income. Basic profits start accruing to Intercor in 1987, and royalties start accruing to Carbocol in the first year of production (1986).

Figure IV-6 shows the composition of participation income. As explained earlier, participation income is zero until 1992, and then increases steadily through the project life. Carbocol's participation is zero or very small until 1997. From 1997 to 2004, it grows faster than Intercor's, and after 2004 it becomes greater than Intercor's, growing very rapidly for the rest of the life of the project. Intercor's participation is accordingly zero until 1992, then greater than Carbocol's participation until 2004, and finally stable for the last few years of the project.

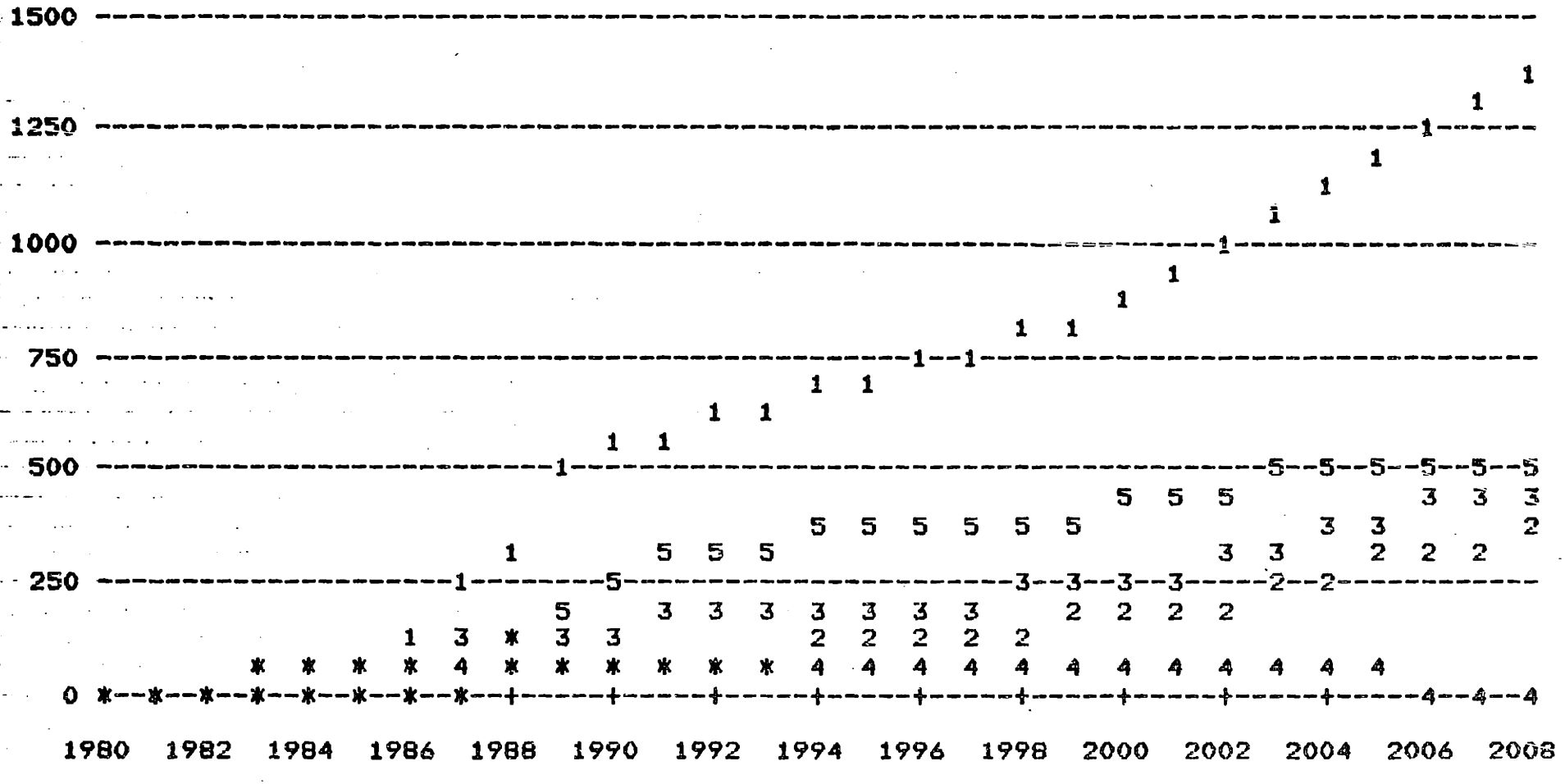
Figure IV-7 shows the partners' gross margins, which include for both all revenues and costs, and for Intercor, net margin after taxes. Carbocol's

FIGURE IV-4 1979 ESTIMATES (US$ Million)



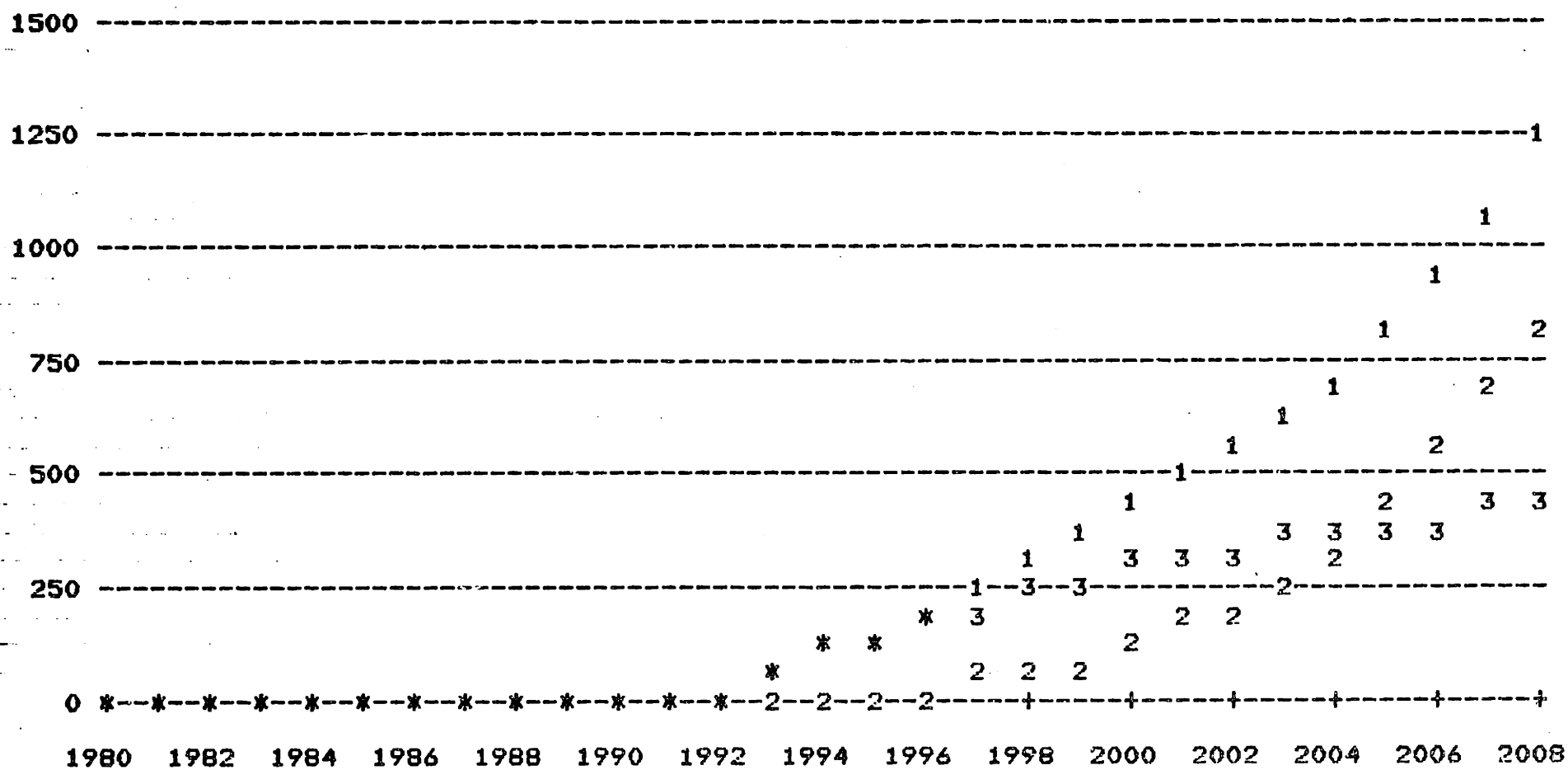
1 - REVENUES(50% of total project revenues)
2 - BASIC INCOME
3 - PARTICIPATION INCOME

FIGURE IV-5 1979 ESTIMATES (US$ Million)



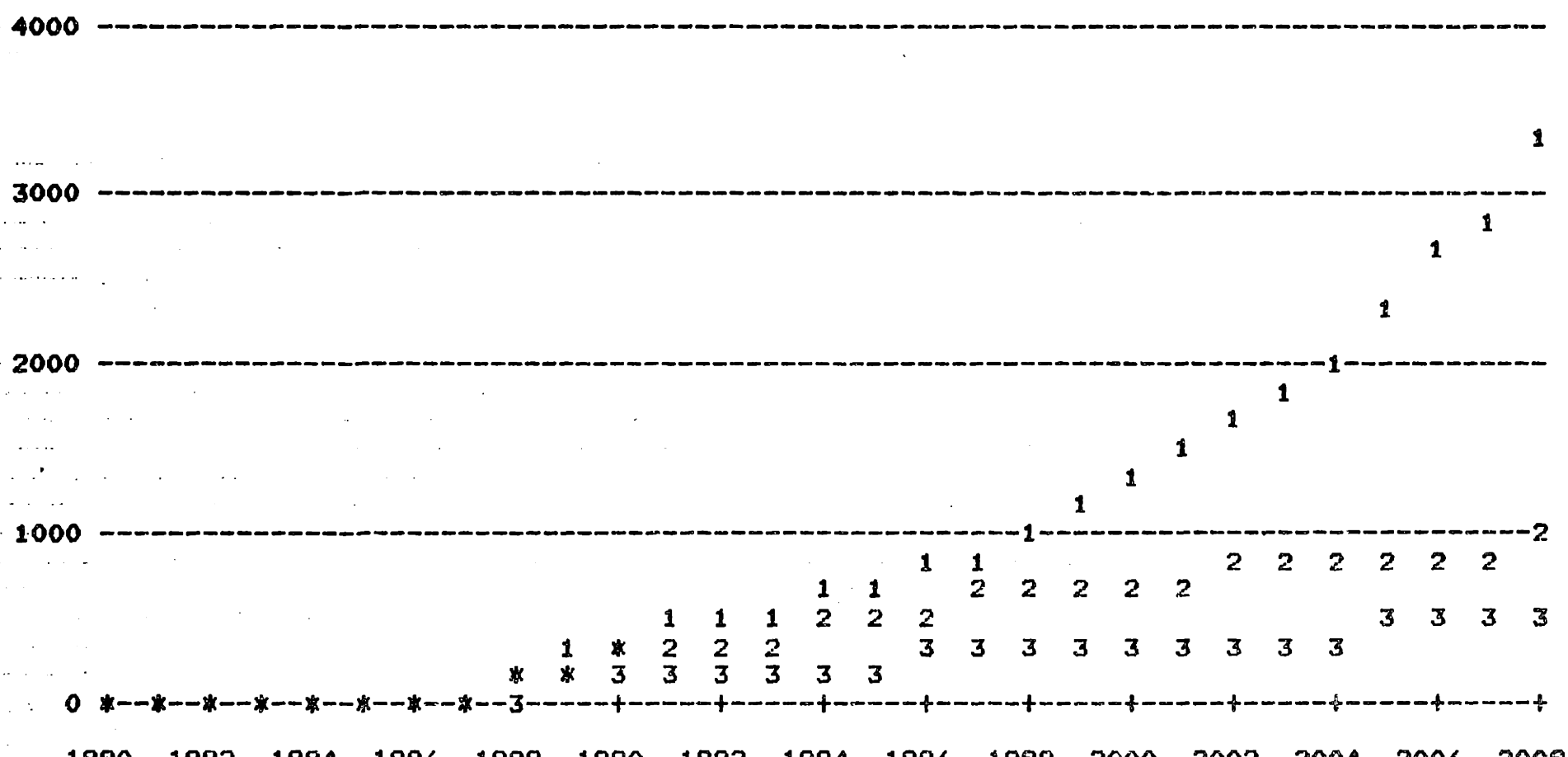
1 - BASIC INCOME
2 - ROYALTY
3 - OPERATING COSTS
4 - DEPRECIATION
5 - BASIC PROFITS

FIGURE IV-6 1979 ESTIMATES (US$ Million)



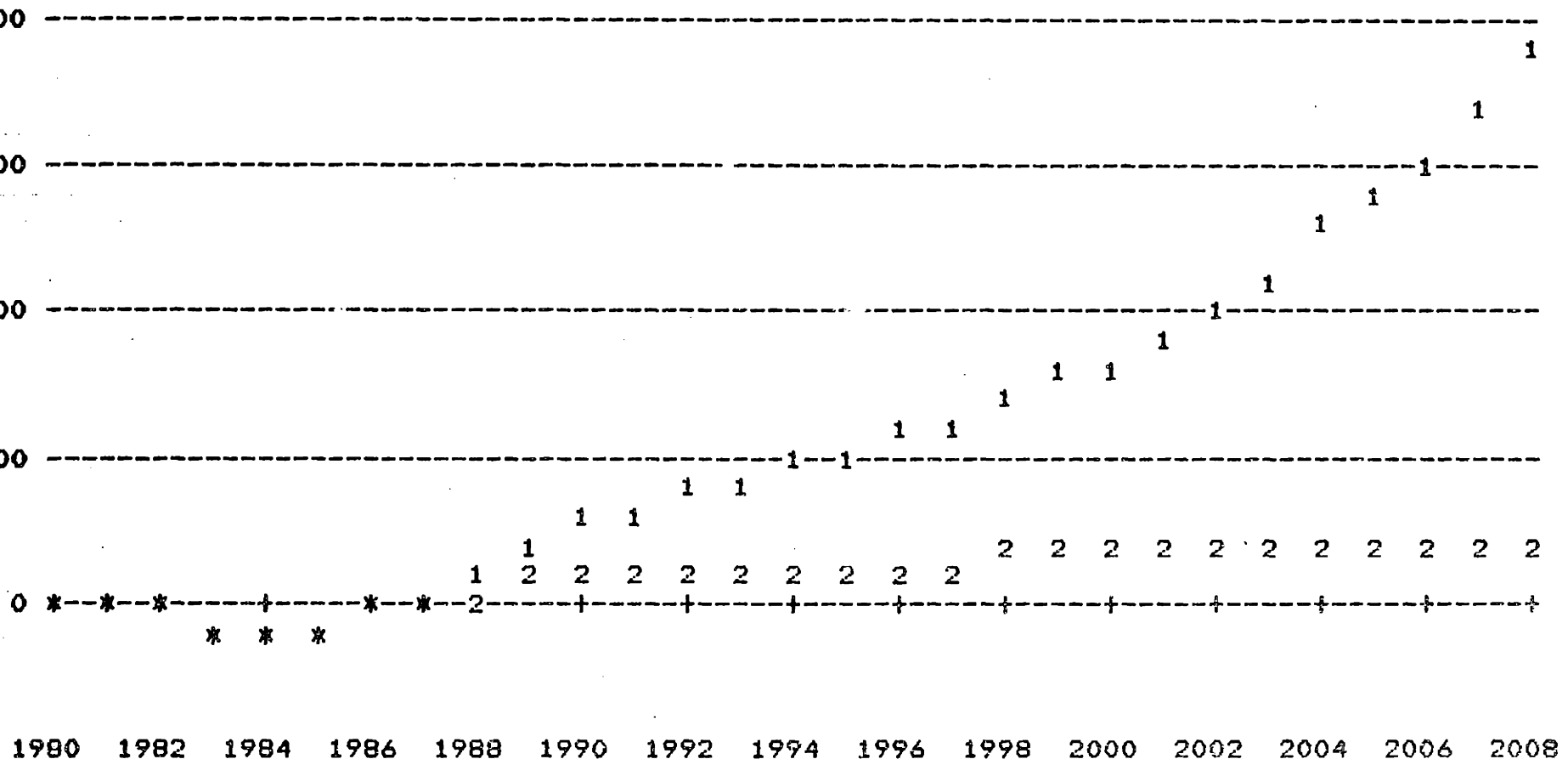
1 - PARTICIPATION INCOME
2 - PARTICIPATION CARBOCOL
3 - PARTICIPATION INTERCOR

FIGURE IV-7 1979 ESTIMATES (US$ Million)



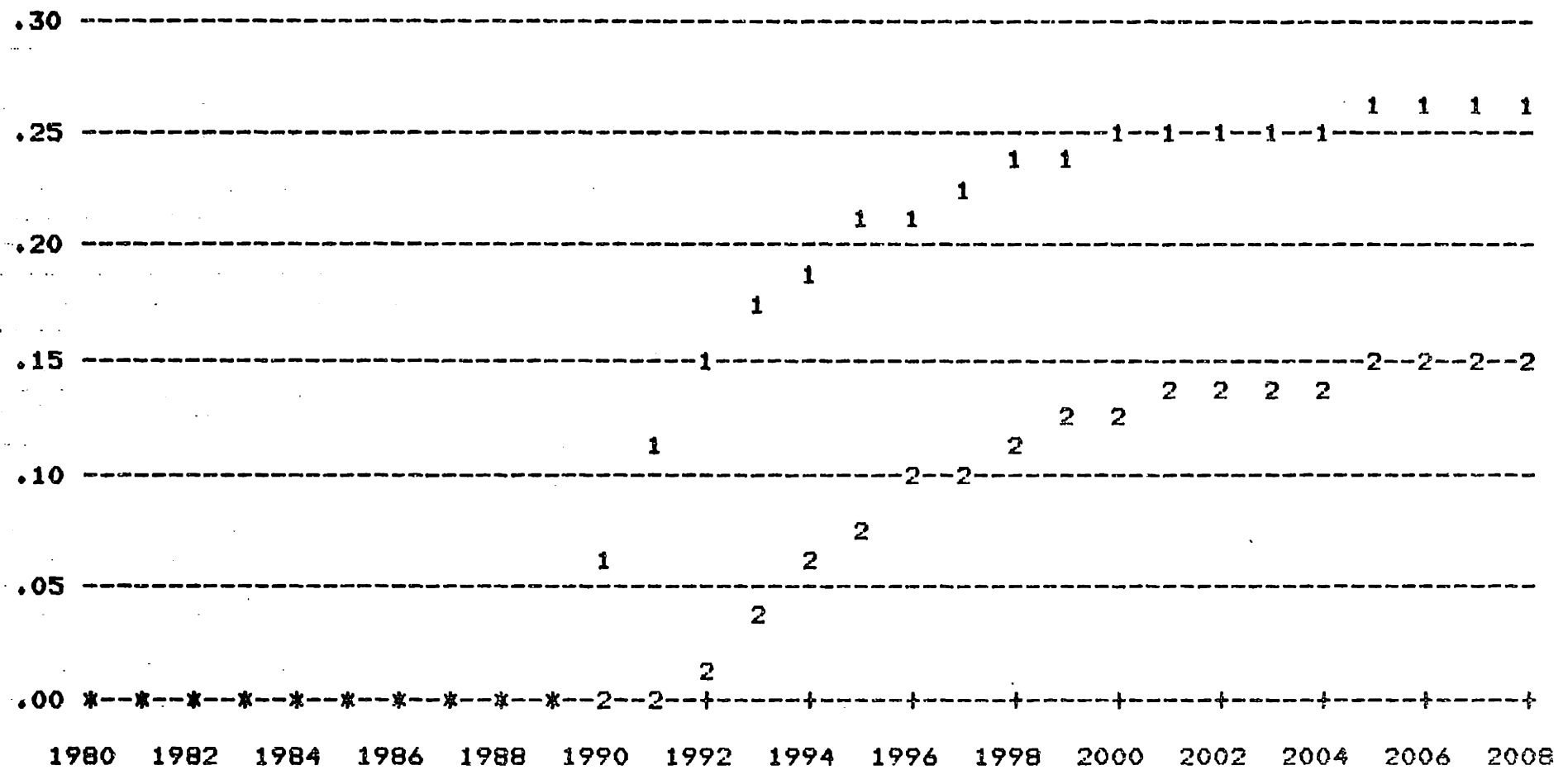
1 - GROSS MARGIN CARBOCOL
2 - GROSS MARGIN INTERCOR
3 - NET MARGIN AFTER TAX INTERCOR

FIGURE IV-8 1979 ESTIMATES (US$ Million)



1 - COLOMBIA NET CASH FLOW
2 - NET CASH FLOW INTERCOR

FIGURE IV-9 1979 ESTIMATES



1 - IRR CARBOCOL
2 - IRR INTERCOR

gross margin grows at a rate similar to Intercor's , and only after 1995 starts increasing at a much higher rate, while Intercor's gross margin grows relatively little, in steps.

Figures IV-8 and IV-9 show the partners' cash flows and internal rates of return. Both Colombia's and Intercor's cash flows become positive in 1988. Cumulative cash flows for the whole project are around US$ 5,5 billion for Intercor and US$ 33 billion for Colombia. Carbocol's IRR shows positive values starting in 1990, being 26% at the end of the project's life, while Intercor's IRR shows positive values starting in 1992, attaining 15% at the end of the project.

To complete this longitudinal analysis, project life was divided into two time periods: the first period covers a time span of 19 years, from 1977 to 1995, and the second period covers 13 years, from 1996 to the end of the project. This analysis was done when it was recognized that results vary significantly for the partners between the two time periods. Exhibit IV-4 and IV-5 present the accumulated values, for each of these two time periods, of the same variables used in Exhibit IV-3. As can be seen from these Exhibits, interesting patterns emerge: during the first period (1977 to 1995), basic income makes up 48% of total revenues for that period, and Intercor's participation amounts to 96% of total participation income until 1995. Basic profits for Intercor make up 21.7% of total revenues for the period.

Carbocol's revenues for that same period are 56% of total 1977-1995 revenues, and taxes are 13% of total revenues. Clearly, the shares of the project until 1995 accrue as follows: 14% to Intercor and 86% to Colombia. The rest (47%) includes investments and total costs.

During the second period, 1996 to 2008, this picture changes consider

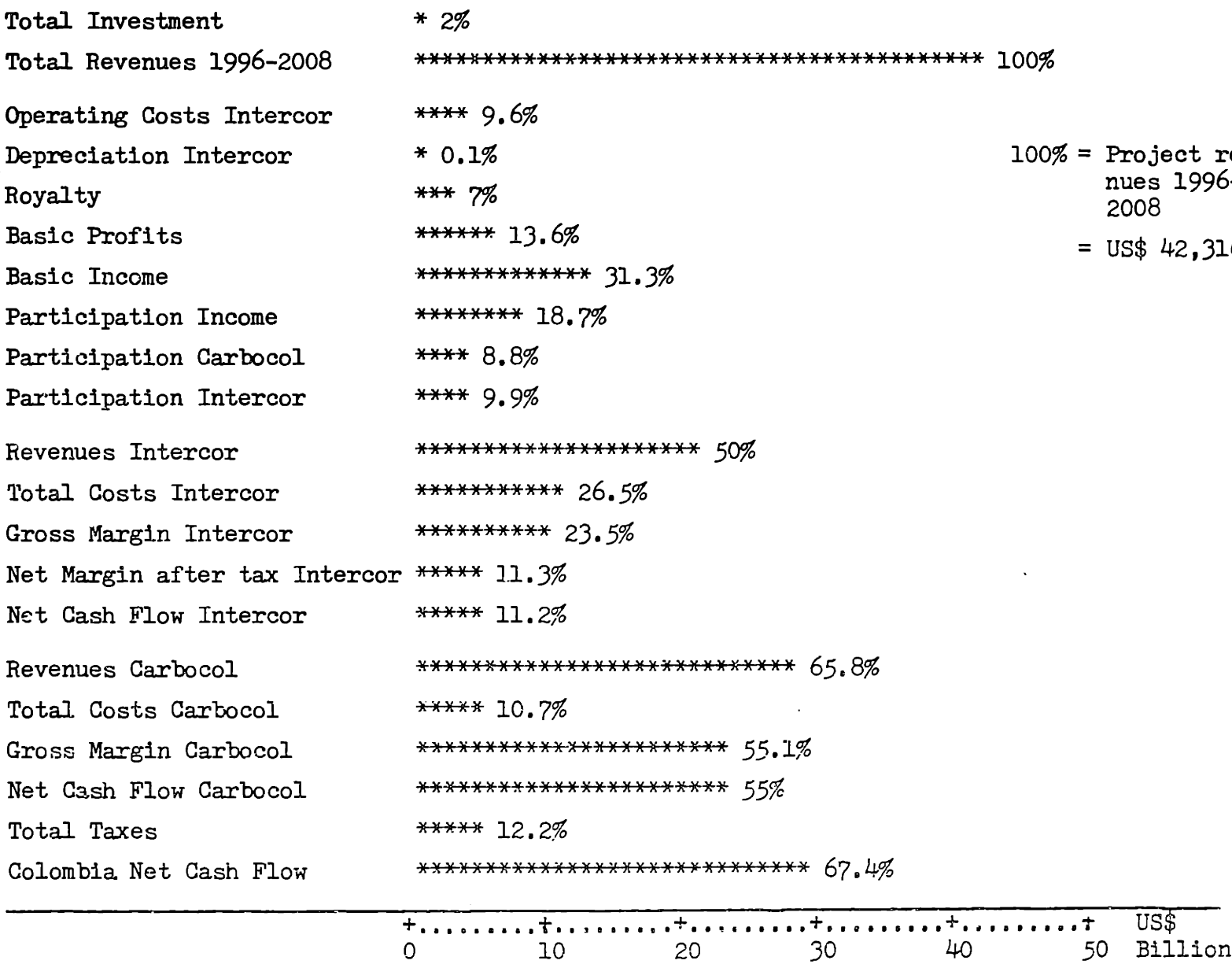
Exhibit IV-4: LONGITUDINAL ANALYSIS 1977-1995

Total Investment	**** 19%
Total Revenues 1977-1995	********** 100%
Operating Costs Intercor	*** 14%
Depreciation Intercor	** 6.8%
Royalty	* 5.9%
Basic Profits	***** 21.7%
Basic Income	********** 48.4%
Participation Income	* 3.2%
Participation Carbocol	0.1%
Participation Intercor	* 3.1%
Revenues Intercor	********** 50%
Total Costs Intercor	****** 26.8%
Gross Margin Intercor	**** 23.2%
Net Margin after tax Intercor	** 10.3%
Net Cash Flow Intercor	* 7.3%
Revenues Carbocol	********** 56%
Total Costs Carbocol	**** 20.7%
Gross Margin Carbocol	******** 35.3%
Net Cash Flow Carbocol	******* 32.4%
Total Taxes	*** 12.9%
Colombia Net Cash Flow	**********45.3%

100% = Project revenues 1977-1995
= US$ 10,544 M.

+.....+.....+.....+ US$
0 5 10 15 Billion

Exhibit IV-5: LONGITUDINAL ANALYSIS 1996-2008



ably. Here, basic income makes up 31.3% of the much larger total project revenues for the period (due to the steep growth in expected coal prices), and Intercor's participation is 10%, larger than Carbocol's 9% of total 1996-2008 revenues. Basic profits accruing to Intercor during the said period account for only 13.6% of total 1996-2008 revenues (as opposed to 21.7% during the first period.)

Carbocol's revenues, on the other hand, are much larger now, accounting for 65.8% of the much larger total 1996-2008 revenues (as opposed to 56% of a much smaller 1977-1995 revenue). Taxes are now 12.2% of total 1996 2008 revenues. Clearly, Carbocol gets most of its revenues during the late years of the project, while Intercor gets them in the early years, percentagewise, and depending upon coal price behavior. If we accept in addition the fact that sales revenues during the late years of the project are much more uncertain than sales revenues during the early years (especially in view of the projected "temporary role" of coal in the world's energy balance-coal, a bridge to the future-) then undoubtedly Carbocol's returns are more uncertain than Intercor's.

To compare again the two periods against total project results, the 100% total project revenues are distributed roughly as follows:

PERIOD 1 1977-1995	Carbocol*	32.4% of 1977-1995 revenues
	Taxes**	12.9% " " " "
	Intercor***	7.4% " " " "
	Total Costs****	47.3% " " " "
		100.% (20% of total project revenues)
PERIOD 2 1996-2008	Carbocol*	55.2% of 1996-2008 revenues
	Taxes**	12.2% " " " "
	Intercor***	11.3% " " " "
	Total Costs****	21.3%
		100.0% (80% of total project revenues)

TOTAL PROJECT 1977-2008	Carbocol*	50.7% of total project revenues
	Taxes**	12.3% " " " "
	Intercor***	10.6% " " " "
	Total Costs****	26.4% " " " "
		100.0%

*Carbocol's revenues include sales revenues, royalties and participation.

**Taxes include Basic Income Taxes and Participation taxes.

***Intercor's revenues include Basic Profits plus participation income less total taxes.

****Includes total investments and operating costs.

As a conclusion it can thus be said that Intercor's returns are in fact a certainty equivalent of whatever share of returns was assigned to it in the 1976 contract, while Carbocol's returns are in fact an uncertain equivalent of whatever share of returns was assigned to it in the contract. In other words, the contract flaws do not have to do with the absolute shares of the project's returns assigned to each partner, as was highly publicized by opponents to the deal in the late 1980 scandal, but with the relative levels of uncertainty that surround those shares. The Colombian share of project returns is an UNCERTAIN 86% while Intercor's share is a CERTAIN 14%. How uncertain Carbocol's returns are depends upon the variability of future international coal prices, which in turn will depend on the worldwide competition and production levels. If coal prices do grow at the expected rate, that 86% share is real. If coal prices decrease, Carbocol's 86% share will be greatly decreased.

On the other hand, Intercor's 14% share is certain insofar as the proposed investments are actually made, and only a small part of it is uncertain (the one that corresponds to participation income). If coal prices grow as expected, the full 14% share would be realized. If coal prices decrease and investment is maintained, the part of Intercor's share corre-

sponding to basic profits will still be realized, and that portion corresponding to participation will decrease. However, a 35% return on investment will be maintained during the whole life of the project, independently of coal prices. To provide more insight into the sensitivities of the partners' shares to variations in project results, a sensitivity analysis is now conducted.

Sensitivity analysis

Tables IV-2, IV-3 and IV-4 show the results of the sensitivity analysis performed with the help of the model. The sensitivities considered were: Total investment, Coal prices, mining costs, transportation costs, transportation fee and production level. Each of these will be discussed separately.

1. SENSITIVITY TO INVESTMENT LEVELS: (see Table IV-2)

This sensitivity is considered without any changes in production or costs: it can then be considered as a minimum sensitivity to investment. As could be expected from the study of the 1976 contract structure, Intercor results' sensitivity with respect to total investment is positive: the larger the investment is, the better will Intercor's results be. Let us see how this happens. If total investment increases, say, by 10%, Intercor's basic profits will also show an 8% increase. Intercor's participation income decreases by 7.2%, but this decrease is smaller in absolute value, than the increase in basic profits. As a result then, gross margin increases by 2.4% (or US$ 305 million for the whole project). Taxes will also increase, but nevertheless Intercor's net margin will still increase by 2.3% (or US$ 133 million). If attendant cost increases are considered, these sensitivities become much greater. Carbocol's

results are in the opposite direction: if total investment increases, Carbocol's results decline. For example, if investment increases by 10%, Carbocol's participation income decreases by 11.58% (the difference being taken up by basic profits). Carbocol's gross margin, then, decreases by 2.1% (or US$ 565 million). Although total taxes increase by 2.64%, Colombia's cash flow decreases by 1.22% (or US$ 406 million), while Intercor's net cash flow actually increases by 2.15%. Again, the attendant cost variations would in addition affect these sensitivities.

Clearly, the partners' interests regarding investment levels are at odds, and this may explain the Parsons-Brickenhof Consultants' worried comments when investment estimates were revised upwards by 138% by Intercor during the first months of 1980. If we also consider that Intercor has control over project investments (being the operator and having the backing of Exxon's mining expertise), and that the difference between investments and costs in coal mining is not altogether clear (many of the costs incurred being at the same time capital replacement investments e.g. machinery), then we can foresee the existence of a potential source of conflict between the partners regarding investment levels. Intercor's analysis presented with the July 1, 1980 declaration of commercial feasibility discreetly confirms this fact, so the project's managers must clearly be aware of this problem.

2. SENSITIVITY TO COAL PRICES (Table IV-2)

As could be asessed from the longitudinal analysis performed before, project results are very sensitive to changes in coal prices. Although sensitivity is in the same direction for both partners, Carbocol suffers much more than Intercor from unexpected price falls or lesser growth rates. This happens because all of Carbocol's revenues

are exposed to price variations, while only participation income for Intercor is totally exposed. As an example, let us consider a price level 15% lower than the expected (base case) level. Intercor's gross margin decreases by 12.3% (or US$ 1.5 billion), while Carbocol's gross margin decreases by 23.6% (or US$ 6.4 billion). This great difference in sensitivities arises because all of Carbocol's revenues are heavily exposed (sales revenues decrease by 15%, royalties by 16% and participation income by 49% !), while Intercor's participation income decreases only by 25% and Intercor's basic profits decrease by 4.5%.

Clearly also, if coal prices turn out to be higher than expected, then Carbocol will receive most of the benefits, as can be seen in Table IV-2. However, the source of potencial conflict is there, as Carbocol is actually bearing the risks of any price variations. It should also be mentioned at this point that the criticisms have already been leveled at the project with regard to transfer pricing: because each partner can sell its coal share "as it sees fit", there can be an incentive for Intercor to undersell its coal to other Exxon subsidiaries or affiliates. This is because Intercor's basic profits do not depend on coal prices. In addition, the less participation income, the more will Intercor receive of it (relatively). This incentive will be even greater if Carbocol enters into Exxon's sales contracts. Carbocol carries most of the burden of low prices, and it can then be expected to be extremely sensitive to this issue, especially due to its lack of marketing expertise which will force it to rely upon Intercor's sales organization for the first few years of the operation.

3. SENSITIVITY TO MINING AND TRANSPORTATION COSTS (Table IV-3)

Both partners' results are sensitive to operating costs in the same

direction. Again, however, Intercor's results are less sensitive than Carbocol's. Cost variations clearly affect participation for Carbocol, in addition to its share of total costs that shows up in its gross margin. Cost variations,on the other hand, do not affect Intercor's basic profits. They only affect its share of participation income. Cost sensitivities, moreover, add up to investment sensitivities, because more investment in this capital intensive project produces higher operating costs. If investment does not vary, a 15% increase in transportation costs will decrease Intercor's gross margin by 0.45% (US$ 55 million) and Carbocol's gross margin by 0.7% (US$ 189 million). Taxes will also decrease. A 15% mining cost increase will decrease Intercor's gross margin by 2.63% (US$ 325 million) and Carbocol's gross margin by 4.04% (US$ 1.09 billion). Again, absolute magnitudes are very large, so we can expect Carbocol's executives to be very sensitive to Operator reports of cost overrides, especially since it will be very difficult for Carbocol personnel to maintain a detailed control over all costs incurred by Intercor (the operator) and its subcontractors.

4. SENSITIVITY TO TRANSPORT FEES (Table IV-4)

Carbocol's royalties are clearly sensitive to transportation fees. A 50% decrease in fees will produce a 5.4% increase in royalties (as opponents to the project contend). But participation income for Carbocol would also decrease by 2%. The combined effect upon gross margin would be a 0.42% increase (or US$ 113 million). Intercor's results vary in the opposite direction, and the absolute effect will be comparable (working only through participation income). A 50% increase in fees will thus produce a 0.92% increase in Intercor's gross margin (or US$ 113 million). Although variations are small, the setting of a commonly

agreed on basis for transportation fees' calculations will thus be a delicate matter of negotiation between the partners, the more so because the issue has been widely publicized.

5. SENSITIVITY TO PRODUCTION LEVELS (Table IV-4)

An assumption was made here that investments need to be increased in proportion to production increases, should production be higher than the agreed on 15 million metric tons per year (design capacity). Operating cost is proportional to production, that is, no economies of scale are assumed for this analysis. Under these conditions, sensitivities work equally for both partners, and in the same direction, if PRODUCTION IS INCREASED. For example, if production is increased to 20 Mtons/year, Intercor's gross margin would increase by 33%, as would Carbocol's. Both Intercor's and Colombia's cash flows would also increase by 33%. Internal rates of return would not vary significantly for either partner.

If however, production is decreased (maintaining a 15 Mton capacity), then Carbocol's results are hit harder than Intercor's, because the initial investment (on which Intercor gets a 35% return) does not change. As a result, Carbocol has the incentive to maximize production for any given level of investment, but to minimize investment for any given level of desired capacity. For example, if production is decreased to 10 Mtons/year, Colombia's net cash flow would decrease by 38%, while Intercor's cash flow would decrease by 28%. A consequence of this is that Carbocol will not want to increase production unless revenues from coal sales were badly needed (for example in a foreign exchange crunch), and in that case it is unlikely that the government would be in a position to invest in increased capacity. On the other hand, Intercor will want to maximize capacity, and to increase investment as required to attend to Exxon's contracts.

TABLE IV-2

SENSITIVITY ANALYSIS
CARBOCOL & INTERCOR

Presented as % changes from the base case (current US$M)

Sensitivity to Total Investment without changes in production or costs	-20%	-10%	BASE US$M	10%	20%
Royalty Carbocol	ø	ø	3,578	ø	ø
Basic Profits (before tax) Intercor	-17.69	-8.64	8,049	8.19	15.97
Participation Carbocol	25.49	12.3	3,766	-11.58	-22.38
Participation (before tax) Intercor	15.20	7.6	4,499	- 7.28	-14.41
Gross Margin Intercor	-5.66	-2.69	12,374	2.47	4.71
Net Margin after tax Intercor	-5.39	-2.56	5,849	2.28	4.3
Net Cash Flow Intercor	-5.19	-2.45	5,571	2.15	4.05
Internal rate of return Intercor	11.07	5.15	15%	-4.68	-8.91
Gross Margin Carbocol*	4.50	2.19	27,063	-2.09	-4.07
Net Cash Flow Carbocol*	4.65	2.26	26,785	-2.16	-4.21
Internal rate of return Carbocol	10.85	5.04	26%	-4.44	-8.41
Total Taxes	-5.89	-2.81	6,525	2.64	5.07
Colombia Net Cash Flow*	2.58	1.26	33,310	-1.22	-2.39
Sensitivity to Coal Prices	**-30%**	**-15%**	**BASE US$M**	**15%**	**30%**
Royalty Carbocol	-33.23	-16.62	3,578	16.62	33.23
Basic Profits (before tax) Intercor	-12.34	-4.53	8,049	2.73	4.28
Participation Carbocol	-83.49	-49.06	3,766	58.08	122.3
Participation (before tax) Intercor	-56.44	-25.35	4,499	21.40	39.79
Gross Margin Intercor	-29.06	-12.30	12,374	9.55	17.25
Net Margin after tax Intercor	-30.07	-12.64	5,849	9.70	17.52
Net Cash Flow Intercor	-31.57	-13.27	5,571	10.19	18.39
Internal rate of return Intercor	-25.63	-11.02	15%	8.73	16.06
Gross Margin Carbocol*	-45.31	-23.67	27,063	24.93	50.71
Net Cash Flow Carbocol*	-45.78	-23.92	26,785	25.19	51.23
Internal rate of return Carbocol	-23.35	-10.82	26%	9.59	18.30
Total Taxes	-28.15	-12.00	6,525	9.42	17.01
Colombia Net Cash Flow*	-42.33	-21.58	33,310	22.10	44.53

*Does not include Carbocol's administrative costs.

Source: Intercor's 1979 preliminary economic projections provided by Roberto Forero. Calculations performed using IFPS (Prime 400).

TABLE IV-3

SENSITIVITY ANALYSIS
CARBOCOL & INTERCOR

Presented as % changes from thebase case (current US$M)

Sensitivity to Mining Costs	-30%	-15%	BASE US$M	15%	30%
Royalties Carbocol	ø	ø	3,578	ø	ø
Basic Profits (before tax) Intercor	2.15	1.16	8,049	-1.16	-2.56
Participation Carbocol	21.43	10.51	3,766	-10.20	-19.99
Participation Intercor	9.78	4.92	4,499	-5.01	-9.91
Gross Margin Intercor	4.96	2.54	12,374	-2.63	-5.39
Net Margin after tax Intercor	5.03	2.58	5,849	-2.74	-5.62
Net Cash Flow Intercor	5.29	2.71	5,571	-2.87	-5.90
Internal rate of return Intercor	5.34	2.71	15%	-2.96	-6.05
Gross Margin Carbocol*	8.23	4.08	27,063	-4.04	-8.03
Net Cash Flow Carbocol*	8.32	4.13	26,785	-4.08	-8.11
Internal rate of return Carbocol	4.38	2.20	26%	-2.23	-4.50
Total Taxes	4.89	2.50	6,525	-2.54	-5.19
Colombia Net Cash Flow*	7.65	3.81	33,310	-3.78	-7.54

Sensitivity to Transport Costs	-30%	-15%	BASE US$M	15%	30%
Royalties Carbocol	ø	ø	3,578	ø	ø
Basic Profits (before tax) Intercor	0.42	0.21	8,049	-0.21	-0.39
Participation Carbocol	3.61	1.80	3,766	-1.79	-3.56
Participation Intercor	1.71	0.85	4,499	-0.86	-1.75
Gross Margin Intercor	0.89	0.44	12,374	-0.45	-0.91
Net Margin after tax Intercor	0.90	0.45	5,849	-0.46	-0.94
Net Cash Flow Intercor	0.95	0.47	5,571	-0.48	-0.98
Internal rate of return Intercor	0.94	0.47	15%	-0.47	-1.00
Gross Margin Carbocol*	1.41	0.70	27,063	-0.70	-1.41
Net Cash Flow Carbocol*	1.42	0.71	26,785	-0.71	-1.42
Internal rate of return Carbocol	0.77	0.38	26%	-0.38	-0.77
Total Taxes	0.88	0.44	6,525	-0.44	-0.88
Colombia Net Cash Flow*	1.32	0.66	33,310	-0.66	-1.31

*Does not include Carbocol's administrative costs.
Source: Intercor's 1979 preliminary economic projections provided by Roberto Forero. Calculations performed with IFPS (Prime 400).

TABLE IV-4

SENSITIVITY ANALYSIS
CARBOCOL & INTERCOR

Presented as % changes from the base values (current US$M)

Sensitivity to Transportation fees	-100%	-50%	BASE US$M	50%	100%
Royalties Carbocol	10.78	5.39	3,578	-5.39	-10.78
Basic Profits (before tax) Intercor	-1.06	-0.54	8,049	0.61	1.19
Participation Carbocol	-4.08	-2.05	3,766	2.09	4.19
Participation Intercor	-2.95	-1.46	4,499	1.43	2.94
Gross Margin Intercor	-1.87	-0.93	12,374	0.92	1.84
Net Margin after tax Intercor	-2.03	-1.00	5,849	0.93	1.87
Net Cash Flow Intercor	-2.13	-1.05	5,571	0.98	1.96
Internal rate of return Intercor	-2.79	-1.37	15%	1.21	2.42
Gross Margin Carbocol*	0.86	0.42	27,063	-0.42	-0.84
Net Cash Flow Carbocol*	0.86	0.43	26,785	-0.43	-0.85
Internal rate of return Carbocol	1.75	0.87	26%	-0.87	-1.74
Total Taxes	-1.74	-0.87	6,525	0.91	1.82
Colombia Net Cash Flow	0.35	0.18	33,310	-0.16	-0.32

Sensitivity to Production**	5 MT/yr	10 MT/yr	BASE 15MT/yr	20 MT/yr	25 MT/yr
Royalties Carbocol	-74.22	-37.6	3,578	33.0	66.0
Basic Profits (before tax) Intercor	-38.00	-8.26	8,049	32.7	65.5
Participation Carbocol	-99.8	-66.8	3,766	32.9	65.8
Participation Intercor	-99.8	-56.7	4,499	32.7	65.4
Gross Margin Intercor	-61.14	-26.1	12,374	32.6	65.3
Net Margin after tax Intercor	-62.6	-26.6	5,849	32.5	65.0
Net Cash Flow Intercor	-65.71	-28.0	5,571	33.4	66.7
Internal rate of return Intercor	7.5%	12%	15%	15.1%	15.14%
Gross Margin Carbocol*	-75.4	-40.5	27,063	32.8	65.6
Net Cash Flow Carbocol*	-76.2	-40.9	26,785	33.0	66.0
Internal rate of return Carbocol	13.8%	21%	26%	26.2%	26.21%
Total Taxes	-60.0	-25.6	6,525	32.7	65.5
Colombia Net Cash Flow*	-73.0	-38.0	33,310	32.9	65.9

*Does not include Carbocol's administrative costs.
**Costs are proportional to production levels. Investments are increased in proportion to production when production is greater than 15M tons/yr
Source: Intercor's 1979 preliminary economic projections provided by Roberto Forero. Calculations performed with IFPS (Prime 400).

IV.4. Conclusions: revenue sharing, cost sharing, risk sharing

This project analysis has uncovered several important characteristics of El Cerrejón project. On the one hand, it has shown the economic desirability of the project per se. On the other hand, it has shown how important differences of opinion between the partners can appear. These differences come from two main aspects of the 1976 contract: its RISK sharing aspects as a function of time, and its RISK sharing aspects as a function of sensitivities of partner's returns to variations in basic variables like coal prices, investment levels, operating costs, and transportation fees. Investment levels are of utmost importance for their effects upon costs and total shares because they impact the partners in opposite directions and with great force. The 1980 events become clearer with the study of the project's economic characteristics. Although many of the criticisms directed at the project were exaggerated in importance and very little documented, some of them were true and will be questioned time and again in the future. The main reason is that several of these issues have become very visible, and will be monitored by the government and commented upon by the public.

Independently from the visibility issue, these project characteristics will have clear behavioral implications for the main participating actors. Potential sources of conflict exist, and the likelihood of their resolution by peaceful negotiation and bargaining depends on many factors, economic, political and cultural which will be explored in the following chapters.

CHAPTER V

AN EXPLANATION OF THE 1980 EVENTS

Chapter IV presented an analysis of the economic characteristics of the association type of joint-venture. Revenue sharing, cost sharing, and risk sharing characteristics were explored. Some of these, like sensitivities to prices, investment levels, costs and infrastructural fees, were found to be a potential cause for disagreement and tension between the partners, Carbocol and Intercor. Other characteristics, like the sharing of commercial risks, were found to be important elements in determining partners' perceptions of the project benefits over time.

According to our story in Chapter II, the 1980 events accelerated when different technical staffs started raising questions about the ECONOMICS of the project, following the seemingly very large increase in investments, costs, and prices estimated by Intercor in their July 1, 1980 declaration of commercial feasibility. During the two months of July and August, what initially were economic considerations regarding the proposal turned into global criticisms regarding the association type of contract, the government's objectives in implementing the project, and the choice of Exxon as the sole partner in the joint-venture. Following Carbocol's own declaration of commercial feasibility in September 1, 1980, it took only a few days for the resignation of Carbocol's economic staff to become a public matter with the proportions of a scandal, and the project was almost brought to a halt.

Were these events precipitated only by the criticisms levelled at the project on economic or legal grounds ? Did the inherent characteristics of the association contract have any bearing on those events ? What other ele-

ments were involved ? This is what we are now to discuss.

In the sections that follow, we propose that the following elements played a role in the 1980 events:

1. The inherent characteristics of the association contract did matter: Association, as we shall see, is a type of contract that is not regulated by Colombian law, so it is open to differences of interpretation which can only be resolved by negotiation. Also, the fact that Intercor is the operator made it difficult for Carbocol's small staff to get acquainted with Intercor's four years of exploration studies and feasibility analyses.
2. The organizational characteristics of the enterprises involved did matter: on Intercor's side, the organization was not really new, being composed mostly of already existing Exxon personnel, but most of the technical work was done outside the country, becoming as such totally alien to Carbocol's personnel. On Carbocol's side, top management did not act from the start to provide an adequate organization for the support of the required controlling and decision making activities. When the time came to act, surprise was great and panic developed.
3. Again on the side of Carbocol, a duality of objectives and of decision-making points became apparent, which alienated at a critical point Carbocol's technical staff and converted them into critics of top management itself. Furthermore, Intercor's relatively secretive approach did not help this state of affairs, alienating further the technical staff and consultants to Carbocol.
4. Finally, when the resignation episode became public, three other elements contributed to the September events: the nationalist press, traditional political opposition to President Turbay, and long-standing animosities

between the different actors in El Cerrejón project.

But, what about the project's economic characteristics? They did play a role, but it was only a very secondary one indeed, the economic implications of which will be discussed in detail in Chapter VI.

V.1. End of the exploration phase and preparation of the Design Basis Memorandum (DBM)

Although the project seemed to be developing quietly before Intercor's declaration of commercial feasibility, signs could be found that: a) the project was taking proportions that were not expected (or accounted for) in the 1976 contract, and b) Carbocol was starting to have trouble being both an equity partner and a controller, especially during the last year of the exploration phase.

During 1977 and 1978, while Intercor proceeded with the exploration of northern Cerrejón in La Guajira, Carbocol was basically a very small staff organization of geologists and engineers (11 professionals according to Roberto Forero)(1), who devoted most of their time to take over the exploration of El Cerrejón's central area that Peabody had not completed. Until 1978, there was little contact between Carbocol and Intercor, and no attempt was seemingly made by Carbocol's manager Hernán Garcés (a mining engineer himself) to prepare Carbocol for the implementation phase of the Carbocol-Exxon project. In the meantime, Intercor had finished (in November 1977) the "conceptual study" (orders of magnitude) and was starting to send to Carbocol technical data relating to the exploration and to the "Class V prefeasibility study" scheduled for completion in September 1978. Carbocol's staff, however, (being composed of exclusively technical people) was probably not very interested in the economic aspects of those reports, and they also may have been too busy in their own work anyway to pay much attention to this, as no comments were made public (to my knowledge) regarding those reports. Relations between the two enterprises were kept only at a high level (general management), and probably were restricted to technical exploration issues and programs.

In December 1978, however, Carbocol hired its first economist, Roberto Forero (who would later resign after the declaration of commercial feasibility). This fact is a clear sign that Hernán Garcés and his technicians were starting to receive economic information about Intercor's activities, and needed help to deal with it. Clearly, though, Carbocol did not take seriously its role as partner and overseer during those initial years, and although it may have done a great exploratory job, it found itself completely unprepared to evaluate the greatly expanded mission Intercor was starting to propose. As if to confirm these facts, in January 1979, and perhaps only due to the recent election of President Turbay, Hernán Garcés (the engineer) resigned and was replaced by Andrés Restrepo (an economist) as Carbocol's general manager. According to Roberto Forero:

> "With the new general manager, an effort is initiated to restructure Carbocol's administration. An administrative manager is hired, as is an engineering manager and two two more engineers (probably with the approaching infrastructural work in mind). A Canadian consulting firm is contracted to proceed with the exploration of central Cerrejón (an implication that all personnel was now needed for the Exxon deal)." (2)

Carbocol clearly started to become aware of Intercor's activities with the arrival of Andrés Restrepo.

In March 1979, a seminar on energy was held at Los Andes University, and Andrés Restrepo presented for the first time the greatly changed characteristics of the Cerrejón-Block B project, in his paper "Coal in Colombia."Two very interesting facts emerged from this document:

1. In a lengthy discussion on the legal aspects of coal mining in Colombia, Andrés Restrepo described the association contract as follows:

> "To explore and exploit minerals, when these activities are shared between private concerns and official entities, a special type of contract has been conceived, the characteristics of which are not defined in Colombian law but have been negotiated in each particular case. They have

> received the generic name of Association and Operation contracts....We can cite as examples of this sui generis legal procedure several contracts performed by Ecopetrol (the state oil enterprise) regarding hydrocarbons, first within the old concession of Mares, and later in other parts of the country. Regarding coal, the first contract of this class to be in use is the one performed by Carbocol and Intercor....The characteristics of these contracts can be modified in the future because, as noted above, there do not exist any strict norms that regulate them...." (3)

2) In the chapter that discussed the Cerrejón project and the contract between Carbocol and Intercor, the following things were mentioned:

> "According to periodical reports about the different aspects of this project, it can be estimated that the required investment for the exploitation of the northern Cerrejón is of the order of US$ 1,000 million, of which Carbocol will invest 50%....
> The volumes projected during the later phases of the project are of the order of 20 million tons of coal per year."

This was quite an uncertain position (or was it secretive ?) for Carbocol's general manager, at that stage of the game, it seems to me.

> "The investments mentioned above are those required by the project during the implementation phase. In other words, they represent the quantity of money required until the project's revenues start financing the rest of the project's investment requirements. They are expressed in constant 1978 dollars...." (3)

It can be deduced from this information that the contract itself is an exceptional form of legal document (the first one in the case of coal), and that total investments required were not known to Carbocol at the time with any degree of precision. This was, in part, because Exxon's final DBM study was still on the making, but clearly Andrés Restrepo should have been in possession of a complete (if not precise) prefeasibility study. Communication channels between Carbocol and Intercor seem, in the light of these facts, quite uneffective, at a time when the most difficult part of the feasibility study was being dealt with. It is also interesting to note the generally critical position taken by Andrés Restrepo regarding the

association contract in this paper.

In May, Carbocol contracted with the consulting firm Parsons-Brickenhof, the main objective being,in the words of Roberto Forero,"to provide consulting services in the planning and design phases of Zone B of Cerrejón."

During the following months, and while Intercor proceeded with the feasibility study (DBM), the consultants started reviewing all project information. Roberto Forero explains:

> "The consultants initiated an exhaustive revision of the contract and of existing information. Soon it was evident that the information was incomplete. Carbocol demanded it, but it started to come in a less than satisfactory way.... Mr. Andrés Restrepo followed very closely the consultants' work, and initiated a discussion with Intercor of some aspects of great importance for the country like the transportation and handling fees. The calculations that Intercor provided regarding those fees were considered too high and against the interests of the nation. Also, disagreements and doubts appeared regarding participation income calculations...." (4)

Clearly, after three years of extensive studies by Intercor, Carbocol's managers were having trouble comprehending the greatly expanded scope of the project and digesting the tremendous amount of information that Exxon had produced (but very little of which had been made available to Carbocol in earlier phases). Carbocol's staff members were also starting to realize the magnitude of the resources involved, and the importance of "details" like the fees when their effect is upon billions of dollars of revenues. This was, I think, one of the most important elements of the rising tensions.

In January 1981, I saw the complete DBM feasibility study which occupied eight volumes and was approximately three feet deep ! And this was a condensed (although detailed) synthesis of the thousand studies I also saw, stacked up seven feet high by three feet wide by 15 feet long in large cabinets in Intercor's Bogotá headquarters: studies produced by Intercor,

Exxon, Exxon engineering subsidiary, Intercol, Morrison-Knudsen (hired by Exxon as consultants for the Cerrejón project in 1978). Studies made in Colombia, in Coral Gables, in New York, by Carter Oil Company and many others, always in non conventional formats specific to Exxon's purposes and presentation criteria. The difficulty for a small and recently hired staff in Carbocol to start reviewing and to comprehend three years' worth of alien information must have been quite near to unsurmountable. It is also quite understandable if questions were raised about just everything in that DBM, given that what they were receiving at the time were short overall (non detailed) presentations of work done in the past by Intercor. Starting with the association contract itself, Carbocol's economists were bound to question EVERYTHING that came to their hands: that was their job, Andrés Restrepo seemed supportive of that attitude (as he demonstrated in his paper) and Intercor's overall reports helped create an atmosphere of "We've got to get to the heart of all these assumptions and calculations and estimates..." Parsons-Brickenhof also took an active role in setting the questioning pace in Carbocol by their insistence on receiving detailed information from Intercor.

This problem could have been solved, but Intercor did not help this state of affairs: their reports continued to be scarce (maybe with some reason; most of them were not even theirs !) and Intercor's own staff must have been quite busy preparing the DBM, not so much for Carbocol, but for Exxon's headquarters in New York ! Commented one of Intercor's officials: "We had enough trouble convincing our superiors in New York to go ahead with this project..." Intercor was supposed to have finished the exploration phase at the end of 1979, per the contract, but this phase was increased by one year, of which Intercor only needed six months, it turned

out. Clearly, the DBM (Design Basis Memorandum) was not ready yet. Perhaps the declaration of commercial feasibility was postponed because of exploration problems, but I do not think so: more plausible is that Intercor had not finished the feasibility study, authorization had not been released from New York's headquarters, and dealing with Carbocol and Parsons-Brickenhof was becoming more and more time consuming. In any case, Intercor had little time to take care of Carbocol's demands for information, and this fact was resented by Carbocol's staff and consultants.

The report estimating total required investments and costs for the project that I used in Chapter IV (and that was used by the critics of the project extensively in September 1980) was prepared toward the end of 1979. It may well have been sent to Carbocol, on demand, because of the consultants' pressure for information, before the completion of the DBM. In that sense, it was also the only working document Carbocol's economists had to evaluate the project prior to the July declaration. As noted above, this four page document set forth, on a year by year basis, the following project characteristics:

PAGE 1: Investment estimates (mining and transportation infrastructure), depreciation schedule.

PAGE 2: Price estimates, production levels, operating costs (mining and transportation) and legal depreciation.

PAGE 3: Royalty and Tax estimates, transportation fees, coal price at the minemouth.

PAGE 4: Determination of participation income, basic income, basic profits, participation income and Carbocol's participation (5)

This constitutes, again, the only document known publicly regarding the project's economic characteristics prior to the declaration of commercial feasibility. All the other documents, to my knowledge, were directly

related to the mine plan (physical characteristics). It was in these conditions then, that Carbocol's staff and consultants had to work on the evaluation of the project during the few short months before July 1980. It is understandable, in my view, that tensions rose quickly, and that those times were extremely stressful for all the participants. Intercor was finishing its DBM six months behind schedule (and one chapter of it was still missing in July), and Intercor's staff probably had little time to coach Carbocol's staff through the maze of reports in their evaluation work: no wonder the economists complained about the poor quality of information received from Intercor ! No wonder Parsons-Brickenhof stated that no progress reports had been sent by Intercor during the first six months of 1980 !

Carbocol, on the other hand, was at the time trying to interpret Intercor's non-standard, fragmentary reports and economic and technical estimates. It was also trying to track down the components of the global investment and cost estimates back to their source, which was probably not in Colombia (EL Cerrejón being the very first large scale coal mine in the country). It was trying, in other words, to replicate Exxon's three years worth of work, having only a few months and a handful of inexperienced people to do it. No wonder questions arose about every aspect of the project ! No wonder Carbocol's staff found this situation very frustrating and stressful! Clearly, no technology transfer was taking place at all between the two enterprises. No wonder that there does not exist a complete evaluation of the project, by Carbocol or Parsons-Brickenhof, prior to July 1980 !

The declaration of commercial feasibility of Intercor took place in the middle of this scramble for information, with the consultants still analizing particular aspects of the project, and Carbocol's staff still trying to find out what was the operating cost of a "170 short ton unitized

body coal truck" (a monster never seen before at those latitudes)...

The next couple of months were to be a complete nightmare for many people, I gather, and the contest for the billions was about to begin. The fact that Intercor was to be the operator was taken too lightly by everybody: that is, Carbocol did not take an active role (and Intercor did not pressure for it) until it was too late, and Exxon was already committed to a program of a specific size before Carbocol was even aware of what this program represented. The association contract made this possible, and the organizational characteristics of the enterprises involved reinforced this state of affairs. The declaration of commercial feasibility took Carbocol by surprise, and it was unprepared to do a timely and complete evaluation. Carbocol was far from committed to the project, it was only starting to question it !!!

V.2. Declaration of commercial feasibility: July-September 1980

To complicate still more the situation created by the events described above, in May 1980 Andrés Restrepo was appointed new Minister of Development, two months before the declaration of commercial feasibility. The effect of this must have been quite devastating. Roberto Forero comments: "Carbocol finds itself acephalous, only two months before Intercor sent in its declaration of commercial feasibility proposing the implementation of the largest project ever in the history of the country." (6) During the month of June, Carbocol's staff had to work without clear directives, until Fernando Copete was appointed, a couple of weeks before the declaration. Fernando Copete commented, in a January 1981 interview: "Before, I worked with the Banco de la República (Central Bank). On arrival to Carbocol, I had no knowledge whatsoever about coal or about Carbocol's organization. I was directly appointed by President Turbay." What Copete must have found in Carbocol, I think, was a complete "state of emergency", because of the expectations about a new management team, because of the tremendous stress created by the difficulties in making a technical and economic evaluation of the project, because of the lack of people to do it, and because of Intercor's final preparation of the declaration of commercial feasibility. Fernando Copete, on the other side, came in with clear instructions. In his words: "Politically (as a matter of policy) decisions seemed relatively easy to take, quite apart from the technical evaluations involved...The government has objectives that Exxon does not have, and these objectives are not quantifiable: Can you quantify the country's benefits coming from the creation of a pole of development in the Guajira?" Implied in this response was the idea that Carbocol's technicians should stick to their

role of technical consultants, and leave the policy decisions to the policy makers. This attitude, however, may have been disastrous for the morale of Carbocol's staff. If they were already alienated from the project itself by their difficulty in obtaining information and help from Intercor, this blow to their self respect surely completed the alienation process.

On July 3, 1980, Carbocol received Intercor's declaration of commercial feasibility. From one day to the next, Carbocol's staff found that proposed investments had been revised upwards by 138%, operating costs by 121% and expected coal prices by 65% (over the estimates they had been struggling with before). In addition, the three feet thick DBM was suddenly in their hands for review, and a decision needed to be reached within 60 days (according to the contract). Suddenly, the staggering magnitude (by all Colombian standards) of the project blew up in the face of Carbocol's staff. To perform the marathon evaluation of this DBM, 6 (six!) professionals from Carbocol were assigned to the task, with the help of the consultants. Roberto Forero describes his participation as follows: "During those two months, the whole team and the consultants tried to find an explanation for the surprising increases in investment and operating costs in the final study, relative to the information presented by Intercor itself in October 1979 (the same information used in Chapter IV), referring to the same project and in comparable dollar bases.... All the questions raised during that time were written in memoranda to (Carbocol's) top management... The contact between the technical staff and top management was minimal, and we never received instructions (from top management) on how to conduct negotiations with our foreign partner..." (7)

Given the project analysis in Chapter IV, they clearly had good reasons to worry. Sensitivities are such that a 138% increase in investment

levels decreases Carbocol's net cash flow by 22% while increasing Intercor's net cash flow by 11.4%. This small percentage difference meant US$ 4.6 billion in revenues lost for the country ! Moreover, the increases were never justified by Intercor, and may be with good reason too: remember that the estimates presented to Carbocol were gross estimates prepared before completion of the DBM. In that sense, they may have been very unprecise.

The increase in project costs also worried Carbocol's economists. Again, an increase of 121% in project costs, apart from being quite phenomenal by itself also affected Carbocol more than it affected Intercor. Carbocol's gross margin (in absolute terms) would decrease by 33% while Intercor's would decrease by 44%. The possibility of transfer pricing could also be raised, as there was no way of determining the "goodness" of those estimates. Yes, Intercor could overcharge Carbocol for its services and those of other organizations within Exxon ! What about exploration costs ? The original estimate was US$ 4 million (in 1976). Cost reports now presented by Intercor stated that US$ 54 million had been spent on exploration! Those suspicions were never confirmed. How could they be ? Moreover, Intercor's only answer was: "Exxon has been operating in Colombia for 60 years and it has a clean bill of health. Exxon has never been accused (much less indicted) for manipulations of this kind." Could Intercor "prove" that those amounts were actually spent? It was very difficult to prove, and Carbocol would have to accept those figures "with faith in their partner's honesty."

To complete the picture, Intercor had raised coal price estimates by 65%. Clearly, 1979 price estimates for the first few years of operation were too low: US$ 44 dollars per ton of coal FOB in 1986, when coal is

selling in Rotterdam for US$ 70 dollars per ton CIF,and FOB estimates for US coal in Virginia ports are US$ 66 per ton (Sept. 1, 1980). However, especially during the later years of the project, there was little ground to increase any price estimates (20 years from now). As we saw, most of Carbocol's revenues due to participation income would start accruing around year 2000. Yes, Carbocol's staff had reasons to worry about those estimates.

Carbocol's top management, however, saw things very differently. According to Fernando Copete, with respect to the government's objectives, the desirability of the project was already clear enough: "The political (and he stressed the word POLICY in English as opposed to POLITICS, as the former word does not exist in Spanish) benefits deriving from the project are immense for Colombia, even if non-quantifiable. These benefits appear as side effects (his word) of the project, quite apart from other (economic) more apparent benefits deriving from it." (8) It is clear, however, that this point of view was never communicated to the technical staff. In the mean time the DBM had to be reviewed not only by Carbocol, but also by the Ministry of Mines' and the National Planning Department's technical staffs, as a legal prerequisite to the final governmental decision. You can imagine their troubles, if Carbocol itself was simply lost in the maze of the DBM, in trying to analyze documents regarding a project they were seeing for the first time ! No wonder that memoranda started to pour out of those offices, questioning the same aspects, wondering how on earth could they accept on faith all this alien information ! Are any proofs needed for this statement ?

Ministry of Mines' Planning Department, August 4, Memo:

> "Obviously, a complete analysis of this document would required more evaluation time than was stipulated in the contract, however this office presents the following general

considerations... In analyzing the components of the required investments, it is important to observe that.... US$ 408 millions are earmarked for 'pre-operational expenses and other' , and this will have to be explained and disaggregated carefully to measure in its real magnitude its justification and proper approval..... This information received does not include the mining program (in a report sent to the Ministry of Mines !) an indispensable element to know and evaluate in a technical way the values of extraction, and the degree to which the deposits will be used efficiently desirable, given the characteristics, dimension and importance of the project, not only at regional level but also at national level, to evaluate the social and economic impacts of it, to quantify its significance and desirability for the national economy....It should be said, finally, that all these questions should be resolved before the project is declared commercially feasible..."

Parsons-Brickenhof Consultants, August 13, Memo:

"Last night John Callaghan and I made an estimate of participation revenues which would accrue to the government under the contract of association if the basis in the contract corresponding to full production of 5 million tonnes per year, contemplated when the contract was made, were logically adjusted to 15 million tonnes, the base case estimated by Intercor in their declaration. Intercor's estimate is based on costs investments , revenues and calculations which WE CANNOT verify....We did not have time to make a corresponding estimate for full production of 25 million, the full production proposed or expected by Intercor.
We are not in a position now to run the full financial model, to show the effects of the adjustment on after tax profits to the parties and income taxes...The effects are particularly meaningful in the early years.."

Parsons-Brickenhof Consultants, August 15 Progress report:

"The coverage of Intercor's activities is incomplete and uncertain because since January, Intercor has not furnished project progress reports to Carbocol....
The first DBM volume has not yet been furnished...One volume entitled financial/economic is neither. It contains cost estimate summaries and project schedules. The DBM contains only broad cost estimate summaries in a proprietary Exxon and unconventional format....
Of particular concern are huge increases in the estimated capital investment over those last reported.

> During the reporting period, on June 13, the consultant presented an interim report on economic analysis methods. Copies were furnished to Intercor, to the National Planning Office, and to the World Bank with a request for comment. The National Planning Office, while recognizing certain shortcomings of the method, considers that such an analysis is essential.... Intercor considers that such an analysis is not needed or inappropriate for a private industrial investment. The World Bank has not commented. Meanwhile, until additional data requested from Intercor have been received, the analyses proposed cannot be made. It is not expected that the consultant can make an "overall project analysis" of the project in a single report before Carbocol will make its Declaration of Commerciality before the end of August...."

One after the other, the technical staffs were in reality declining any responsibility for the coming decision. The project itself was never attacked directly, and for good reasons: How could anybody prove anything under those circumstances of complete lack of information ? What all staffs in the government were vying for was information, not vetoing the project ! On August 27, Carbocol's economists sent their famous memorandum to top management, and overriding clear lines of authority, to Fernando Copete's superior, the Minister of Mines and Energy.It was also sent informally to Minister of Development Andrés Restrepo Londoño, in a desperate attempt to get support from their previous manager. In the face of the total impossibility to evaluate the project the three economists presented a general criticism to the association contract form, and came back to the 1975-76 problem of evaluating the proposed contracts (by Intercor, Peabody, Arco-French etc.). They did have grounds for doing this, if we remember the issues raised by former Cerrecarbón's manager, Guillermo Gaviria and the facts explained by Andrés Restrepo regarding the legal basis of the association contract. In a sense, it was a compendium of all the informational doubts raised by all the organizations involved. The general impression one can get from the document is a plea to top management to hold off any decisions until they found a way of

really (technically) evaluate the proposal, and to get their questions answered. Some excerpts follow:

> "....We want to express our profound concern...about the perspective of Carbocol declaring in a few days the commercial feasibility of the project, and through it, confirming and accepting before Intercor that the implementation phase of the project has started, with the repercussions and consequences to which we shall refer later.. The information and explanations given by Intercor to the out of proportion increase of costs...prices...and basic production levels...have not been at all suitable, clear or convincing, and we have the impression that with the declaration of commercial feasibility, Carbocol would accept this state of affairs...Apart from the repercussions derived from the above considerations, the general evidence shown by Intercor in their declaration has negative implications for Carbocol and the country...."

As a conclusion to their report, the following things were mentioned:

> "The declaration drafted by Carbocol in response to Intercor's declaration does not condition the commercial feasibility to previous agreements between the partners over the different interpretations that exist today of the contract and of the fundamental elements that have an effect upon the distribution of benefits, such as participation income, royalties, transportation fees, etc... The danger exists then, that Intercor will interpret such declaration in the sense that Carbocol accepts the parameters upon which its declaration was based...
> The grave fact is that there is no guarantee that any of Carbocol's conditions or demands will be resolved to our satisfaction by an Executive Committee in the future, once Intercor acquires its interest in the operation and its right to ownership of coal...
> We believe Carbocol should not declare this project to be commercially feasible until the problems described in this memorandum are solved to Carbocol's satisfaction..."

Clearly, the economists' principal worries were related to: a) difficulties in interpreting the contract clauses, b) the realization that there was no way Carbocol's technical staff could effectively audit all of Intercor's estimates c) fear that Carbocol's acceptance would tie up its hands in the negotiations needed to settle differences of opinion d) a clear distrust of the capacity of the executive committe (i.e. Carbocol's general manager

himself) to negotiate all those facets with Intercor in a satisfactory way after the declaration e) finally, the specter of Intercor becoming owner of its share of coal before even the economic benefits of the project became known.

How would you have felt, if you were Carbocol's top manager, upon reading this document, and when you found out that it was also sent to your immediate superior (the Minister of Mines himself) ? I propose the following interpretation:

1. These guys were not able to evaluate the proposal at all.
2. They are questioning MY capacity to conduct successful negotiations with our foreign partner.
3. They are proposing to stop the project, not because they can prove it is bad for the country but because they have not understood how the contract works (after four years !).
4. They tell me all this only a few days before the answer is due, when basically nothing can be done about it, and the government is already committed to it.

Conflict between top management and staff was inevitable. However, the economists' criticisms were not disregarded, as we shall see. During this time, the government was not exactly waiting for the technical staff's evaluation. Fernando Copete was quite busy with the President and the Cabinet, evaluating the proposal at a very different level, the policy level. In his words: "The policy decision is a macro decision: to go ahead or not with the project. No economist had any doubts about the project's importance for the country: Commerciality, like all other important decisions, was a decision of the Cabinet itself. Carbocol cannot make this kind of decisions at a technical level only...". Asked about Carbocol's main objectives re-

garding the declaration of commercial feasibility, Mr. Copete was also categorical: "The basic objective today is to make this project a reality NOW. Get the most out of our negotiating position is important also, but the contract provides the channels to do this as the project develops... At that moment, policy decisions were clearly more important than technical considerations. We shall take care of technical objectives (transfer of technology) as time goes by. As long as the legal aspects of the contract are respected, the project is not to be stopped...."

On August 29, CONPES (the cabinet) approved the commercial feasibility. The President and his Ministers were later accused of "refusing to accept the advice of all the government's technical staffs, including the consultants." In reality this is not true. Carbocol's declaration letter clearly indicates that the CONPES understood the problems raised by the economists and prepared a legal document which took these criticisms into account. As the following excerpt shows, the declaration was a "Legal go ahead." On the basis of a) the estimated size of coal deposits b) the necessary infrastructure c) coal demand and supply perspectives and d) estimated investment levels of US$ 1,935 million (constant 1979), Carbocol:

> "....accepts the proposed commercial feasibility and convenes the initiation of the implementation phase in the terms established in the association contract....
> In the communication to which we made reference, a series of additional considerations are mentioned, some general, some specific, all of them relating to factors, circumstances, perspectives, decisions and measures that are expected to occur during the development of the project; some criteria and calculation mechanisms are also proposed that formed the basis for the proposed declaration. Carbocol understands the necessity to reach agreements, make decisions and further discussions regarding all those aspects and facts....in strict accordance to the contract and through the organisms of direction and execution that it provides for the phase following the declaration of commercial feasibility....Consequently, this our answer only implies, as it is obvious, the acceptance of commerciality and the ratification of the obligations that

we acquire in conformity with the clauses of the contract." (9)

In other words, the real meaning of this letter was: we want to go ahead with the contract, but reserve the right to question just about every thing in your declaration of commercial fesibility...

This may not have seemed meaningful to Carbocol's staff, but it is definitive for any lawyer around. In this way, then, the technical impasse reached was surmounted (legally) and the complete evaluation of the project was postponed. The contract itself (clause 9.3.f) stipulated that the final preparation of the complete feasibility analysis was to be performed AFTER the declaration of commercial feasibility. As a consequence, the DBM was to be considered only as a preliminary feasibility analysis. This fact escaped, perhaps, Carbocol's staff attention, who genuinely thought of September 1, as the ultimate deadline for project acceptation.

Nevertheless, Carbocol's entire economic and financial departments resigned on September 4 "in protest against the declaration of commercial feasibility."

As a conclusion, it can be said that Carbocol's economists must be given credit for raising important considerations concerning future decisions (committment to specific levels of investment, production, fees). However, they tried to force the government to actually make those decisions before giving a green light to the project implementation. The government cannot be accused of "disregarding their staffs' advice" but Carbocol's top management clearly did not make an effort to solve the internal crisis to the staff's satisfaction, therefore losing good human and technical capabilities (which as we saw, are already scarce in Carbocol).

The consequences of these events will be exposed in the next chapter.

V.3. The congressional debates

Several elements were important in precipitating the congressional debates which took place in September and October 1980. The resignation of Carbocol's economists was only the detonator for the series of events that succeeded each other after the September 1 declaration of commercial feasibility. We shall discuss three basic ingredients: press intervention, "traditional" opposition to President Turbay's economic policies and political drive against association contracts in general, as opposed to management or operating contracts.

Press intervention

Scarcely four days after the economists' resignation, and three days after the official announcement by President Turbay of the commerciality, Clemente Forero Pineda (an economic editor for El Espectador daily newspaper -the second in size in the country) published a long article entitled "La fé de carboneros" (Blind faith). In this article and those that followed, Clemente Forero did the following, in addition to presenting all the criticisms raised by Roberto Forero and his fellow economists:

1. He brought back into the scene the 1975-76 events, and in particular Guillermo Gaviria's (former manager of Cerrecarbón) opinions about the nature and undesirability of association contracts,
2. He directly attacked Andrés Restrepo (former head of Carbocol and now Minister of Development), by implying that, if while in Carbocol he had been critical of association contracts, he was now part of the high level Cabinet which authorized the project against his own previous opinions.
3. Through Gaviria's declarations, he directly attacked Jaime García Parra

(Minister of Mines at the time the contract was signed, and presently Minister of Treasury) as "having fired Gaviria to be able to sign the contract with Intercor."

4. He directly attacked the government's general policy approach in the area of natural resources, and in particular of coal, and made the present government responsible for accepting "undesirable association contracts with foreign companies."
5. He involved the professional and civic associations of the Guajira region in the story by revealing the existence of that pressure group against the "negative character of the association with Intercor for the country's interests."

This announcement constituted essentially a rallying voice, for all critics of one or the other aspect of the government's economic policies, technicians, politicians and civic organizations. It also put on the line the very respectability of the high government officials most closely involved with the project since its inception, in a way that could not escape public comment. As could be expected, the announcement precipitated a storm of press releases and public comments.

Political opposition to the government natural resources policies

Carlos Lleras Restrepo (former President of the Republic in 1969, when Peabody coal started conversations with Cerrecarbón, and who had been defeated in later elections by the present government fractions) called for "public scrutiny of the Cerrejón project" (10) in an article published through his own magazine Nueva Frontera. In this article, Carlos Lleras said:

"There were times when large and small projects related

> to the country's natural resources and their exploitation were object of detailed public scrutiny... Today, the large public contracts of the government arise little interest on the part of the public at large, and this is precisely what has happened with the exploration and development of area B of El Cerrejón's coal deposits.Strange indifference, indeed because this is by far the most important negotiation in the Republic's history..."

He also gave Luis Carlos Galán, a brilliant and fast rising politician who was supportive of the technocratic movement within the central government, the opportunity to publish a long series of articles in which a) he presented the whole story of El Cerrejón and Exxon's contract since its inception b) he described in detail the contract, although he did not attempt to make a detailed evaluation of the project itself c) he detailed the criticisms made by all of government's technical staff, obviously with much help from Roberto Forero (they used exactly the same supporting documents), in particular:

1. Excessive complexity of the association contract.
2. Intercor's right to ownership of coal once the declaration of commercial feasibility was accepted.
3. Unjustified increases in investment levels and estimated costs.
4. Unnecessary increase in production levels with the associated depletion of Colombian reserves.
5. Government responsibility for not renegotiating too low royalty levels and regressive participation incomes.
6. Unexplainable precipitation in declaring the project feasible.
7. Illegal actions of government in assigning responsibility and ownership of the coal fields.

d) he attacked Minister Jaime García Parra for his unrestricted support of the contract and of Exxon's proposals e) he intervened in the defense of the technical advisors to the government and criticized the latter for its failure to take into account their technical reports in decision making f) he finally took sides with Guillermo Gaviria (former manager of Cerrecarbón and presently a Senator in Congress) regarding the issue of

association versus management contracts. Although Luis Carlos Galán was never involved directly in El Cerrejón's dealings, his interest in energy and natural resources may come from the fact that his father, Mario Galán Gómez, was for a whole decade (until the 1974 appointment of Mr. Villareal) President of Ecopetrol. Mario Galán is considered to have been the creator of the powerful State Oil Organization. In any case, Luis Carlos Galán has maintained a strongly nationalist stance against the government's energy and natural resource policies. One person interviewed said in January 1981, taking about Luis Carlos Galán: "He opposes Turbay's policies on principle: he sees him as a red banner."

Coordination of the political opposition

Luis Carlos Galán rallied sympathetic senators in Congress (being a Senator himself) and, with the help of Guillermo Gaviria and Enrique Pardo Parra (former Minister of Mines and supporter of the drive against "excessive profits" of oil companies operating in Colombia), promoted the public congressional hearings to be held on October 8, with the participation of Jaime García Parra, Humberto Avila Mora and Andrés Restrepo Londoño.

Guillermo Gaviria, as was noted before, was a staunch enemy of association contracts and did not sympathize with Exxon and Jaime García Parra, as a result of the 1975-76 events. Moreover, he was essentially driven to take again the banner against association contracts because of Clemente Forero's declarations in the press.

Results of the Congressional Debates

The debate was terminated with mixed results, and for good reasons: 1. The whole "public scrutiny and evaluation" proposed by Carlos Lleras had

quickly transformed itself into a display of political forces for and against the government.

2. Two opposing camps were clearly defined from the start. On one side, the government in power, with tacit support of the private sector and the conservative press. On the other side, "traditional" opposition to the government, with the open support of governmental technocracies and former participants in the Cerrejón projects. Finally, as a not so silent observer, the generally nationalist oriented, and naturally suspicious of the multinationals, public opinion.
3. In all this process, no attempt was seriously made to EVALUATE the project itself and to find out the reasonableness of the basic criticisms made to the contract.

Eduardo Gaitán Durán, in an article published in Estrategia (November,1980) gave an interesting description of the process:

> "This debate, which was convenient for the country per se, has been very important for the future approach to national policy problems, because it proved that consensus and detailed information are absolutely necessary for an adequate conduct of projects of such magnitude as El Cerrejón. However, the debate was superficial because from the start, national and international political actions surfaced, as did the frustration of some of the actors of this already very long process. As a secondary factor, there was the desire, on the part of the general public, to learn something about this enormous but unknown project. The fundamental orientation of this debate was political... From a national point of view, enmities and personal jealousies influenced the press, and with them, the controversy itself was obscured.
> Also with the anthropophagy characteristic of the Colombian ruling class, many attacks were directed towards the functionaries who participated in the initial decisions on the project, for the sole reason that this gave them prestige and a reputation of capacity and efficiency.
> The other point of view, is that of international politics. We cannot ignore that the multinational companies possess an immense capacity for action which can be mistaken for the political interests of capitalist countries...."

Conclusions

Several important lessons can be derived from the study of the 1980 events: on one hand, Exxon's business culture and operating mode alienated government professionals who wanted a piece of the action. On the other hand, Carbocol's organization was not adapted in time for the activities that needed to be performed at the end of the exploration phase, and thus brought about the July-August confusion and frustration regarding the commercial feasibility declaration. Also, the "alliance" between Exxon, Ecopetrol and high ranking government officials alienated other political constituencies who wanted a piece of the pie, in the form of CONTROL over the project's future. This caused the cristallization of political opposition to the project. Finally, those two forces combined and made use of the public's widespread nationalist sentiments to attack the project, and through it, the political power holders. Wide support for this project was lacking at a critical point, and the process could have been stopped dead, had it not been for the decisive intervention of the President himself.

In the next Chapter, we shall study the economic effects of Intercor's July 1980 proposal on the distribution of project benefits and costs. The September governmental decision to go ahead with the implementation will then be reviewed in its economic consequences.

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(2) Ibid.

(3) Andrés Restrepo Londoño, "El carbón en Colombia", Carbocol, Bogotá 1979 (paper presented to: Seminario de Energía, Universidad de Los Andes, Bogotá, Marzo 1979.

(4) Cecilia Velez de Sierra, Liliana Jaramillo Velosa, Roberto Forero Baez, Ibid.

(5) Intercor: "Proyecciones económicas preliminares, proyecto Cerrejón, Area E", elaborated toward the end of 1979.

(6) C. Velez, L. Jaramillo, R. Forero, Ibid.

(7) C. Velez, L. Jaramillo, R. Forero, Ibid.

(8) January 1981 interview, Carbocol, Bogotá: Fernando Copete Saldarriaga.

(9) Fernando Copete S.: Carta a Enrique Andrade, Presidente de Intercor, respondiendo a la declaración de comercialidad, Septiembre 1, 1980.

(10) El Espectador: "Escrutinio público sobre El Cerrejón pide Lleras", Septiembre 16, 1980.

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CHAPTER VI

ECONOMIC ANALYSIS OF THE 1980 DECLARATION OF COMMERCIAL FEASIBILITY

We now turn to the problems which were simply overlooked during the September-October debates: Are the critics to the project reasonable in their charges ? How did the partners' shares change with the declaration of commercial feasibility ? What is the correct interpretation of the July 1980 proposal ? To do this, let us review the most important criticisms in the light of the project's economic characteristics explored in chapter IV. Using the sensitivity analysis performed there, we can see the effects on the partners' shares, of the changes proposed in Intercor's declaration of commercial feasibility. We shall use now the new estimates presented by Intercor on July 1, 1980. We should remember, however, that those "new" estimates are not final for two reasons: First, the government made it clear in its answer that it reserved the right to question any of those estimates or calculations. Second, the final project feasibility analysis is still on the making, and final figures will be budgeted after the prime contractor (Morrison-Knudsen was chosen in February 1981) presents its proposal. Intercor's July 1980 proposal basically boosted estimated investments by 138%, operating costs by 121% and price estimates by 65% with respect to the 1979 estimates used in chapter IV.

Table VI-1 Investment, cost and price increases (US$ million)

	1979 estimates	1980 estimates	Percentage change
Total investments	2,859	6,817	138.4 %
Total revenues	52,858	87,566	65.6 %
Operating costs	11,127	24,622	121.3 %

Sources: 1979, Intercor's preliminary economic projections provided by Roberto Forero.

1980: Intercor's declaration of commercial feasibility, July 1, 1980

VI-1 Intercor's 1980 proposal.

In chapter IV, project sensitivities to the different basic parameters (prices, costs, investments, fees and production) were explored. All these parameters are interrelated, and in that sense move together: For example, to increase production, both investment and cost estimates must be revised upwards. If investment levels increase, depreciation and infrastructural fees also increase. In all these cases, participations and royalties change and, therefore, bottom line results change for both partners in the project. During this discussion, we shall vary one parameter after the other to see what the cumulative effects are on the project's bottom lines. We shall proceed as follows:

1) The effects of a 138% increase in investment levels will be explored.
2) On top of these effects, the additional effects of a 121% increase in operating costs will be explored. These two aspects of the project will be accepted or renegotiated by the partners, but they have to be committed to at some point.
3) The third factor, coal prices, neither partner can control (if we rule out the possibility of transfer pricing or monopoly power). So only price estimates can be agreed upon for purposes of planning and analysis. The best approach is then to provide an analysis of partners' shares' sensitivities to coal prices. Two extremes are considered: On one end, a revised price estimate 65% higher than the 1979 estimate was used in July 1980. On the other end, a pessimistic estimate according to which prices would stay at their 1979 estimated levels was considered. The possibility of lower price levels is considered to be remote, especially during the first decade of the project's operation, but it cannot be ruled out with 100% confidence in later years, as world coal production is expected to increa

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se considerably toward the end of this century, with the concomitant competitive drive in international markets. In this respect, the 1980 WOCOL study reports:

> "In contrast to world oil supply, which is becoming increasingly constrained, the coal supply has wide scope for expansion. Given sufficient lead time, it should be possible to increase supply to meet incremental demand at competitive prices. Moreover, the growing number of international coal suppliers, each with different interests, from all the world's regions including OECD, CPE and the developing countries, makes the formation of an international coal cartel unlikely."

Investments increased by 138%

Table VI-2 shows the effects, on several important project indicators, of the increases proposed by Intercor. The numbers in column (2) present the percentage increases (or decreases) of those indicators over their 1979 values due to a 138% increase in investment levels. As was predicted in chapter IV, a change of this nature works against the country's interests: Carbocol's gross margin decreases by 21%, and, although total taxes increase, the country's net cash flow in the project decreases by 13.8% (or approximately US$ 4.5 billion). By contrast, Intercor's results improve. Its net margin after taxes increases by 14% and its net cash flow increases by 11.4% (approximately US$ 639 million). The question is: Is this increase in investments justifiable ? This is what Carbocol's economists could not find out, and an answer would necessitate a study so detailed that it is out of the scope of the present report. Normally, the only feasible way to ensure the reasonableness of such estimates is to do a bidding competition, and choose the lowest bid (subject to certain conditions). But this is impossible to do in this case, because the only bidder is also half owner in the project, and its profits depend precisely on the level of those investments ! Figures VI-1 to VI-6 show new project results for a 138% increase in investments.

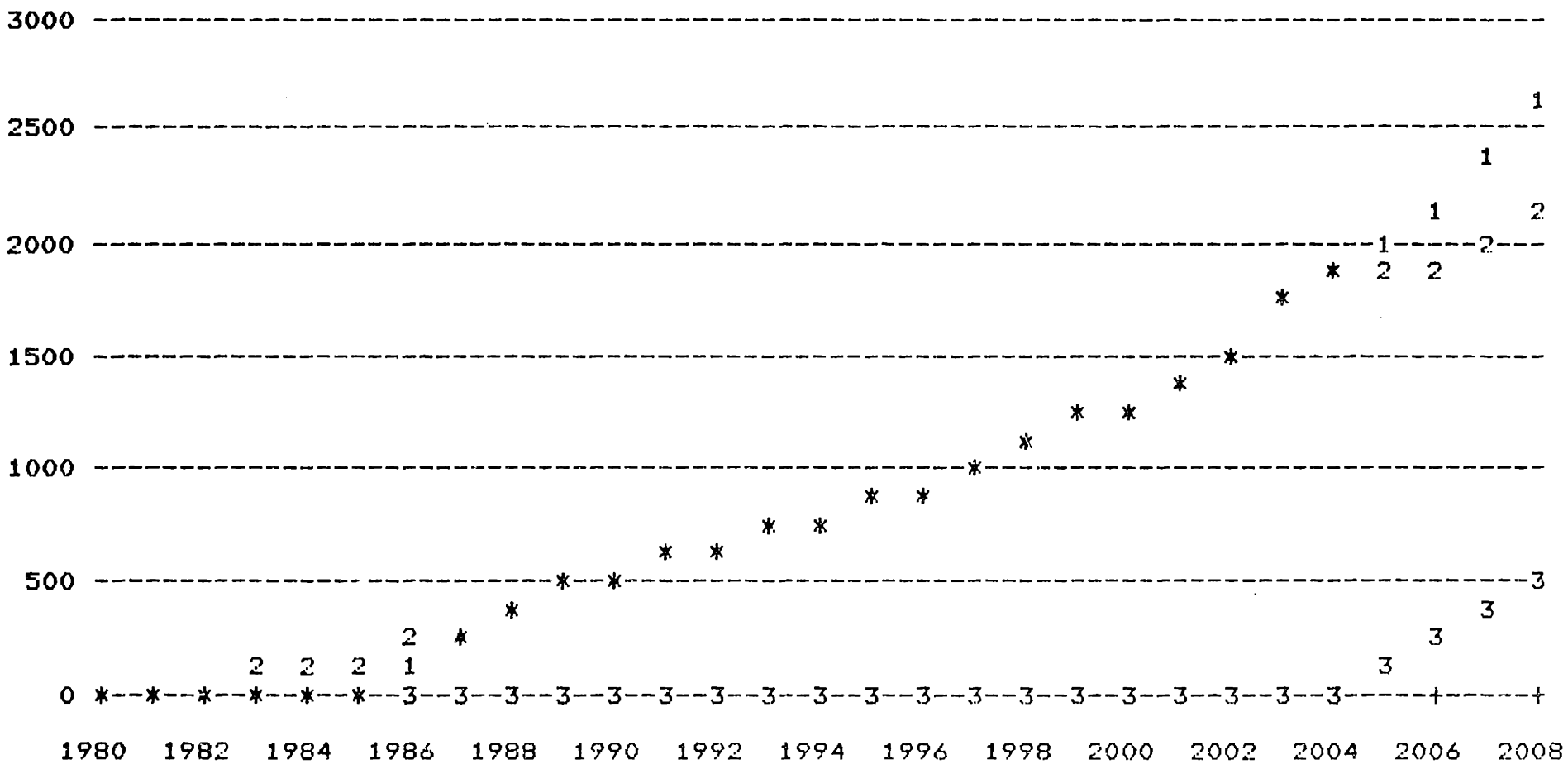
Table VI-2

Effects of the 1980 declaration on project's shares. 1. Investment increases by 138% 2. Cost increases by 121% 3. Price increases by 0, 32.5%, 65%	1979 Estimates	% Changes over 1979 estimates		Values below are % changes over 2. & 3. results	
	TOTAL PROJECT RESULTS US$M	INVESTMENT ↗ 138%	COSTS ↗ 121%	PRICE ↗ 32.5%	PRICE → 65%
Royalty Carbocol	3,578	-14.9	-14.9	42.32	84.64
Basic Profits before tax Intercor	8,049	73.32	13.39	57.33	85.07
Participation Carbocol	3,766	-91.04	Ø*	607.5*	3,241*
Participation before tax Intercor	4,499	-79.06	Ø*	1,239*	3,219*
Gross Margin Intercor	12,374	17.51	-34.25	82.27	139.60
Net Margin after tax Intercor	5,849	14.05	-42.04	98.19	166.70
Net Cash Flow Intercor	5,571	11.47	-47.42	113.6	192.9
Internal rate of return Intercor	15%	9.2%	5%	8.79	11.2%
Gross Margin Carbocol	27,063	-21.28	-47.43	73.71	161.7
Net Cash Flow Carbocol	26,785	-22.18	-48.61	76.18	167.1
Internal rate of return Carbocol	26%	16%	12%	16.8%	20.4%
Total taxes for Colombia	6,525	20.6	-27.26	70.91	120.3
Colombia Net Cash Flow (Carbocol + tax)	33,310	-13.80	-44.43	74.83	155.1
	1.	2.	3.	4.	5.

1. Results obtained with Chapter IV model, using Intercor's end-of-1979 estimates.
2. Percentage change over 1979 estimates due to a 138% increase in total investments.
3. Percentage change over 1979 estimates due to a 138% increase in investments and a 121% increase in operating costs.
4.5. Percentage changes over 2. and 3. due to different increases (or decreases) in prices over those estimated in 1979.

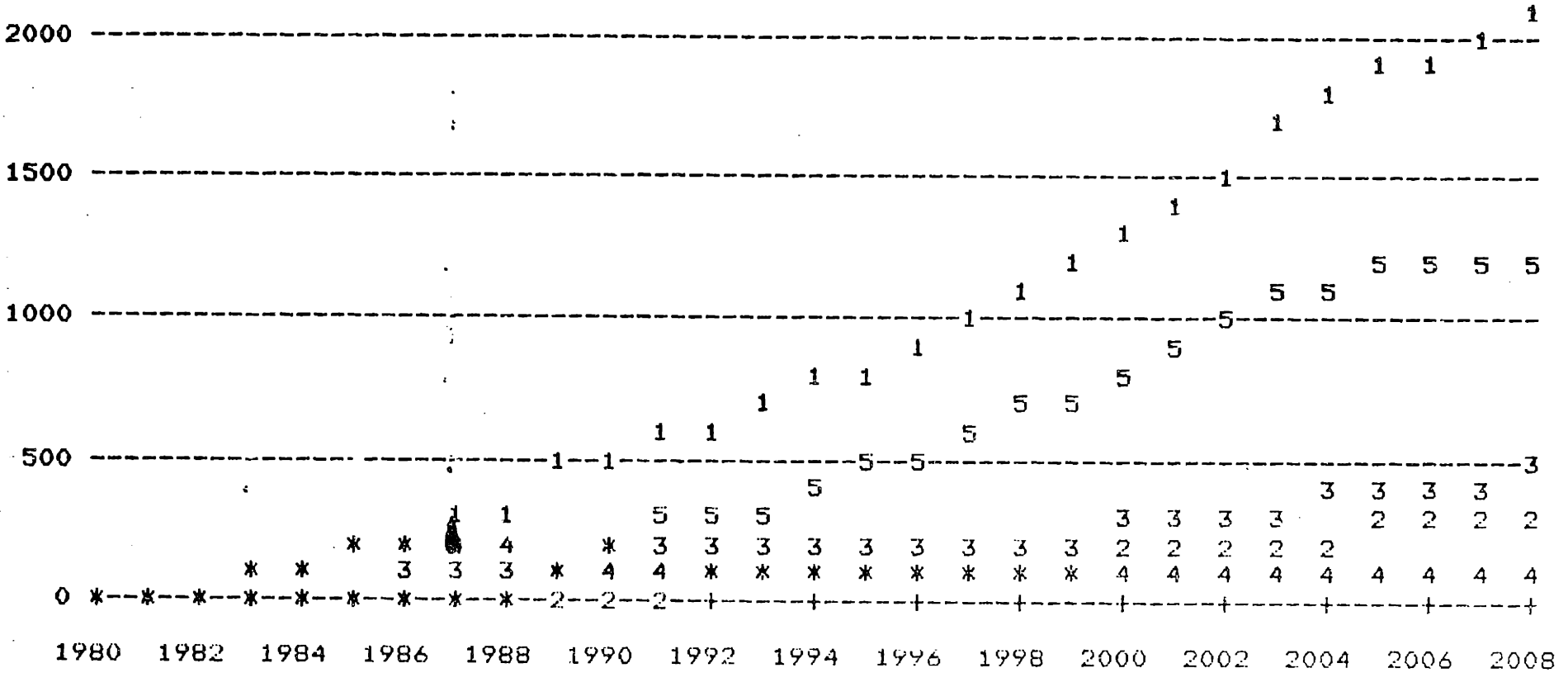
* Real values for participations given, as the % increase is infinite.

FIGURE VI-1 1979 ESTIMATES BUT INVESTMENT INCREASED BY 138% (US$ Million)



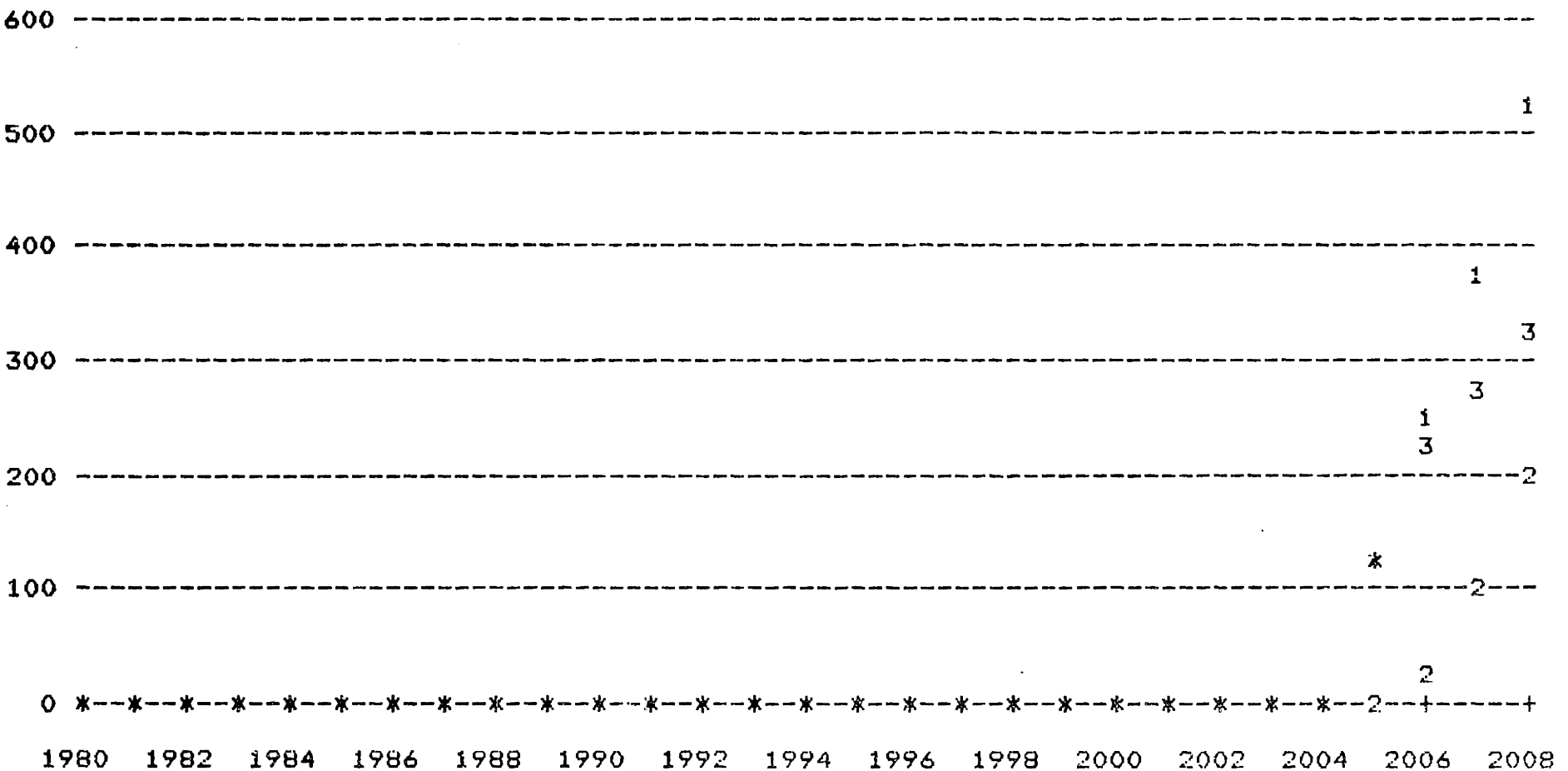
1 - REVENUES (50% of total revenues)
2 - BASIC INCOME
3 - PARTICIPATION INCOME

FIGURE VI-2 1979 ESTIMATES BUT INVESTMENT INCREASED BY 138% (US$ Million)



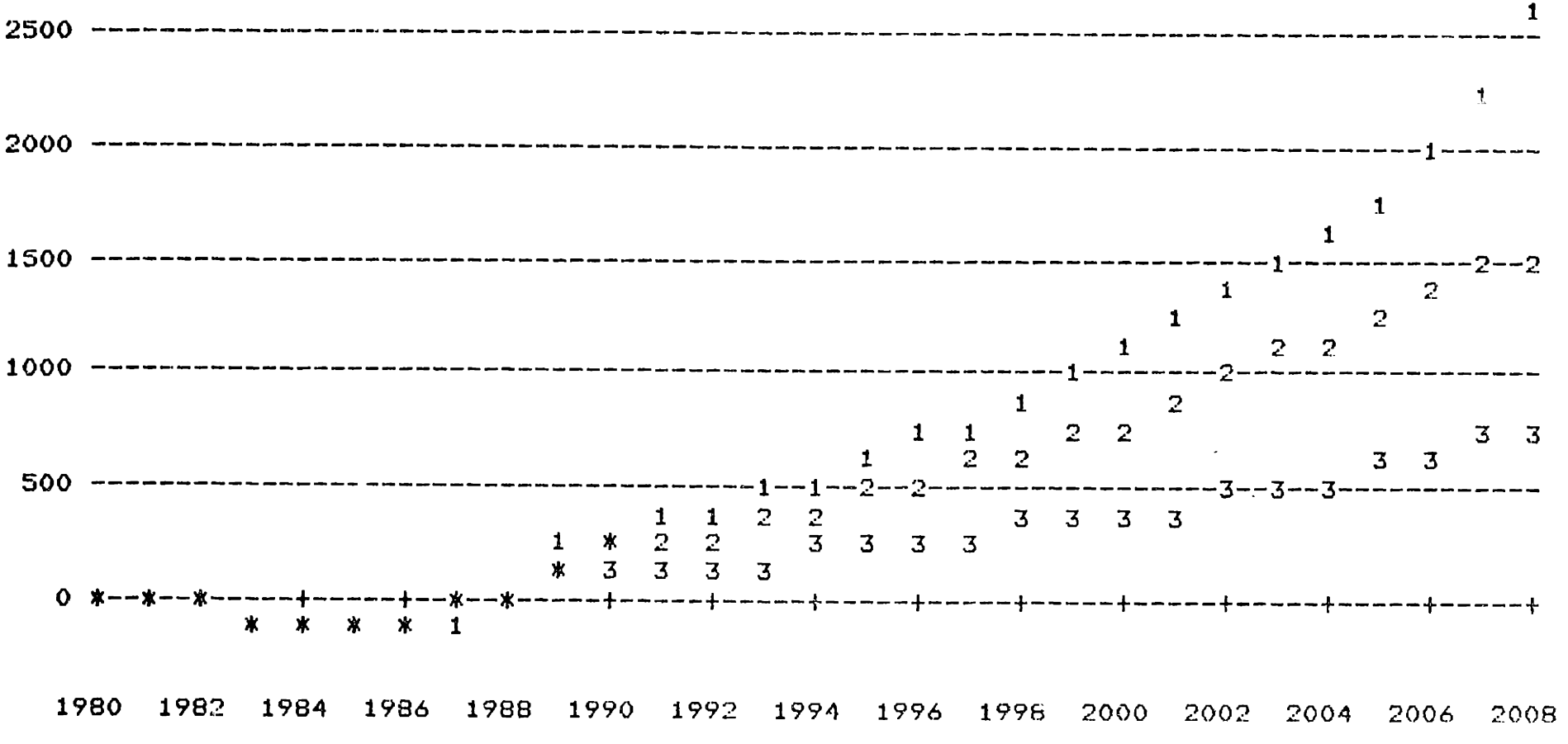
1 - BASIC INCOME
2 - ROYALTY
3 - OPERATING COSTS
4 - DEPRECIATION
5 - BASIC PROFITS

FIGURE VF3 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% (US$ Million)



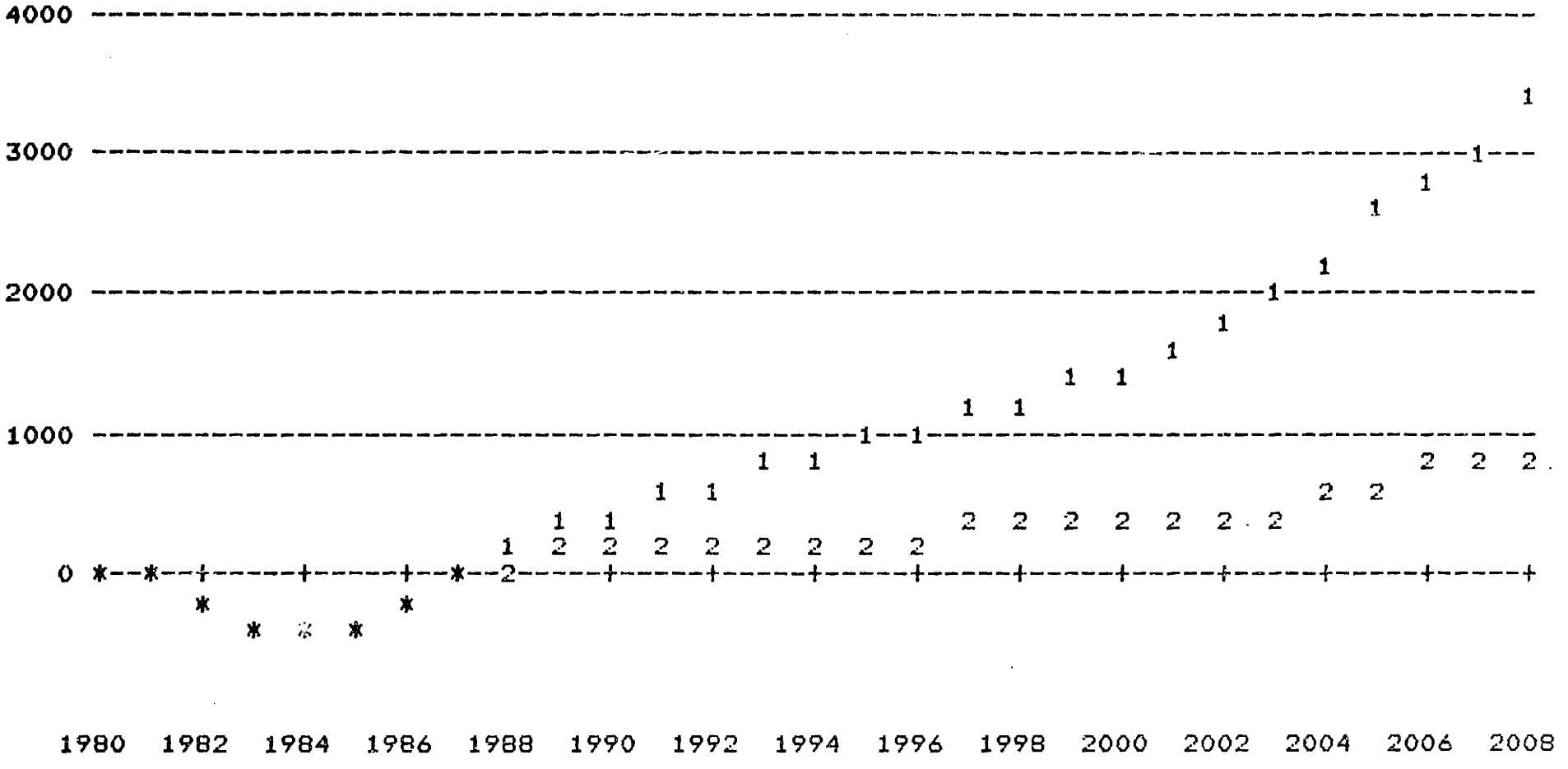
1 - PARTICIPATION INCOME
2 - PARTICIPATION CARBOCOL
3 - PARTICIPATION INTERCOR

FIGURE VI-4 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% (US$ Million)



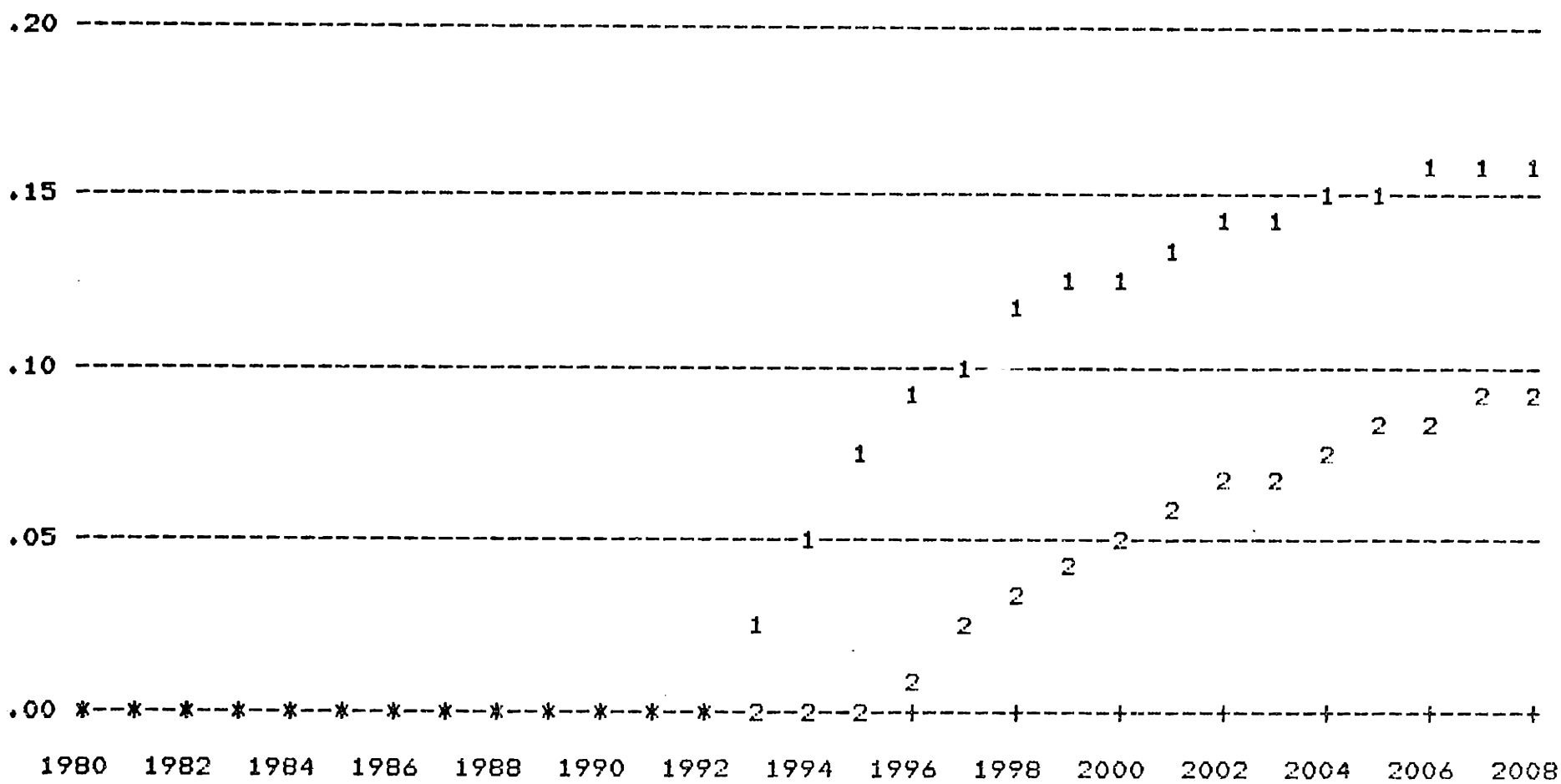
1 - GROSS MARGIN CARBOCOL
2 - GROSS MARGIN INTERCOR
3 - NET MARGIN AFTER TAX INTERCOR

FIGURE VI-5 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% (US$ Million)



1 - COLOMBIA NET CASH FLOW
2 - NET CASH FLOW INTERCOR

FIGURE VI-6 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138%



1 - IRR CARBOCOL
2 - IRR INTERCOR

Costs increased by 121%

In relation to the 121% cost increase estimated in July 1980, Table VI-2 (column (3)) shows its effects on the partners' shares. These are negative for both partners, and the combined effects of higher investment and cost estimates impacts Carbocol's results more negatively than Intercor's. Carbocol's gross margin is reduced by 47% from the 1979 estimates, while Intercor's is reduced by 34%. However, if taxes are considered, the combined effect is essentially the same for both partners (percentagewise). Colombia's net cash flow decreases by 44% (approximately by US$ 14.8 billion), while Intercor's net after tax cash flow decreases by 47% (approximately US$ 2.6 billion). As we can see, a large part of these cost increases (in absolute value) are borne by Carbocol. These effects are very large, and both partner have the incentive to minimize operating costs (assuming no transfer pricing is practiced for outside services). As was the case with investment levels, Carbocol's results are more sensitive to changes in costs, and Carbocol can be expected to be more suspicious of large cost overruns. Again, cost auditing will be extremely difficult to perform for Carbocol, especially if we consider their high rate of personnel turnover (including top management), a fact dramatically illustrated by the resignation of the entire economic and financial departments. Figures VI-7 to VI-11 show the project's results when investments are increased by 138% and costs by 121%. It should be mentioned that, even with these quite extreme changes in project costs, results for both partners are still positive (Carbocol's internal rate of return is stil 12% and Intercor's 5%), if price estimates turn out to be accurate during th whole life of the project. Exhibit VI-1 shows the distribution of revenues and costs for the case assumed above, in terms of percentages of total project revenues, as was done in chapter IV.

Exhibit VI-1: DISTRIBUTION OF REVENUES & COSTS FOR THE 1980 PROPOSAL (ASSUMING NO CHANGE IN COAL PRICE)

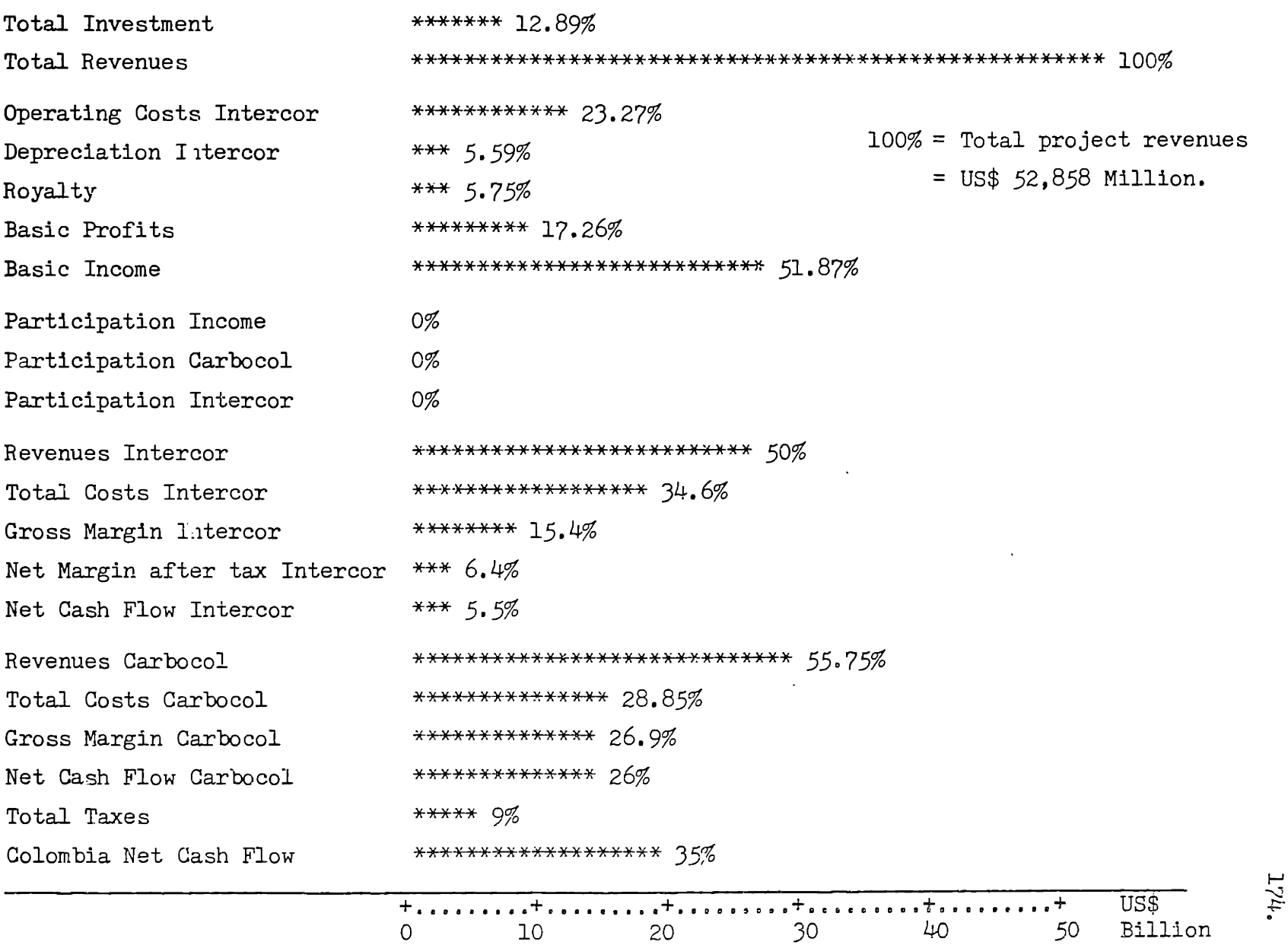
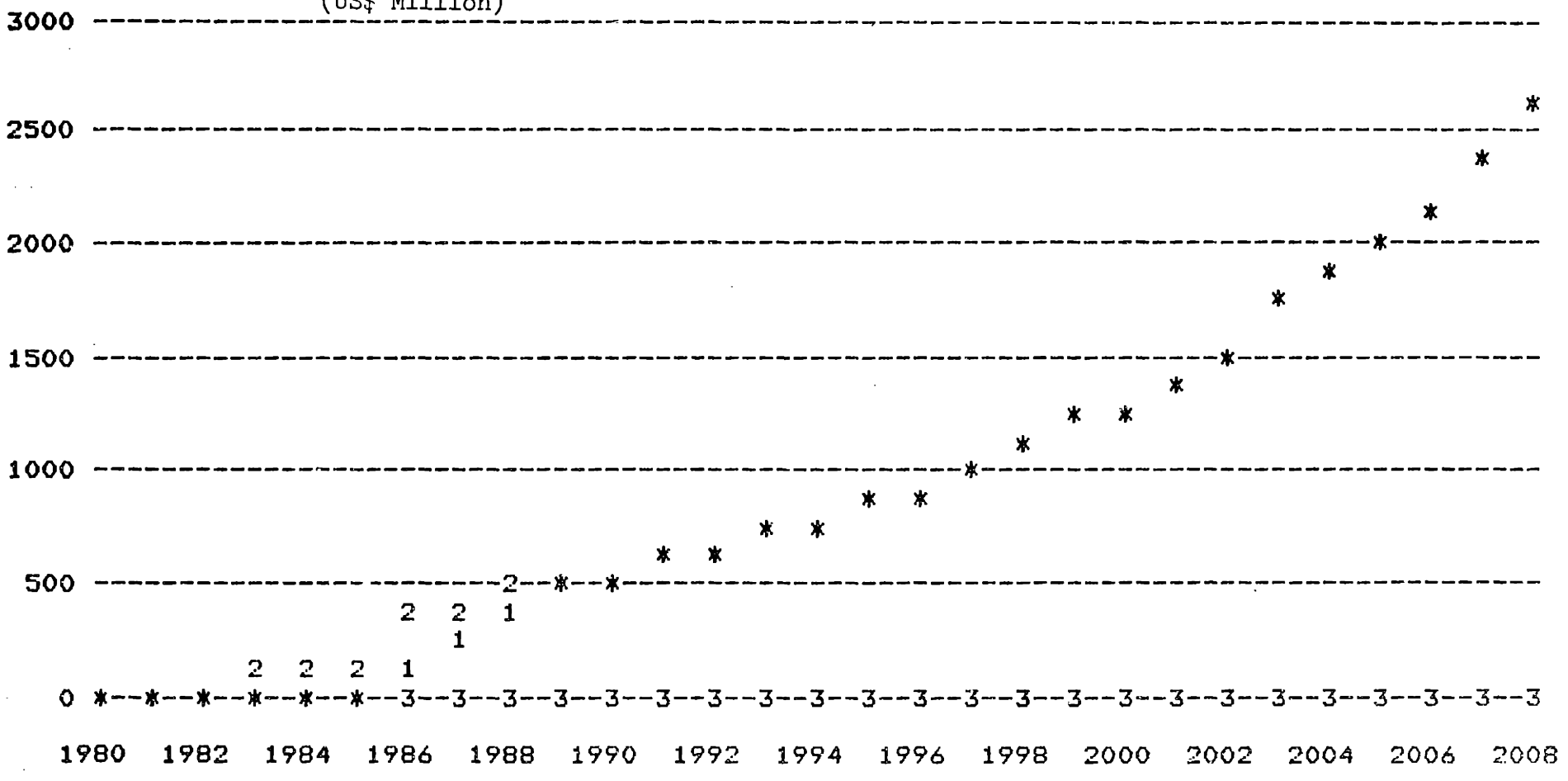
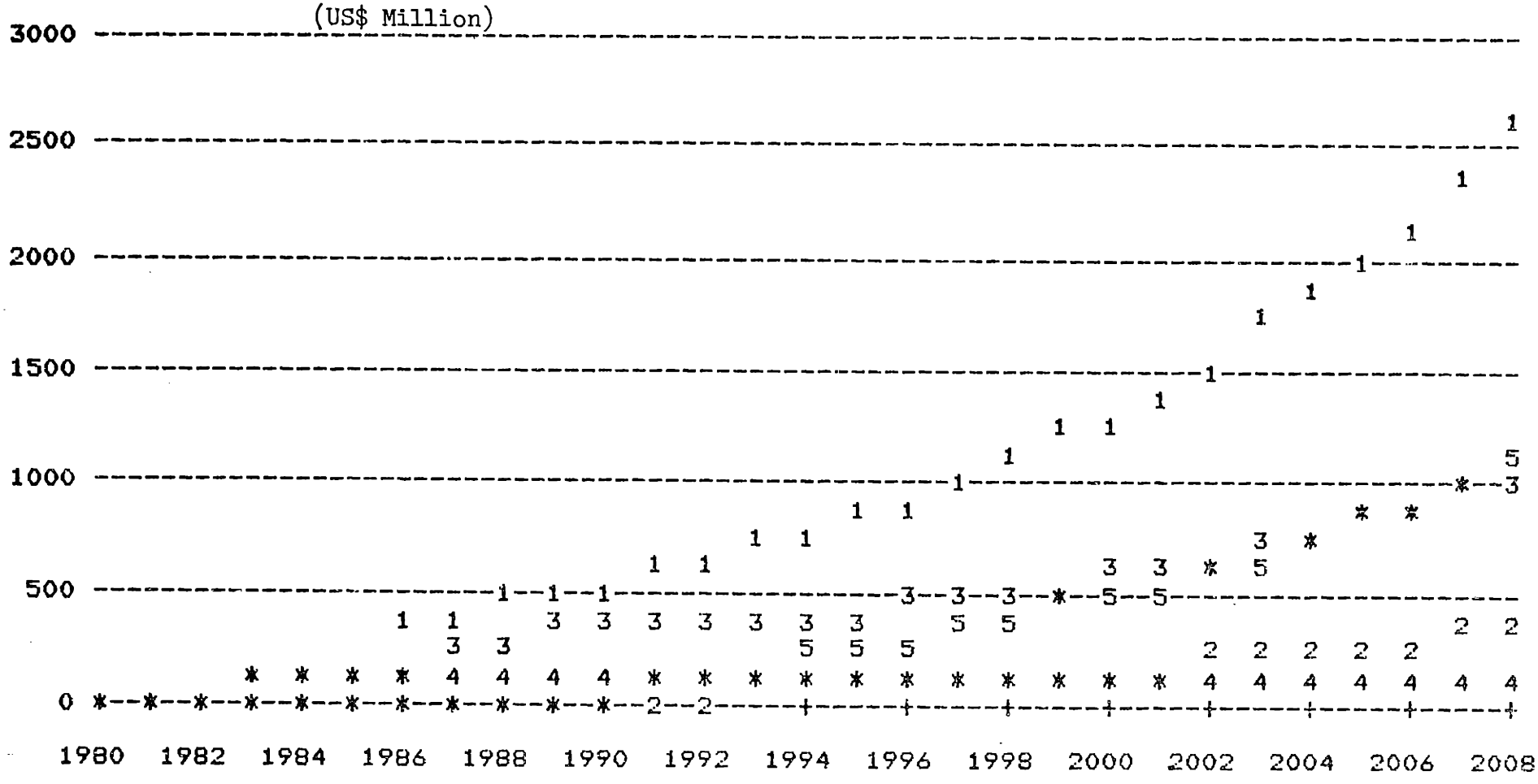


FIGURE VI-7 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% AND OPERATING COSTS BY 121%



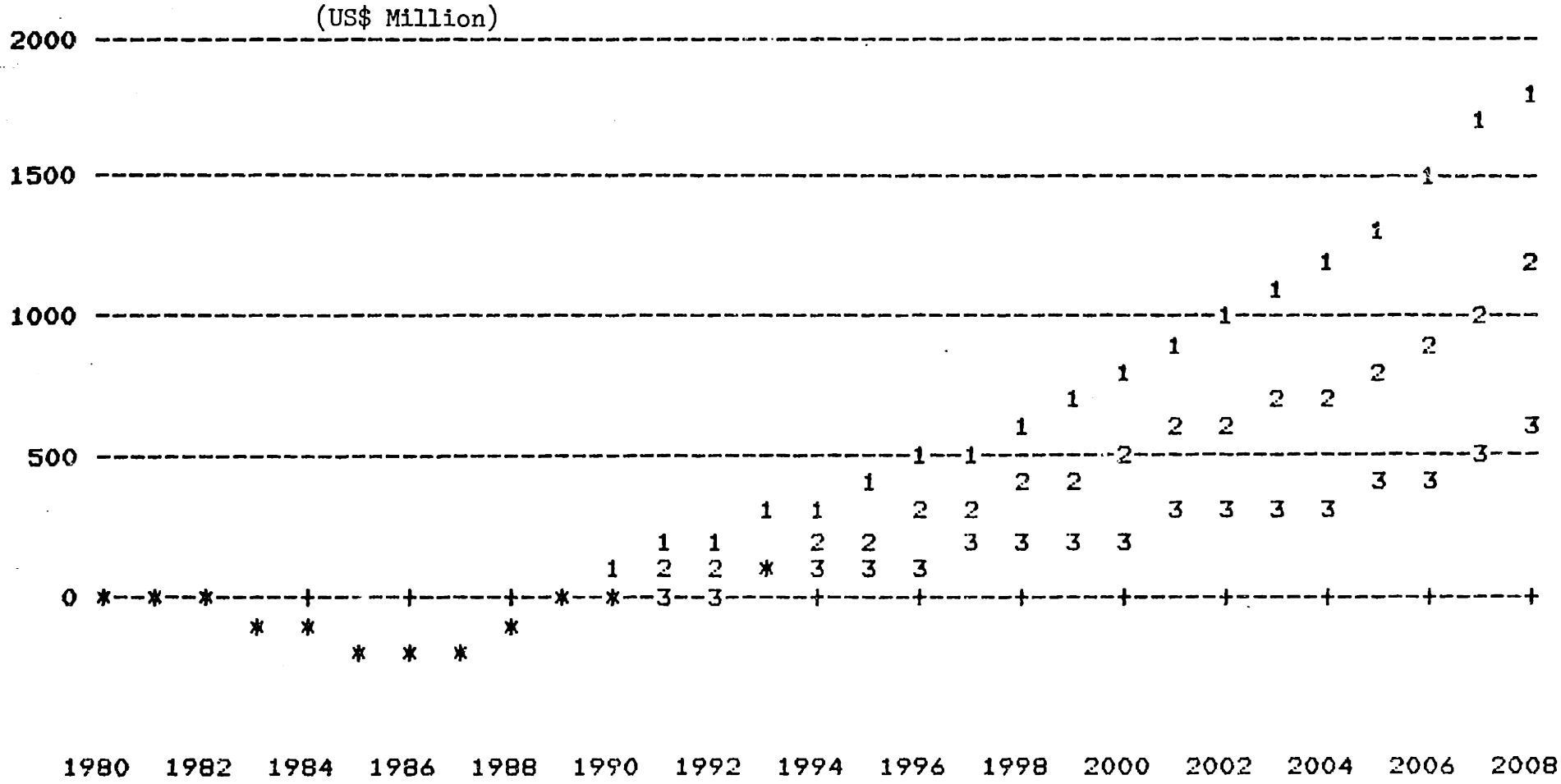
1 - REVENUES (50% of total revenues)
2 - BASIC INCOME
3 - PARTICIPATION INCOME

FIGURE VI-8 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% AND COSTS BY 121%



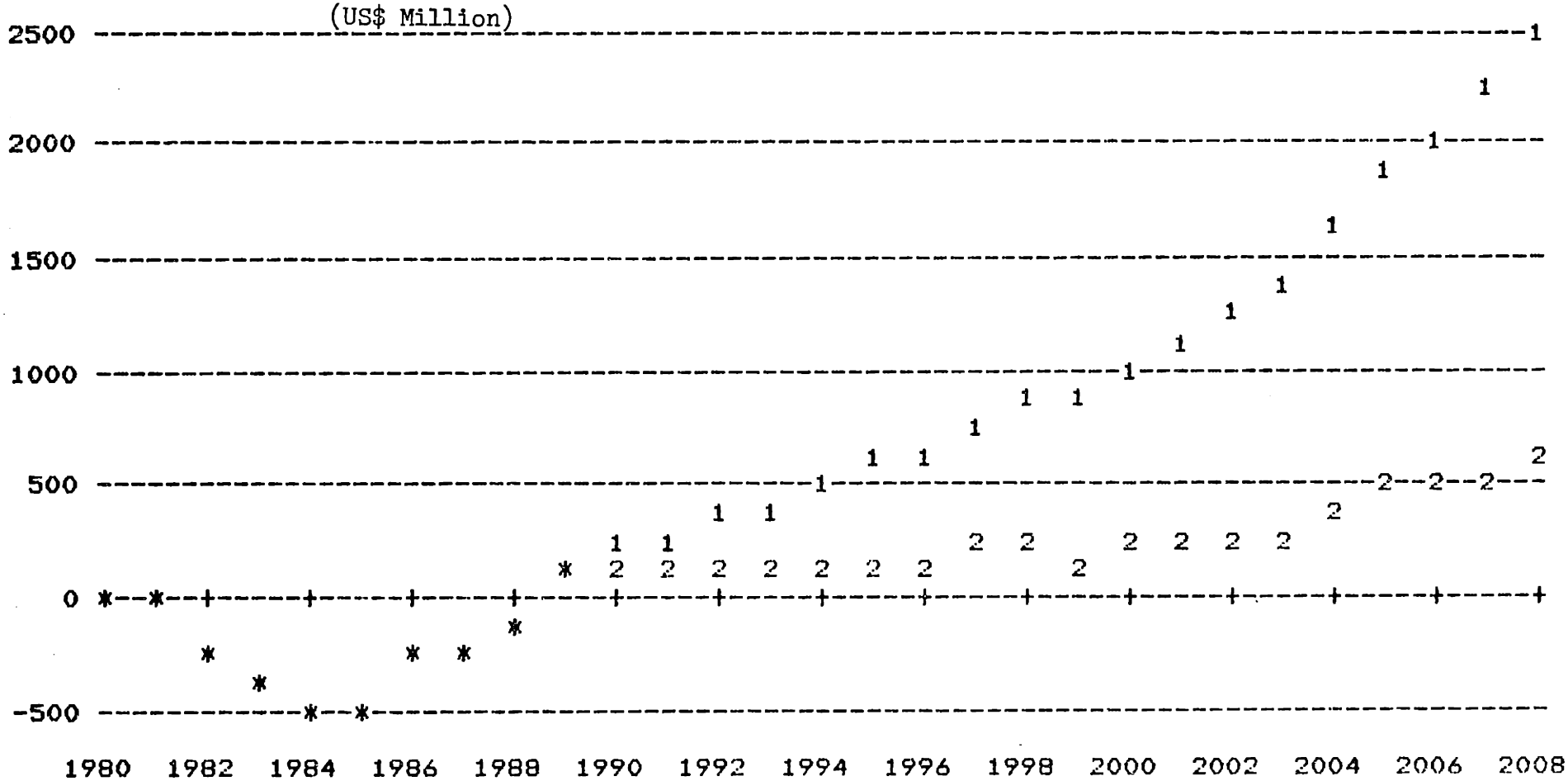
1 - BASIC INCOME
2 - ROYALTY
3 - OPERATING COSTS
4 - DEPRECIATION
5 - BASIC PROFITS

FIGURE VI-9 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% AND COSTS BY 121%



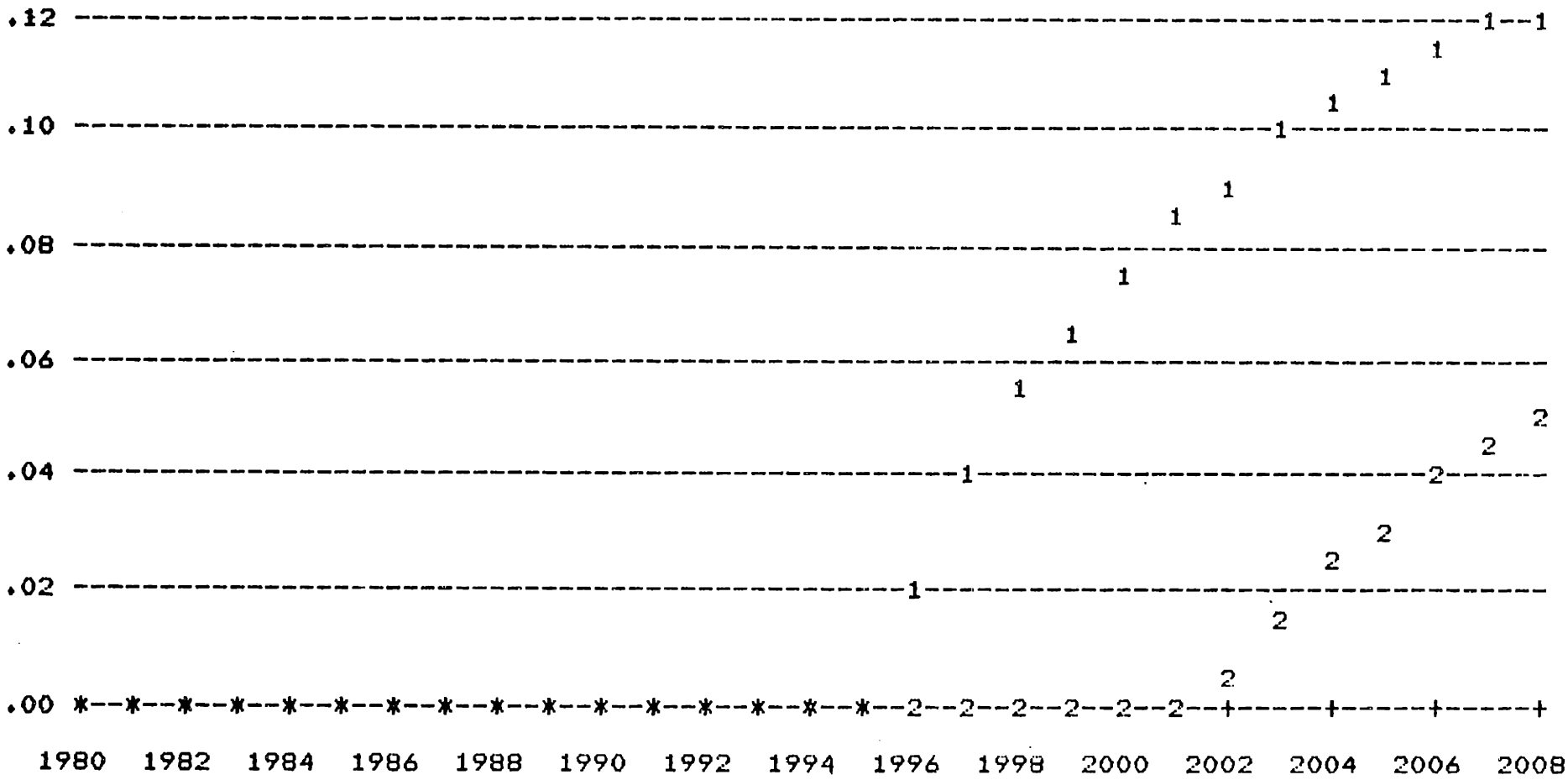
1 - GROSS MARGIN CARBOCOL
2 - GROSS MARGIN INTERCOR
3 - NET MARGIN AFTER TAX INTERCOR

FIGURE VI-10 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% AND COSTS BY 121%



1 - COLOMBIA NET CASH FLOW
2 - NET CASH FLOW INTERCOR

FIGURE VI-11 1979 ESTIMATES BUT INVESTMENTS INCREASED BY 138% AND COSTS BY 121%



1 - IRR CARBOCOL
2 - IRR INTERCOR

Sensitivity to coal prices.

Table VI-2 finally shows (columns (4) and (5)), the sensitivities of the project's new results with respect to price variations:
Should coal prices maintain the levels estimated in 1979, the discussion given before would apply without restrictions. However, coal prices are already above those estimated in 1979 for 1986; as table VI-3 shows in the case of north american coal exported to Rotterdam. Should revenues increase by 65% (as Intercor's 1980 estimates imply), the results presented above would change completely for both partners and Carbocol would this time take a large part of the gains. This is because, as we saw in chapter IV, Carbocol is bearing the risks of price variations. In this case, Carbocol's participation income would decrease by 13.9% (taking into account the investment and cost increases) under the 1979 estimate, and Intercor's participation income would decrease by 28.4% . Bottom line results would also be reestablished: Colombia's net cash flow would increase by 42% (an amazing US$ 14 billion), and Intercor's net after tax cash flow would increase by 54.6% (approximately 3 billion) over the 1979 estimates. Exhibit VI-2 shows the new distribution of revenues and costs between the partners, as implied by the 1980 proposal, and Figures VI-12 to VI-17 show the distribution of project revenues and costs over time. If we compare these before and after the declaration of commercial feasibility, the results are as follows (on a net cash flow basis):

	1979 estimates	1980 estimates
Carbocol*	50.7 %	42.3 %
Taxes**	12.3 %	12.0 %
Intercor***	10.6 %	9.8 %
Total costs****	26.4 %	35.9 %
Total revenues	100.0 % (US$ 52.8 B.)	100.0 % (US$ 87.5 B.)

Exhibit VI-2: DISTRIBUTION OF REVENUES AND COSTS: 1980 PROPOSAL (INCLUDING A 65% PRICE INCREASE)

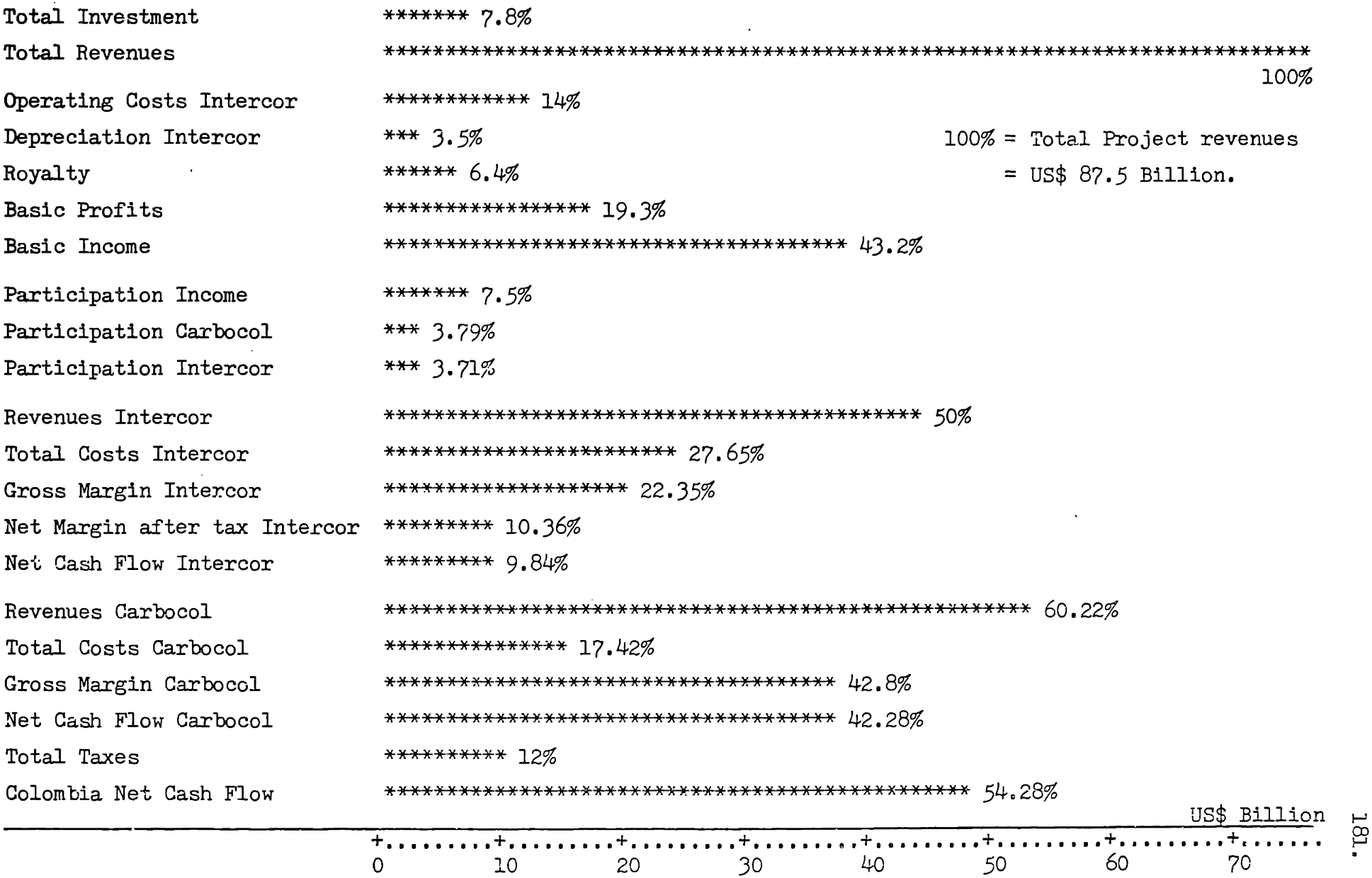
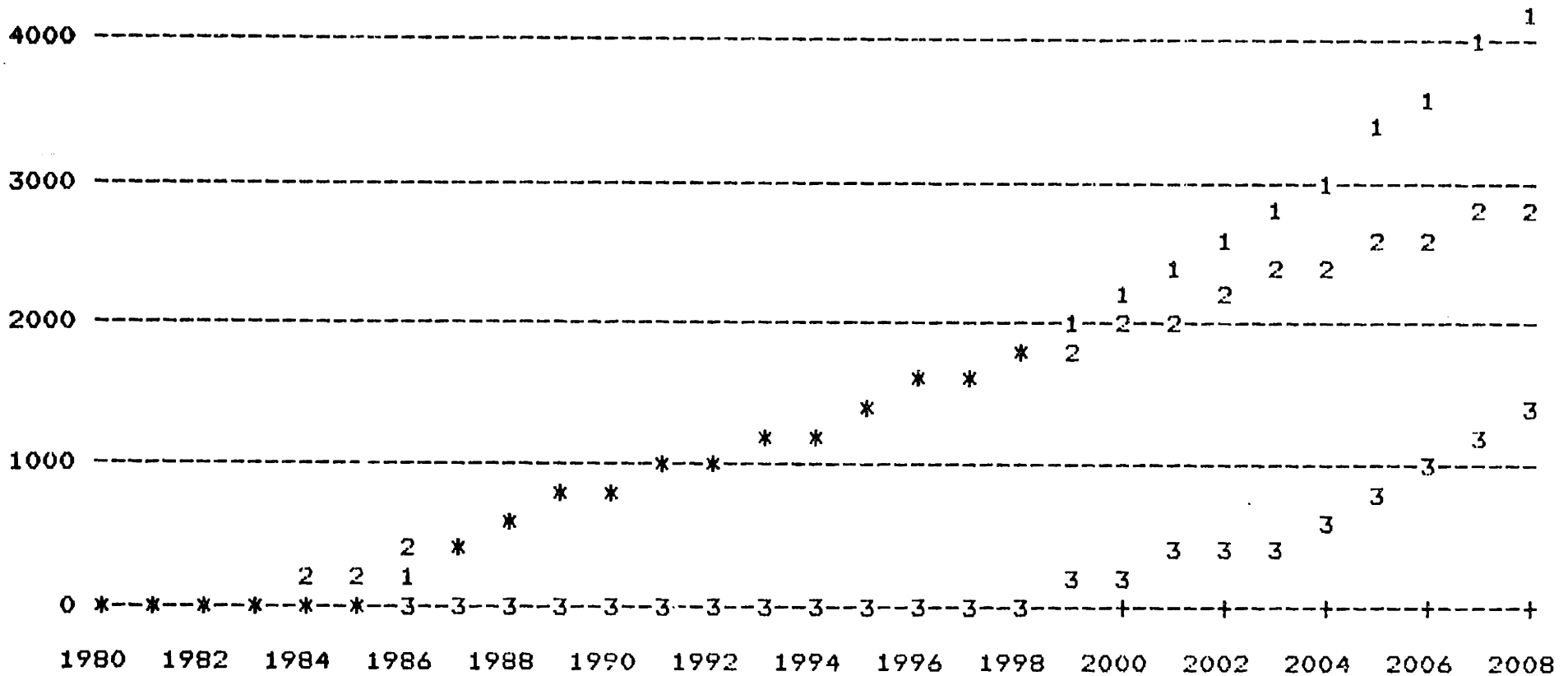


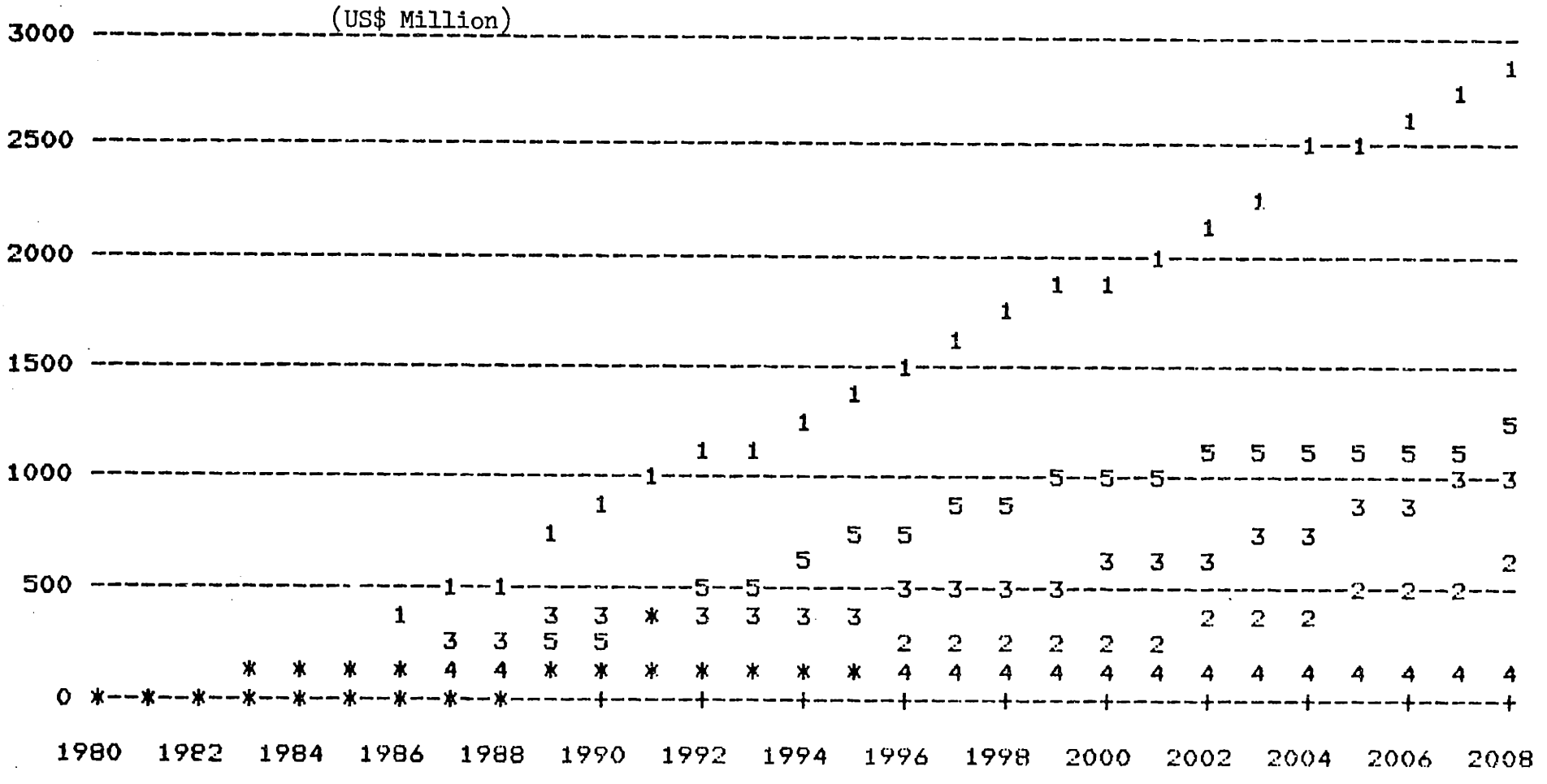
FIGURE VI-12 1980 ESTIMATES: INVESTMENTS INCREASED 138%, COSTS 121%, COAL PRICES 65%

(US$ Million)



1 - REVENUES (50% of total revenues)
2 - BASIC INCOME
3 - PARTICIPATION INCOME

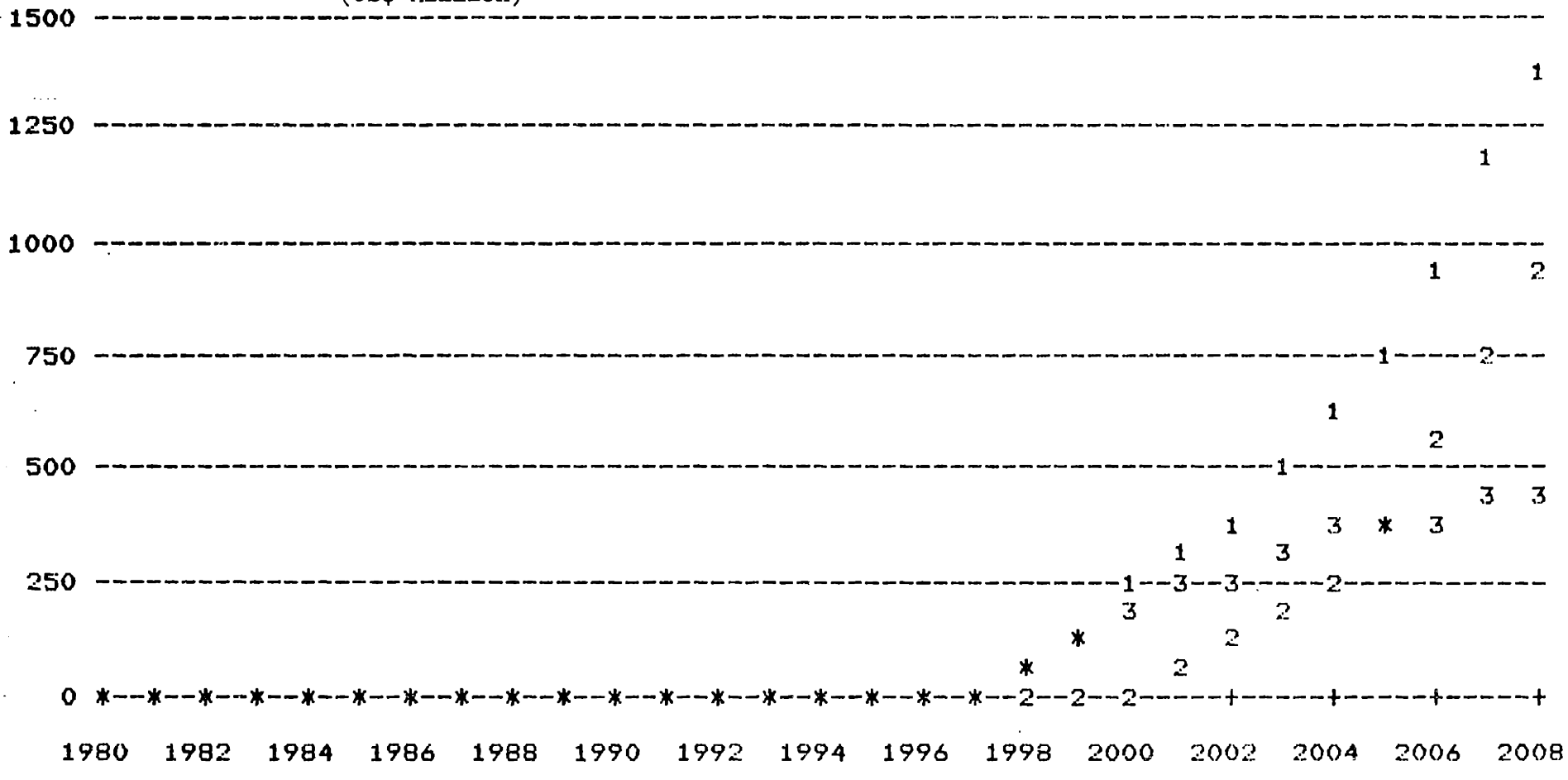
FIGURE VI-13 1980 ESTIMATES: INVESTMENTS INCREASED 138%, COSTS 121%, COAL PRICES 65%



1 - BASIC INCOME
2 - ROYALTY
3 - OPERATING COSTS
4 - DEPRECIATION
5 - BASIC PROFITS

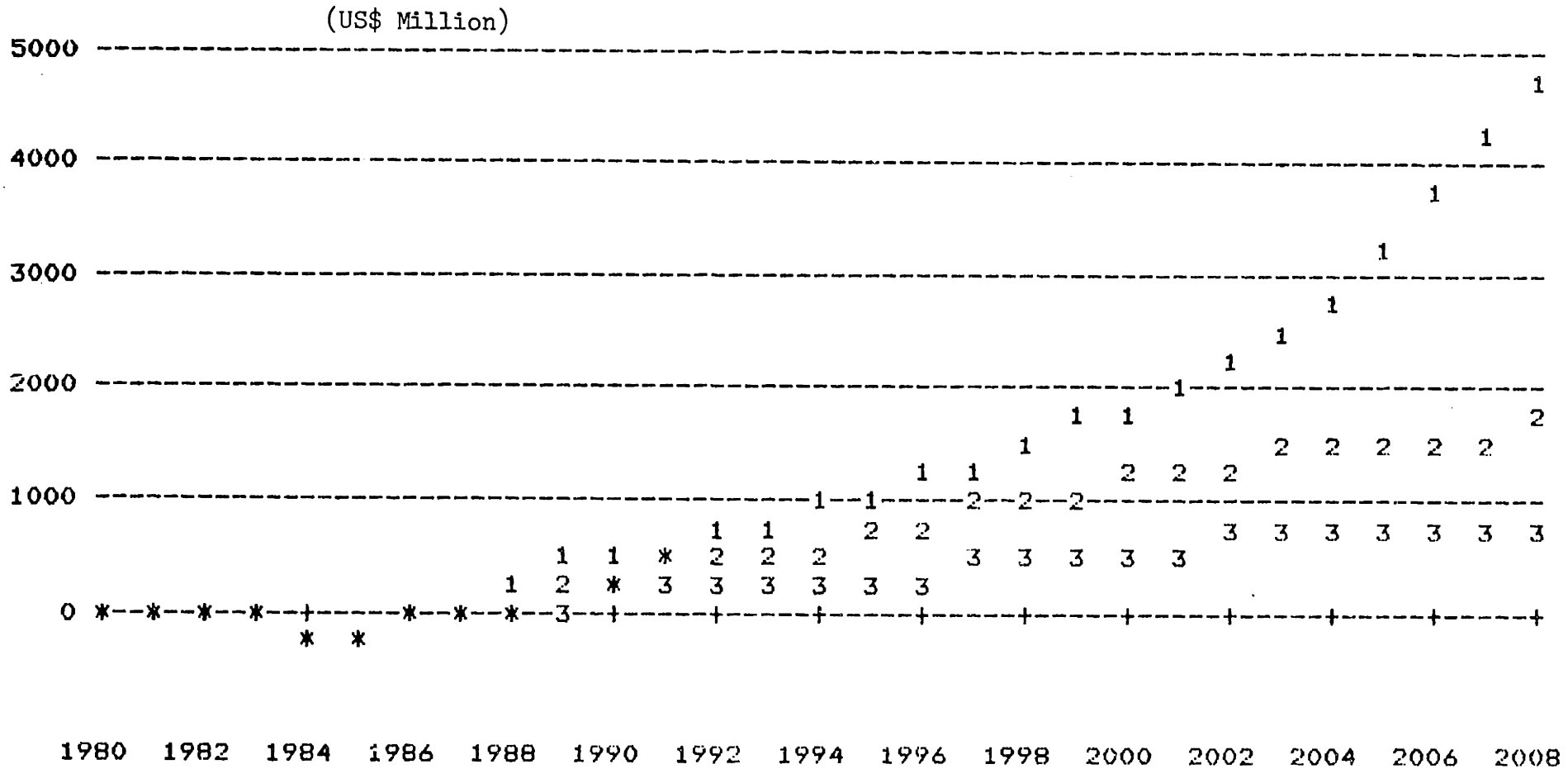
FIGURE VI-14 1980 ESTIMATES: INVESTMENTS INCREASED 138%, COSTS 121%, COAL PRICES 65%

(US$ Million)



1 - PARTICIPATION INCOME
2 - PARTICIPATION CARBOCOL
3 - PARTICIPATION INTERCOR

FIGURE VI-15 1980 ESTIMATES: INVESTMENTS INCREASED 138%, COSTS 121%, COAL PRICES 65%



1 - GROSS MARGIN CARBOCOL
2 - GROSS MARGIN INTERCOR
3 - NET MARGIN AFTER TAX INTERCOR

FIGURE VI-16 1980 ESTIMATES: INVESTMENTS INCREASED 138%, COSTS 121%, COAL PRICES 65%

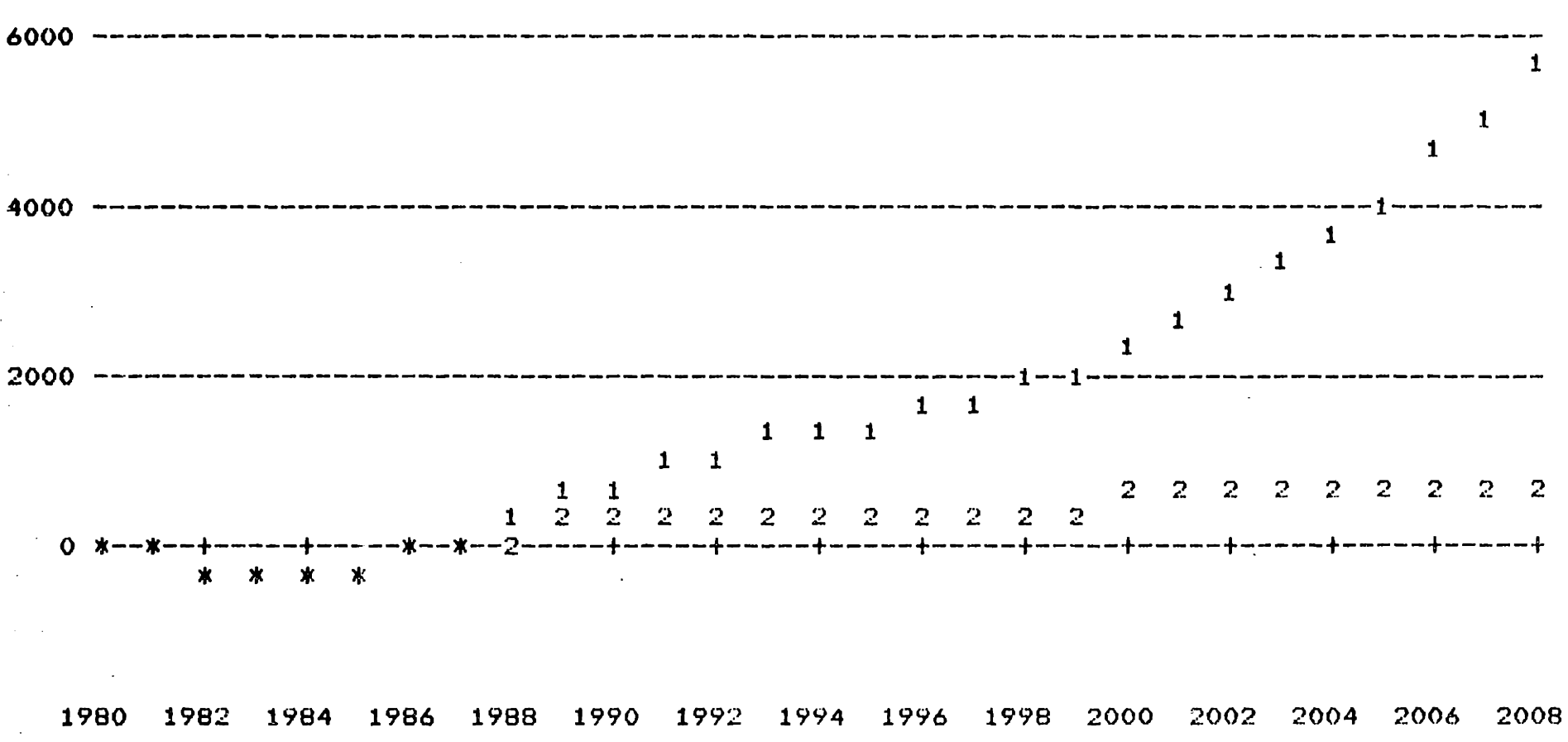
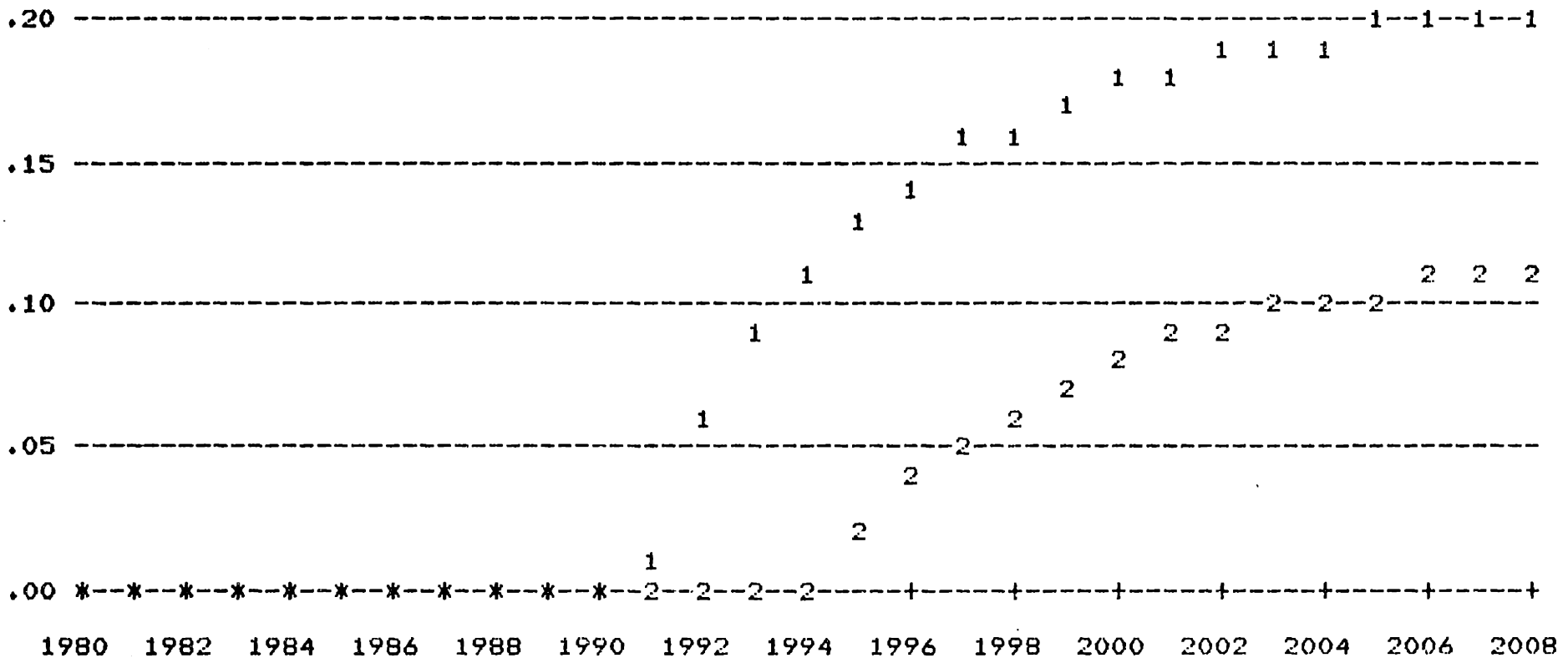


FIGURE VI-17 1980 ESTIMATES: INVESTMENTS INCREASED 138%, COSTS 121%, COAL PRICES 65%



1 - IRR CARBOCOL
2 - IRR INTERCOR

These results are clearly subject to the revised estimates of July 1980. Should coal prices stay at the levels estimated in 1979, the results would be as follows:

1980 estimates (except for 1979 price estimates)	Carbocol*	26.0 %
	Taxes**	9.0 %
	Intercor***	5.6 %
	Total costs****	59.4 %
	Total revenues	100.0 % (US$ 52.8 B)

Notes:

* Includes sales revenues, royalties and participation income.

** Includes basic profit tax and participation tax of 52%.

*** Includes basic profits and participation income, net of taxes.

**** Includes total investments and total operating costs.

In conclusion, the results of the 1980 declaration of commercial feasibility are not clear cut: Both partners are better off now than with the 1979 estimates: Carbocol's net cash flow was increased by 42% because of the higher price estimates, and Intercor's net cash flow increased by 56% because of the higher investments. Carbocol's relative increase is smaller than Intercor's, because price increases were not matched by investment increases. In absolute terms, Carbocol's cash flow increased more than Intercor's, but Carbocol's RISK in the project is also much larger now, because, again, Intercor's returns are assured through investment levels, while Carbocol will bear the risk of price variations. The following other considerations also apply to this discussion:

1) The possibility and the incentive do exist for Intercor to practice transfer pricing through subcontracts with other Exxon's subsidiaries for equipment purchases, management contracts, service contracts, etc. Clearly also, the opposition to the project has not proved that such practices

have actually been used by Exxon regarding El Cerrejón contract. In this respect, Exxon still has a "clean bill of health". Project opponents will also have a hard time trying to discover instances of transfer pricing, the more so if Carbocol itself finds it difficult to audit those estimates. For the time being, and until Carbocol learns more about the coal business, it will have to accept "on faith" Intercor's (and Morrison-Knudsen's) estimates.

2) Intercor's price estimates clearly needed to be revised upwards, as was done in the 1980 declaration, because international coal prices are today higher than the estimates made in 1979 for 1986 FOB prices (see Table VI-3). However, the question can still be asked regarding those new estimates: Did they have to be increased across the board (for every year into the future) as was done by Intercor, or are prices only approaching their maximum level ? Chapter VII will explore the possible outcomes of future price variations.

Table VI-3: STEAM COAL EXPORT PRICES TO ROTTERDAM FROM SELECTED ORIGINS ----- SEPTEMBER, 1980

ORIGIN	MINEHEAD PRICE OF COAL	RAIL RATE	HANDLING RATE RAIL TO VESSEL	OCEAN VESSEL RATE	UNLOADING RATE	TOTAL COST	BTL/Lb.	CENTS/ MILLION BTU
TO ROTTERDAM:								
New River Group or Pocahontas Field, WV or VA.	$28-33	$12.94	$ .40	$10.50-13	$2.00	$53.84-$61.34	12,000	224-256
Kanawha Group or Kenova District, KY	$28-33	$13.20	$ .40	$10.50-13	$2.00	$54.10-$61.60	12,000	225-257
Big Sandy Group, KY Via Chessie	$28-33	$13.52	$ .40	$10.53-13	$2.00	$54.42-$61.92	12,000	227-258
Southern IL Group Via New Orleans	$25-30	$12.00	$2.50(2) $2.74(3)	$10.50-13	$2.00	$52.00-$59.74	11,500	226-260
Southern IL Group Via Mobile	$25-30	$13.00	$1.10(2) $1.60(3)	$10.50-13	$2.00	$52.10-$59.60	11,500	227-259

Source: Central Gulf Railroad, Illinois: "World Coal Market."

VI-2 Participation income: Progressive or regressive ?

As we saw in chapters II and V, opponents to the project have charged that the participation income calculation provided in the 1976 contract is regressive. According to Roberto Forero (in a January 1981 interview):

> "The table which defines, in the contract, the level of participation income was created with a production level of five million tons per year in mind, but becomes unfair when production levels are increased. This calculation procedure should be changed in view of the present agreed on level of production."

Project managers, however, see it very differently. In the words of one of Intercor's executives:

> "The contract formulation provides for the eventuality of excess profits if the international prices of coal increase over our expectations, in which case some of those profits would automatically go to the government. Basically, an excess profit tax is included in the contract for the first time in Colombia in relation to natural resource projects."

One thing is certain, however: The "tax table" appearing in the 1976 contract (page 17) is very difficult to interpret, and the use of the two formulas is not precisely defined. This may have been after all the main cause of the controversy that appeared during the 1980 events. Let us then find out how it works, and how the participation incomes behave in relation to the project's endogenous and exogenous variables.

This table was created for five million tons per year as a UNIT OF PRODUCTION. If a larger production level is agreed on by the partners, then the formulas are used to transform the tax table's figures for higher levels of production. This formulation of participation incomes may have been proposed by Intercor, in my view, because of the recent attacks on several oil companies in the U.S.A. for their excessive profits due to very high oil prices. Exxon may have wanted to guard itself, through this procedure, a-

gainst possible attacks on the project as a result of unexpected increases in coal prices (as happened with oil in 1973 -see chapter II).

Participation income depends basically on CAPACITY LEVELS (which affect investments), on COAL PRICES (which determine revenues), and on PRODUCTION LEVELS (Which affect operating costs). Using Intercor's 1980 estimates, the behavior of participation incomes was simulated for different production CAPACITY levels. The basic assumptions are as follows:

1. Intercor's 1980 declaration presented two sets of estimates, one for a production of 15 million tons per year, and another for 25 million tons per year. A comparison of these two sets permitted the identification of implied economies of scale, with the result that no significant economies of scale were found for operating costs (operating costs are proportional to production levels). In the case of investment levels, however, significant economies of scale were found (i.e. investment levels are less than proportional to production CAPACITY). Table VI-4 shows the results of this analysis.

Table VI-4 Implied economies of scale.

	Index of economies of scale	
	15 Mtons/year	25 Mtons/year
Production*	100	166.60
Operating costs*	100	166.18
Investment levels**	100	156.00

Source: Intercor's 1980 declaration of commercial feasibility.

* Related to actual production levels.
** Related to production capacity levels.

2. A simulation was made for 5, 10, 15, 20, and 25 million tons per year of production capacity, assuming in each case that full actual production would be achieved over the life of the project (i.e. the mine would in

each case operate at full capacity).

3. All other estimates used were the established by Intercor in 1980.

The results of this simulation are shown on Exhibit VI-3, which includes for comparison Carbocol's and Intercor's participation incomes (lower part), Intercor's net cash flow (middle part), and Colombia's net cash flow (Carbocol's net cash flow plus total taxes, in the upper part). Clearly, Carbocol's participation is not regressive under these conditions.

Let us now assume a fixed level of production capacity, and see what happens as production is varied. As an example, let us suppose that the partners agree on investing for a 25 million tons per year capacity level. Exhibit VI-4 shows how the partners' participation incomes and net cash flows vary with different levels of production. The results are very similar to those on Exhibit VI-3. Again, Carbocol's participation is not regressive. It is clear, however, that Carbocol's share of participation is smaller than Intercor's until production approaches capacity. Also, chapter IV showed that Carbocol's participation decreases more rapidly than Intercor's in the event of decreasing coal prices, but in this case, BOTH participation incomes will be regressive.

This goes to show that clear and simply structured contracts can go a long way in facilitating both partners' jobs and in avoiding mishaps such as the September 1980 resignations.

Exhibit VI-3: PROJECT BENEFITS AS A FUNCTION OF PRODUCTION CAPACITY
(Production at capacity, 1980 price estimates)

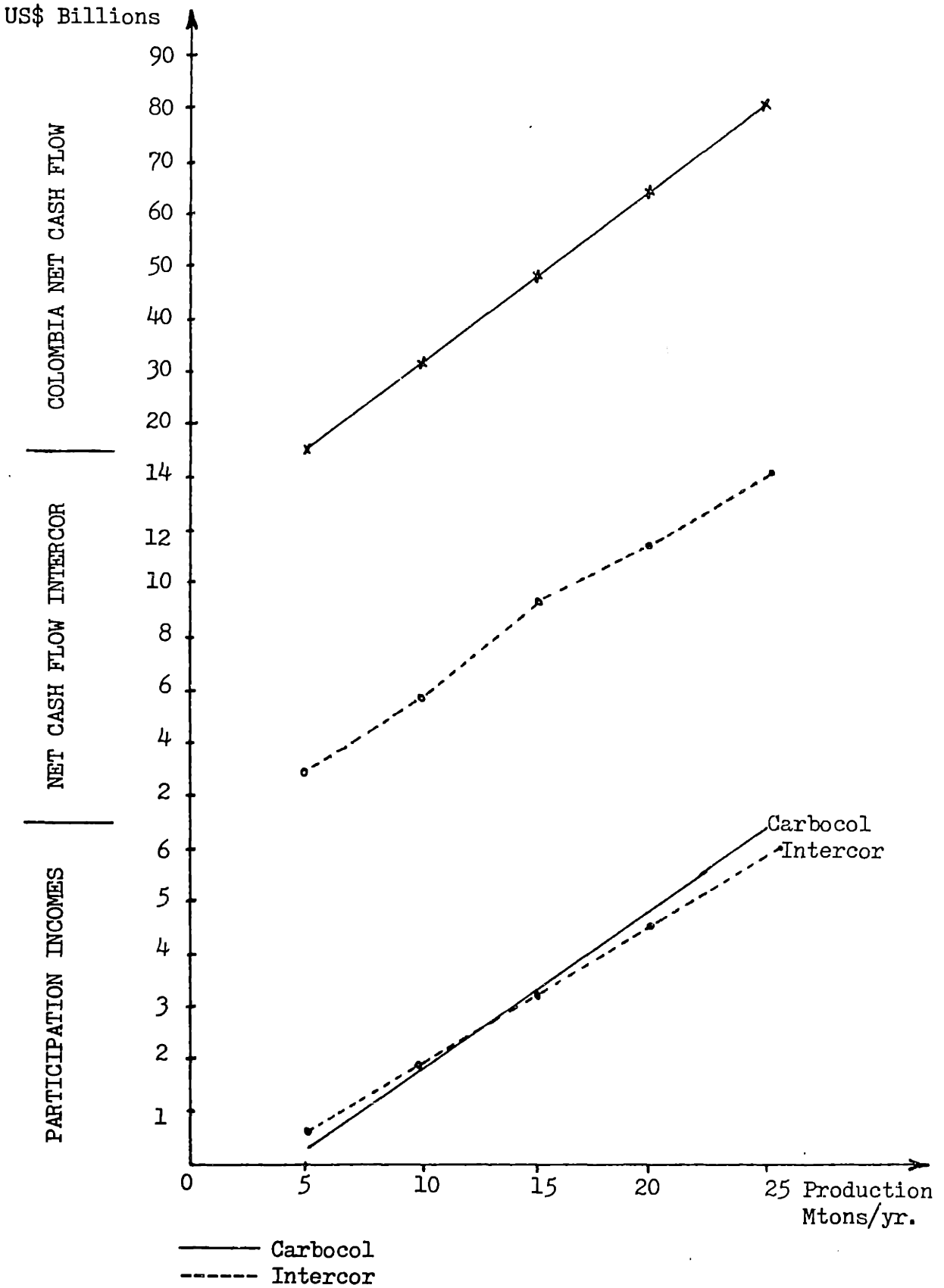
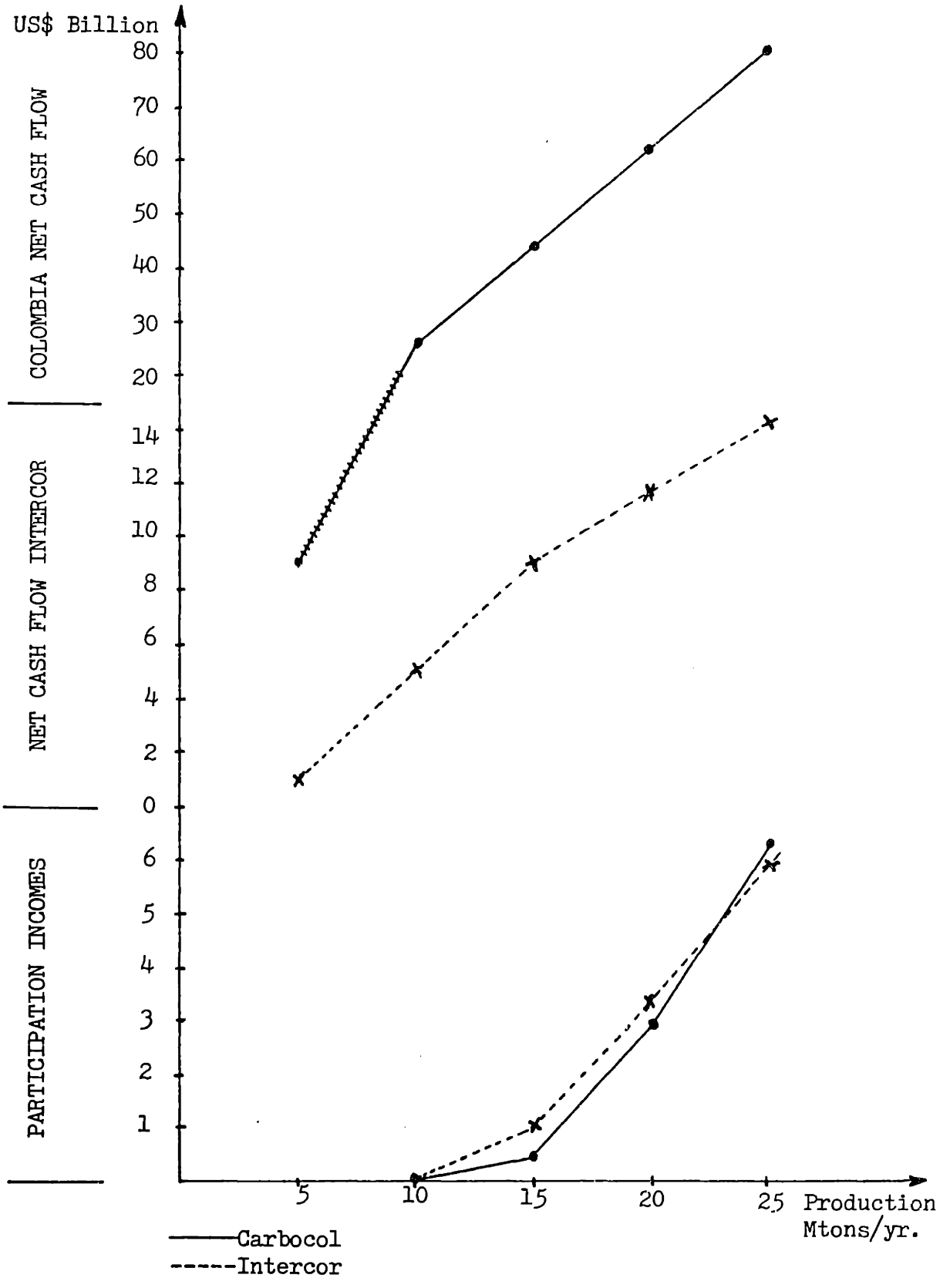


Exhibit VI-4: PROJECT BENEFITS AS A FUNCTION OF PRODUCTION LEVELS, WITH FIXED CAPACITY OF 25 Mtons/yr.
(1980 estimates used for costs, prices and investments)



VI-3 Depletion cost: What is the value of the resource ?

Is Colombia selling its coal for a very small price given the level of royalties and the transportation fees to be agreed upon ? The answer, again, is not clear, but the following simple exercise can shed some light on this issue. Let us consider only one half of the total project, Intercor's half, which is almost like a straight concession, but which includes, in addition to royalties, the payment of a participation income to Carbocol. The following assumptions are used:

1. July 1980 estimates are used throughout. Investment levels and operating costs do not change due to the smaller size of the project (i.e. no economies of scale are considered).
2. Royalties are maintained at 15% of Intercor's production of 7.5 million tons per year.
3. Participation incomes (windfall taxes) are computed as per the contract. Transportation fees are levied on royalties as proposed by Intercor in July 1980 (35% on accumulated transportation investments).
4. Price estimates are the 1980 estimates. Taxes stay the same.

Given these assumptions, we can compute the average price per ton of coal exported by Intercor that would be paid to the country over the 23 year productive life of the project, and compare this average with the average market price of coal estimated in 1980:

Total royalties paid (1986-2008)	US$	5,645 million	
Participation income paid	US$	3,309 million	
Total taxes paid	US$	10,492 million	
Total amount paid (1986-2008)	US$	19,446 million	(a)
Amount of coal exported by Intercor		163.75 million tons	(b)

Note: Based on July 1980 estimates.

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Average price per ton implied (a/b)	US$ 119 per ton
Average market price (Revenues/prod.)	US$ 267 per ton

According to these results, Colombia would be selling its coal at an average 5[illegible] over international coal prices. In return, Colombia would get an average of US$ 884 million per year in foreign exchange, the infrastructure and equipment at the end of the project's life, and the technology, in addition to the positive economic repercussions due to regional development, per some [illegible] However, we must remember that the country is bearing the risk of price variations, and its participation income could turn out to be lower (or disappear). Also, participation income would accrue to Colombia only in later years of the project's life. During the first few years of operation, Carbocol would receive very little for the coal it would give away:

Period	1986-1995	1996-2008
Total royalties paid	US$ 912 M	US$ 4,733 M
Participation income paid	US$ 0 M	US$ 3,309 M
Total taxes paid	US$ 1,712 M	US$ 8,780 M
Total paid	US$ 2,624 M	US$ 16,822 M
Amount of coal exported	66.25 M tons	97.5 M tons
Average price per ton implied	US$ 39.60 per ton	US$ 172.5 per ton
Average market price	US$131.70 per ton	US$ 359.4 per ton

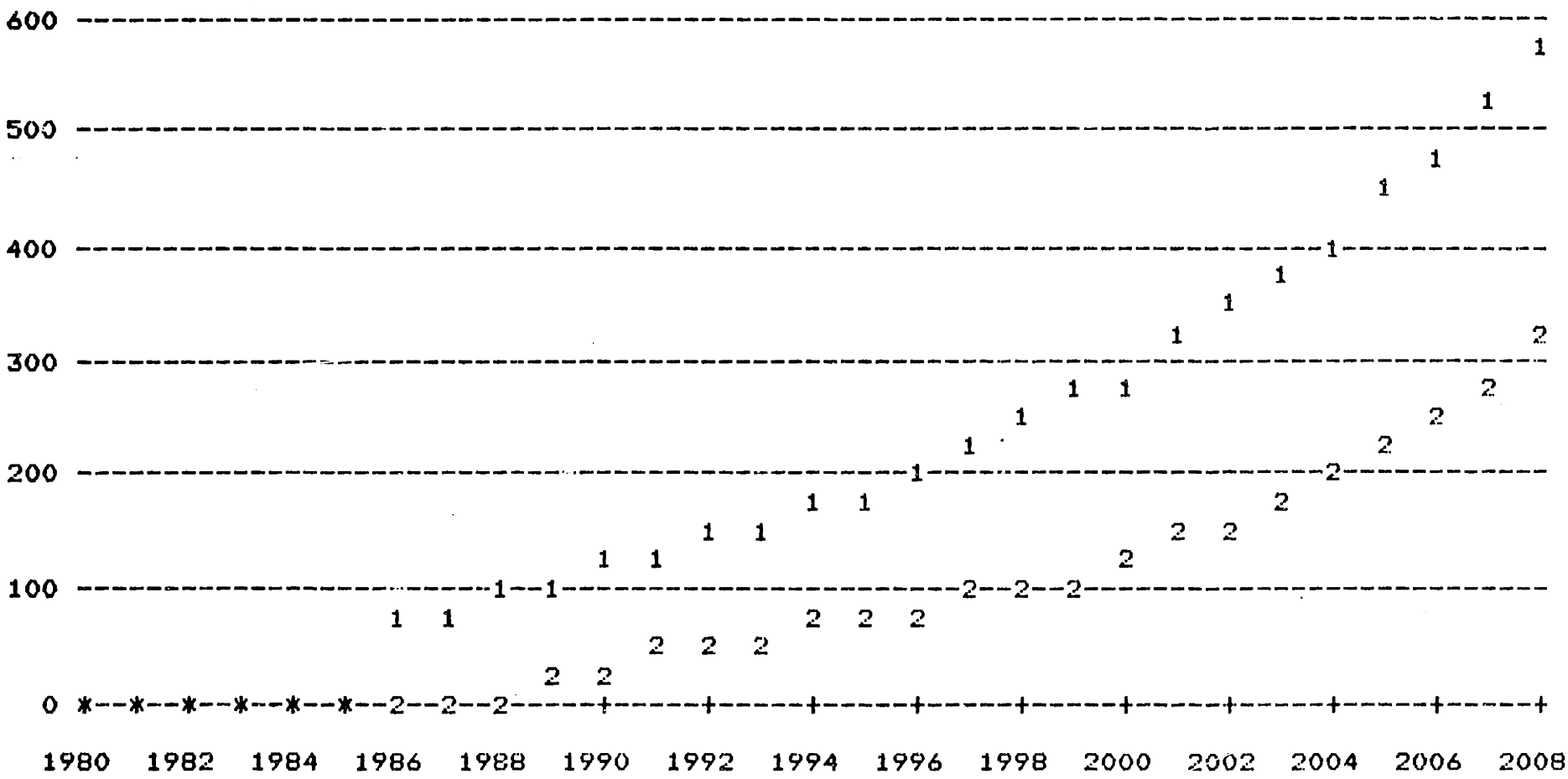
Note: Based on July 1980 estimates

According to the above calculations, Colombia would be selling its coal at an average 70% discount for the first ten years of mining operations, and at an average 52% discount thereafter. Figures VI-18 and VI-19 show the year by year values for these implied and market prices, and the year by year discount rate in terms of the ratio "implied price/market price".

Are the economic and "political" benefits accruing to the country worth this discount ? We already know the government's answer to this question. As Mr. Copete said: "This project's political return on investment is very large for Colombia, even if non-quantifiable.... These benefits come as side effects to the project, quite apart from the large and more visible foreign exchange benefits." Figure VI-20 shows the value of the discount, which is the value the government has implicitly assigned to those "intangible" benefits. The accumulated value of this discount over the life of the project amounts to US$ 24 billion. Is this value acceptable from the point of view of the country ? This is a question that cannot be answered without a complete socio-economic evaluation of the project, which has not yet been performed by the government, as opponents to the project argued. It is clearly urgent to do so, as the amounts involved are truly impressive.

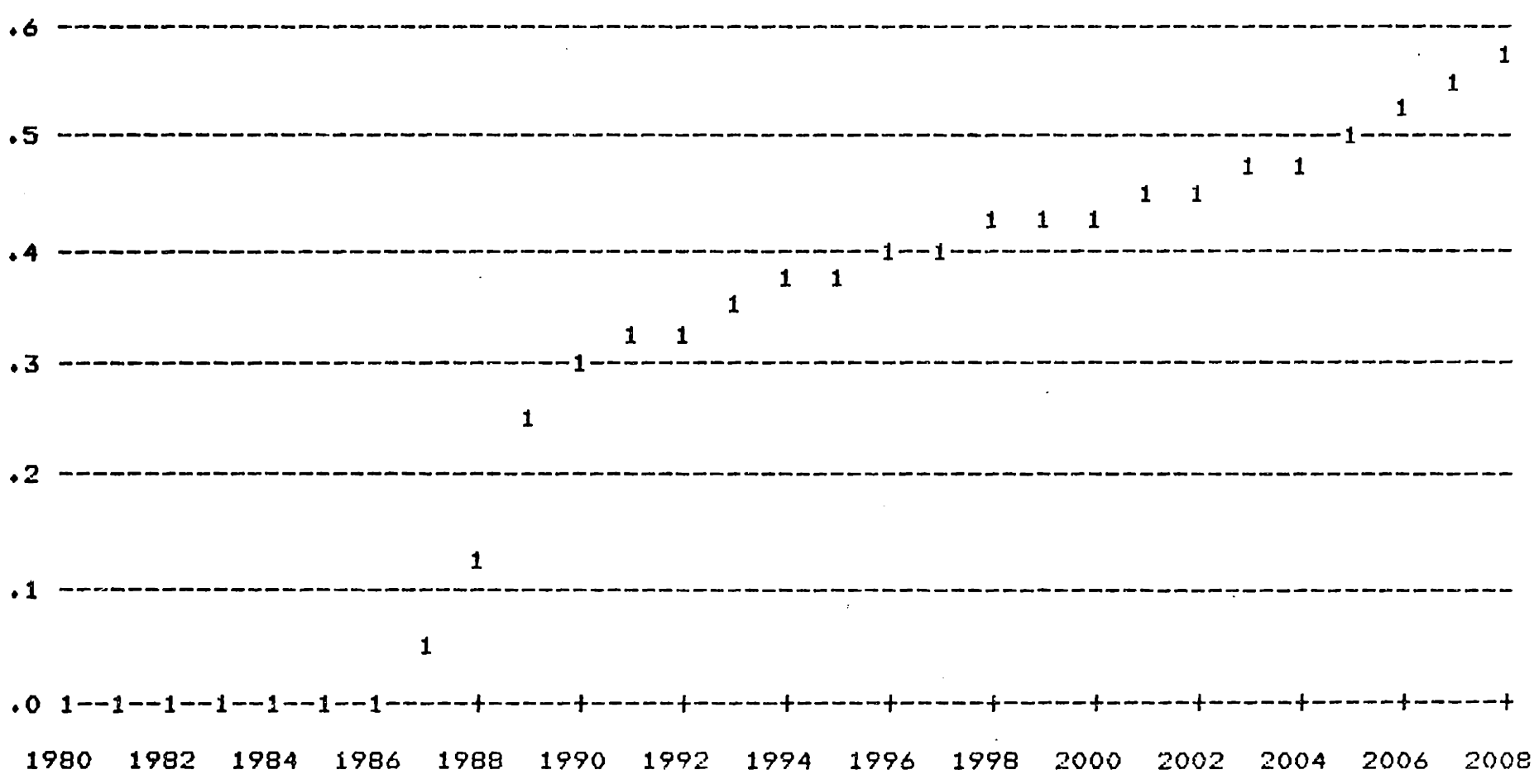
What is the price the government can afford to pay to see its broader policy objectives realized ? Clearly, only Colombia can answer, at the risk of losing its foreign partner in this venture.....

FIGURE VI-18 1980 ESTIMATES: COAL PRICES IMPLIED BY THE 1980 DECLARATION (US$)



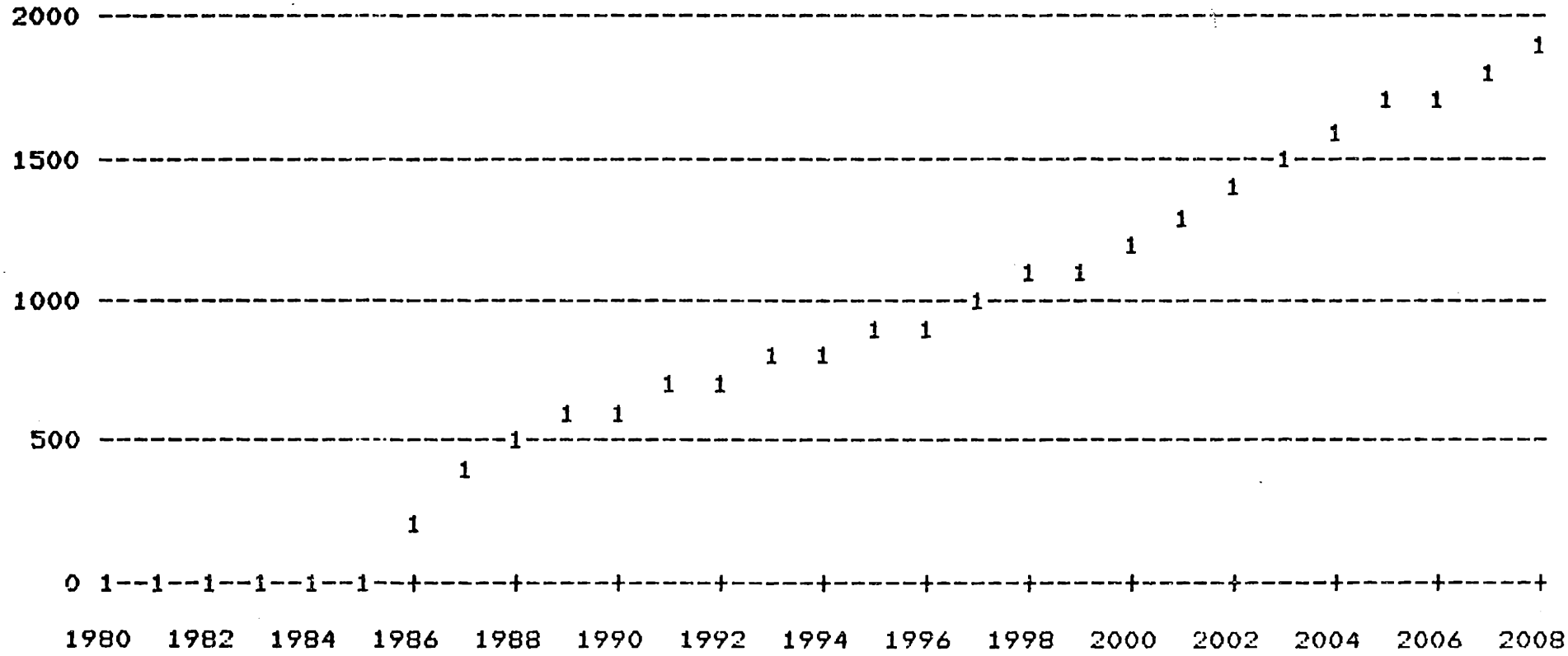
1 - MARKET PRICE
2 - IMPLIED COAL PRICE

FIGURE VI-19 1980 ESTIMATES: COAL PRICES IMPLIED BY THE 1980 DECLARATION



1 - DISCOUNT RATIO

FIGURE VI-20 ECONOMIC VALUE OF THE DISCOUNT IMPLIED IN THE 1980 DECLARATION



1 - VALUE OF DISCOUNT

VI-4 Production versus capacity levels.

There seems to have been great confusion, during the whole 1980 controversy, about what the intended production of El Cerrejón will be. Nobody has made it clear, until now, that there exist two related but different aspects of production: One is the DESIGN CAPACITY, and the other is ANNUAL PRODUCTION. On Intercor's side, the higher the production capacity is, the better, because its profits are directly dependent on investment levels, and because higher costs due to higher production would only affect (if price expectations are realized) Intercor's participation income. Also, Intercor is mostly shielded from decreases in coal prices (down to the point where revenues do not cover operating costs, depreciation and royalties), and it is getting a handsome discount over expected international prices. If coal prices are higher than expected, Intercor will greatly benefit from participation incomes. With respect to coal prices, we can expect that Intercor has the incentive to use the highest possible estimates, because this will make the project appear more attractive to Carbocol in terms of benefit sharing.

On Carbocol's side, it is clear that there will be pressure to minimize investment levels for any given level of production capacity. The optimal capacity level for the country depends on long term policies regarding the balance of payments and the possibilities to substitute coal for oil in domestic markets. The optimal level of production, on the other side, depends on factors external to the project:

1. The country's short term balance of payments' outlook, which is a function of coffee prices, oil prices and drug trade in large part.
2. The short term domestic needs for coal (especially in the Atlantic coast) which will probably be covered by the production of Area C of El Cerrejón that Carbocol is presently undertaking.

3. The contractual arrangements made for the sale of coal in international markets (i.e. long-term contracts versus spot sales).

Given these facts, the most reasonable proposition is that Carbocol will probably want to have enough production capacity to cover its possible long term needs, but will control production levels closely on a year by year basis. Basically, if coffee prices maintain their present levels, Carbocol should only extract the coal needed to maintain the country's energy balance of payments. This tactic may be detrimental to both partners, however, because coal customers would probably prefer to sign long term contracts to ensure a steady stream of the resource. On the other hand, both Carbocol and Intercor may want to wait to sign those contracts, as coal prices are still increasing, until some plateau is reached (even though the contract establishes that sales should have been secured before starting the implementation phase). In the future, however, coal prices may decrease, given the world's production potential and the present levels of investment in coal mining, and the country would then be better off by using its coal domestically, through conversion or substitution.

In any case, Carbocol can be expected to monitor very closely world coal prices and make its production decisions accordingly. Chapter VII will examine the consequences of these differing needs for the project's future.

CHAPTER VII

EL CERREJON PROJECT: RECOMMENDATIONS AND GENERAL IMPLICATIONS

Based on the issues and findings identified in the previous chapters, we are now in a position to offer some recommendations and discuss the general meaning of El Cerrejón for the conduct of similar large scale, transnational, multisector undertakings.

From a strategic point of view, it appears that the project, as it is structured now, fulfills Exxon's objectives at all times. The project also fulfills the Colombian short term objective of exchanging oil for coal, and the government will probably want to make relatively large investments up front to provide the country with an ample CAPACITY for producing coal. In the longer run, however, the government may want to limit production levels and/or exports of coal if the swapping policy becomes uneconomical, and if it becomes more advantageous to process or utilize coal for domestic purposes, in which case the partners' interests would find themselves in complete opposition. Section VII-1 discusses this issue in more detail.

From a contractual point of view, the project is a creature of the country's history of natural resource development contracts. Association contracts were still politically feasible in 1976, and Guillermo Gaviria's efforts to change this state of affairs were stalled. These efforts, however, reflected the changing conditions, and heralded the shift towards operating and management contracts. Today, mixed enterprises and operating contracts are feasible, and association contracts are bound to disappear. As the country's project management capabilities increase, the government will exert increasing pressure to assume complete control over natural resource

exploitations, and will be in a position to bear their risks and keep their potential benefits.Section VII-2 discusses this issue at length.

From a tactical point of view, the question is then: Can project managers maintain partners' support for the rest of the project's life? This depends on their ability to apply the contract in a way agreeable to both partners. An important issue related to the contract's application is discussed in Section VII-3.

From an organizational point of view, building and maintaining support for the project within the organizations involved is a key element for Intercor to consider. Securing the means to achieve control over the project's implementation is the key element for Carbocol. Participation and cooperation are fundamental factors in achieving both ends. This issue is considered in Section VII-4.

Finally, Section VII-5 proposes a general framework for the study of similar large scale, transnational, multisector joint ventures. In this framework, five basic problem areas are identified, and four interrelated environments which affect problem areas in different ways are isolated. Crucial success factors relate environmental changes with a project's chances for success. I believe that such a framework can be useful in the analysis of other such ventures, by making explicit the crucial interrelationships between the project and its environment.

VII.1. Stability of the partners' objectives over time

Chapter III analyzed the objectives held by both the Colombian government and Exxon in relation to the project. On the Colombian side, the basic objectives are:

1. In the short term, fast implementation of the project to address the balance of payments' problems faced by the country due to the rapidly increasing oil imports, and the construction of a minimum level of infrastructure necessary to support further development of the country's coal resources.
2. In the medium term, secure through Carbocol the necessary human and technological resources to manage the country's coal reserves, and lessen, through substitution of coal for oil, the country's dependence on foreign oil.
3. In the long term, work towards the national objectives of regional economic development, national integration, and affirmation of national sovereignty over La Guajira region.

On Exxon's side, the basic objectives are:

1. In the short term, secure new sources of coal, and overcome the transportation and infrastructural bottlenecks that have appeared in the USA and in other countries, that hinder the development of an internationally diversified coal market.
2. In the medium term, diversify into new sources of energy like coal to lessen its dependence on OPEC's oil, and achieve a high relative market share in the emerging international coal market.
3. In the longer term, take advantage of their leading position in coal conversion technologies, and ensure a steady supply of thermal coal for

their worldwide customers at the lowest possible extraction cost.

We can see by comparison of these two sets of objectives, that the Colombian government's objectives may change over time in a manner detrimental to the project as it is structured. In the short run, both partners have the incentives to proceed rapidly with the project's implementation phase. Exxon's presence is presently very important for Carbocol, for it will provide the technology and the know-how that the state enterprise does not yet have. In addition, the government may prefer to leave the implementation phase to a foreign private partner to minimize domestic political interferences which may greatly increase the project's implementation times. In the medium term, however, the Colombian government's objectives may change, probably when Exxon will be reaping the benefits of the project, if one or more of the following contingencies happen:

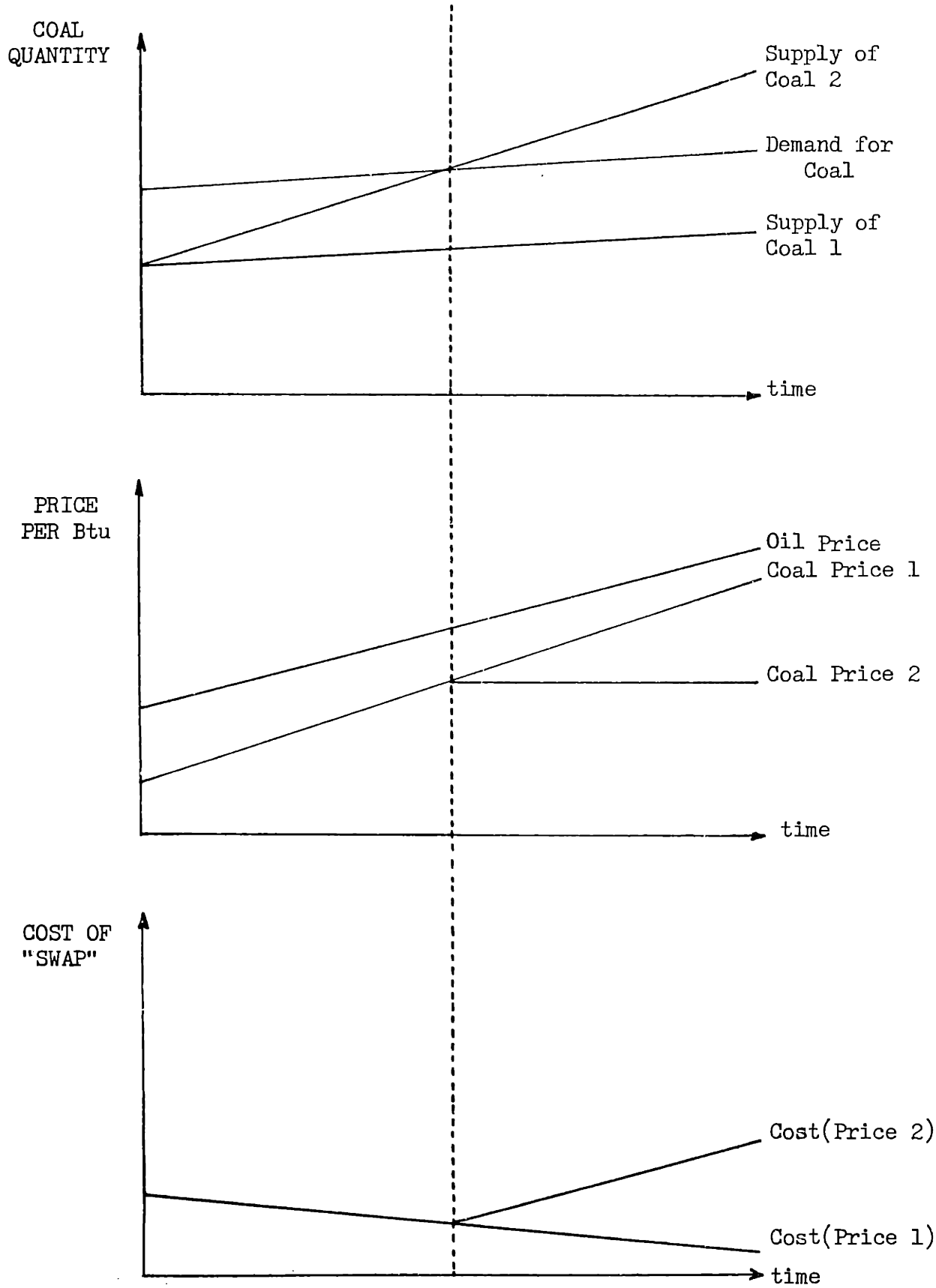
1. A balance of payments' crunch may never appear in Colombia, for example, if coffee prices maintain their upward trend, and/or new oil is discovered in the country. Therefore, the pressure to export coal to redress the balance of payments' problems may decrease considerably, and the government may then prefer to keep its coal reserves in the ground, even if the infrastructure is there to extract it, or to extract amounts just sufficient to keep the operation going, therefore avoiding a prompt depletion of those reserves.
2. To the extent that Carbocol grows and acquires coal mining technology and operating know-how, time can only lessen the government's need to share the operation with a foreign partner, especially in view of the voters' generally nationalist attitudes. This is quite significant because the technology involved in open pit coal mining is not very complicated, shortening the time needed for a complete technology transfer

to take place. Furthermore, the country will be acquiring completely up to date technology which can be expected to be relatively long lived. Another important fact is that, contrary to oil exploration and extraction, coal production is a risk-free operation, once the necessary infrastructure is in place and the reserves have been determined with pre-

[illegible] more compelling reason why Carbocol may change its policies [illegible] commercial risk that coal prices may not be linked [illegible] which is what the industrialized nations are looking [illegible] their own dependence on oil. Since the 1973 oil embargo, [illegible] increased in the wake of OPEC's prices, and as long as [illegible], the country may find it acceptable to swap coal for oil [illegible] energy balance. But the very high investment levels that exist today in both consumer and producer countries in the area of coal [illegible] increase world coal supply to the extent of decreasing the prices of coal in relation to oil. Whenever this happens, the swapping policy which Colombia is implementing will become disadvantageous, and it will become better to keep the coal home and convert it to domestic uses. Figure VII-1 illustrates the possible trends in coal demand and supply, and their effects on the country's cost of the swap.

4. The Colombian government's long term objectives can be achieved as long as El Cerrejón mine is in operation, which also means with or without foreign partner, unless other compelling reasons exist for their presence, like transportation and marketing capabilities not available to Carbocol. None of these seems to exist, however: Carbocol has already [illegible] from several countries to buy coal on long term contracts without any external help; once the port infrastructure is in

Figure VII-1 POSSIBLE TRENDS IN COAL DEMAND, SUPPLY AND PRICES



place, coal can be sold FOB in Bahía Portete to anyone who cares to bring its ships in.

What do the different actors think today about these propositions? In relation to the country's balance of payments' position, there seems to be a consensus that it can only grow weaker in the future, and that the country will never have enough foreign exchange for its development needs. According to one National Planning Department official, the project's objectives agree with the general energy policies set by the National Integration Plan (PIN), and it can only be positive for the balance of payments in the future. He also disagrees strongly with the opposition's view that the country will be wasting its coal reserves at low prices. He maintains that time is ripe to extract coal and sell it, rather than wait and run the risk of never exploiting it commercially due to the advent of new energy sources in the not so distant future. According to Exxon's officials, the probability that new oil will be discovered in Colombia is extremely small, and they dismiss the theory that "Multinationals know where the oil is but keep it secret" as pure nonsense.

> "If the country is full of oil reserves, they say, why doesn't the government exploit them?" (1)

Intercor's officials also find it unlikely that the government will limit El Cerrejón's production in the future:

> "Colombia's coal reserves are much greater than its oil reserves. The country will use its coal, there is no doubt. Besides, once the investments are made, the government will want to recover them, because El Cerrejón should not compete with other domestic development projects for the use of scarce financial resources." (2)

Private interest groups also see the threat on the balance of payments as very real. A leading Colombian economist described the problem in blunt terms:

> "Look: during the next few years, Colombia will have to import some US$ 1,500 million worth of oil. What is the composition of our balance of payments? Coffee makes up some US$ 1,500 million, and drugs another US$ 1,000 million per year. People think our balance of payments is great because we have lots of foreign exchange, but the truth is, it is very weak !
> Why does it look good? Because people are bringing foreign financial assets to the country, to lend at a 30% or 40% interest rate. But now that the US interest rates may well reach 25%, our financial bonanza is over ! Should monetary problems arise, our balance of payments will blow up in the air. Let's face it: Colombia still lives on Brazilian frozen coffee crops ! (3)

Support for a large scale project seems assured in all eventualities. This does not mean, however, that the project's success is assured, as the distribution of its benefits depends on future (uncertain) prices of coal in international markets. If things go wrong, the transnational nature of the project will be questioned.

As Carbocol acquires the required technology, moreover, the public/private quality of the project may become unnecessary. These are the critical strategic issues which project managers will need to face in the future.

VII.2. Contractual Arrangements

The degree to which the association contract achieves a clear focus on the partners' objectives is an important success factor in the project's future. The important questions are: Is the Association contract the best type of contract to use in large scale coal mining? Is the Association contract fair in terms of how it distributes project revenues, costs and risks? Section VII-1 implies that the project is congruent with the partners' objectives, at least in the short run. The operationalization of those objectives in a legally binding contract is another matter, however.

Is association the right type of contract?

Chapter III basically proposed that the government's choice of an association contract was made almost by default (because Peabody's proposal was not competitive, and because Cerrecarbón did not find clients for its proposed mixed enterprise). Let us remember, however, that this happened in 1975. Things have greatly changed since then, and there is now a widespread consensus (excepting, of course, Ecopetrol and the oil companies) that association contracts are on their way to extinction. Several important reasons exist for this:

1. Association contracts are becoming politically infeasible: the public has lost confidence in their possible virtues, the press has been attacking them with increasing frequency during the last years, and voters preferences will eventually scare away politicians who still believe in their soundness.
2. Other types of contracts like mixed enterprises, and operating and management contracts are now feasible: the Cerromatoso Nickel project

is an example of the former, and Carbocol's bidding competition for central Cerrejón is an example of the latter.

3. Many government bureaucrats, especially at the professional (staff) level, resent one basic tenet of the association contract: that CONTROL is in the hands of the foreign partner during all of the project's phases (exploration, feasibility studies, implementation and exploitation). This fact was illustrated in Chapter V and the point needs no further elaboration.

4. Finally, there exists a worldwide evolutionary tendency in large scale, natural resource projects towards the management type of contracts which imply a sort of open market treatment of technological transfer and acquisition of know-how. In particular, the 1976 nationalization of the Venezuelan oil industry is a starkly clear example of a management contractual arrangement, and it is too close an event for Colombian policy makers to overlook.

Evolution of natural resource exploitation contracts: The history of natural resource contracts is related to the degree of control of the state over those projects: before the creation of Ecopetrol, for example, concession was Colombia's approach to its oil industry development. From an economic point of view, a concession was basically equivalent to selling the country's reserves up front, without regard to how they were exploited or what was done with them, in exchange for a (fixed) stream of revenues which included royalty payments and taxes. Clearly, only the foreign exchange was of concern to the government here, and control over the project was left in private hands. The creation of Ecopetrol and the introduction of association contracts are inseparable, and correspond to the government's drive toward assuming more control over the development of those resources. In the case

of oil exploration, association contracts made sense because of the high level of risk involved: large investments were needed for exploration. Finding viable oil deposits was like a poker game in which it was imperative, for countries with limited financial resources, to share the risks of drilling many "dry holes", and to share the benefits of the few positive discoveries, even without contractual arrangements like participation incomes.

The idea of a mixed enterprise begins to make sense when the government has the institutions necessary for the management of large scale projects and wants to participate fully in the project's implementation. The presence of the private partner is then acceptable if the state is not willing to assume the project's technological and commercial risks by itself.

The final step in this evolution comes when the government is willing to assume all the risks involved in the venture, be it because those risks are low or because the country is in a position to bear them financially. Operating and management contracts then become viable because they involve the following procedures:

1. The state enterprise assumes all exploration, implementation, and commercial risks, and should therefore receive all the potential benefits accruing from the project (for example those due to higher prices).
2. The project's phases are kept under full control of the state enterprise and each phase may be contracted with a private operator when it is not in the state's interest to build the operating organizations required (take, for example, hiring Morrison-Knudsen directly to build the necessary infrastructure.)
3. Management contracts (or hiring of external consultants) may be used if

the state does not have the required managerial cadres or if it needs expert advice on particular aspects of the project (e.g. international marketing.)

4. Operating and management contracts could be awarded under a variety of contractual arrangements like fixed fees, cost-plus contracts, percentage of revenues and others, which are widely used in industrialized countries for all types of large scale, multisector projects.

Viewed under this light, El Cerrejón association contract has the operational characteristics of a concession; but it is in its risk sharing aspects more akin to an operating contract. But there is one additional, though crucial, difference: the association contract spans all of the project's phases from start to finish, not one particular phase. Association contracts have been used by Ecopetrol for twenty years, but this does not mean they are applicable to coal exploitation today. When the contract was signed in 1976, Colombia did not possess the technology or the management capabilities required; but it is now in a position to acquire those capabilities. Carbocol only has to become acquainted with the technology which is not in itself very complex.

An association contract would not be feasible today. But since the Carbocol-Intercor contract is already in force, the question is: will it be manageable until 2008? This depends now on the ability of its managers to apply it, and maintain support for the contract.

Is the association contract fair in its risk sharing characteristics?

Chapter IV studied the economic aspects of the Carbocol-Intercor association contract. It was found that the opposition was wrong in arguing that the distribution of benefits would be 80% for Exxon and 20% for Carbocol.

The real distribution will probably be the opposite, if Exxon's coal price estimates are correct. The real problem with this contract lies in the distribution of the project's risks: Colombia is in fact assuming all the commercial risks of the project (related to coal price variations) because Exxon receives a guaranteed 35 percent return on its investment, in return for a guaranteed level of royalties which only decrease the available participation income. Intercor will share with Carbocol the operational risks of the project (embodied in operating cost variations) but gets in return full control over the implementation and extraction phases of the project. Moreover, any non-extreme variations in costs will not reduce Intercor's profits, but only the participation income available for distribution. Intercor bore the exploration risks of this project, but the corresponding investment will also give an accumulated 35% return to Intercor. The distribution of participation incomes is defined in such a way that Intercor will get a very large proportion of them, and sooner than Carbocol, within the probable price range of international coal prices. Only if coal prices fall down to ridiculous levels will Intercor be deprived of its guaranteed 35% ROI. Furthermore, the contract includes clauses that allow Intercor to withdraw at any time from the project, while Carbocol cannot do this short of straightforward nationalization(with all the legal and diplomatic problems that this would entail.)

The association contract is in fact a cost-plus operating contract with a large plus (35% ROI) and the right to participate in the benefits accruing from any positive variations in international coal prices in a preferencial way over Carbocol. Operationally, the association contract has most of the characteristics of a straightfoward concession because the project's management and control are fully in the hands of Intercor. The execu-

cutive committee (made up of one representative of each company) is the only element characteristic of a mixed-enterprise.

It is my view that the country would be much better off with a straightforward operating contract (cost-plus or fixed fee) in a business which has relatively little technological or operating risk, and assuming all commercial risks, while keeping all of the project's potential benefits. I should mention that this problem of risk sharing is not unique to developing countries or natural resource development projects. The US government encounters the same difficulties and faces the same choices, in high technology ventures (for example in the area of Defense) or in new energy projects (for example in the area of synthetic fuels). Future development contracts will, I think, be awarded in the form of operating contracts, or structured around mixed enterprises, depending on the degree of technology, exploration, operation and commercialization risks involved. This also means that the state enterprises should move to develop adequate PROJECT MANAGEMENT know-how, and that multinational oil companies should move towards offering straightforward operating capabilities, selling technology and management know-how in what should amount to future open market transactions.

VII.3 Application of the contract

Chapter V analyzed the problems involved in applying the "rules of conduct" set by the association contract to actual decision making in two independent organizations which respond to very different environments. Chapters IV and VI showed how the economics of the contract give different, and at times opposing, incentives to the two partners, further complicating the decision making process. Section 2 of this Chapter explained my reasons to think that association is no longer appropriate for this kind of project. The Colombian government, however, has decided to go ahead with the contract, in view of the urgency of the project. The problems faced now lie in the great difficulty to interpret some of its clauses. This increases the possibilities for misunderstandings and disagreements to appear between the partners. An important element for success related to the application of the contract is the degree of flexibility provided by the contract to ensure a coordinated and mutually beneficial decision making process.

"Legalistic" versus "Spirit of the contract" approaches

Intercor's managers raised the issue of contract application during the January 1981 interviews in relation to the poor performance achieved in smoothing the decision making process between the two organizations. Their opinion is that the contract is complicated due to legal problems involved in government contracts. This probably happens in many countries and with many multisector projects. They further assert that the INTENTION of the contract is more important than its LETTER:

> "The contract will be effective as long as it rests at the bottom of the partners' drawers." (4)

In reality, however, the Colombian legal and political systems impose

upon Carbocol the necessity to "stick to the letter of the contract." This is exactly what happened with Carbocol's September 1980 declaration of commercial feasibility, and this is probably the way Carbocol's performance is going to be judged by government auditors all the way. Intercor's managers see this problem as a very important barrier to the project's future success, and they find it critical for El Cerrejón's success that Carbocol achieve some degree of decision making autonomy vis à vis the rest of the government. They expect this to happen with time as Carbocol grows into a full-fledged, stable organization, especially in response to its plans for the development of El Cerrejón's central area:

> "Carbocol will thus be fortified; the joint decision making process should then become smoother, as happened with Ecopetrol twenty years ago."(5)

Carbocol's managers hold somewhat different opinions on this subject. Present plans contemplate the duplication of Carbocol's personnel in the short run but the main objective seems to be to avoid the growth of a complete bureaucracy like Ecopetrol. In relation to the high-level relationships between the partners, Carbocol's managers agree with the necessity of "having confidence in the partners' intentions", but are quick to add "as long as decisions are made in strict accordance with the contract." The fact that the contract is not clear and precise may give Intercor more amplitude for negotiation, but it makes Carbocol's job more difficult, as was shown in Chapter V:

> "Some adaptation will be necessary, because some clauses are very restrictive and inhibit the proper functioning of the association. The contract provides some sort of an envelope, and our (Carbocol's) job is to maximize our decision making effectiveness within the envelope."(6)

This will have to be done through the Executive Committee created by the contract to make all important decisions regarding the project, which

includes one representative of each partner (probably their top managers). Both organizations expect to avoid the use of the arbitration procedures stipulated in the contract in case of a disagreement, but this may become difficult, given the inherent contradictory economic incentives of the contract. Both partners already expect serious problems in decisions regarding:

1. The setting of production levels.
2. The setting of transportation fees, which will affect not only the royalties paid but also the use of the project's infrastructure by third parties (in this case, Carbocol itself with its central area developments.)

However, Carbocol's managers feel confident that arbitration will never be needed:

> "Carbocol cannot be so exacting as to lose its private partner by making it operate at a loss. But Carbocol will keep absolute control over things like production levels. Exxon has too many interests in Colombia, and the possibility of expropriation should keep them in check. It is of utmost importance for <u>them</u> to maintain very good working relationships within the executive committe and they will behave accordingly." (7)

They further respond to the criticisms made about letting Carbocol's hands be tied through the declaration of commercial feasibility as follows:

> "The August 1980 decision to go ahead with the project was not, and should not in any case be, taken by an autonomous Carbocol: it was made by CONPES. Furthermore, Carbocol's board of directors <u>is</u> the government: Treasury, Mines and Energy, Ecopetrol, IFI, and the Banco de la República all have seats in it. Do not be so naive as to think that the government does not know what it is doing. You have to understand this: Carbocol is only the entity which EXECUTES the government's policies with respect to coal: TRUE: CONPES decides on Carbocol's objectives. FALSE: Carbocol forces decison making within the government." (8)

Another key problem is, in my view, the discontinuity of top management, characteristic of the Colombian political system. Although project managers with different capabilities may be needed for different stages of

the project, the timing of those changes is certainly unrelated to the country's political and electoral cycles. The appointment of a new top manager for Carbocol only weeks before a turning point such as the declaration of commercial feasibility, shows how disastrous this lack of continuity may be, regardless of the abilities of the new incumbent. This is critical not only because an enterprise such as Carbocol cannot perform its assignments effectively, but also because any new management will always have to go back to the LETTER of the contract before it can proceed with decision making. This may be a good way to ensure that the contract is performed as "established", but the danger will always exist that it be interpreted differently by new managements because of its complicated legal language.

VII.4. Organizational structures and project management

The adaptive capacity of the organizations involved in this project is a key element of its future success. Chapter V showed that Carbocol's organization did not change significantly from the time when the contract was signed in 1976 until the 1980 declaration of commercial feasibility. It was then totally unprepared to deal with the economics of the project as they were presented in Intercor's Design Basis Memorandum (DBM). The attention of most of its staff was devoted to the exploration of Central Cerrejón. Parsons-Brickenhof was hired too late to be useful in evaluating Intercor's proposal, and Carbocol was forced to return to the letter of the contract in answering the proposal.

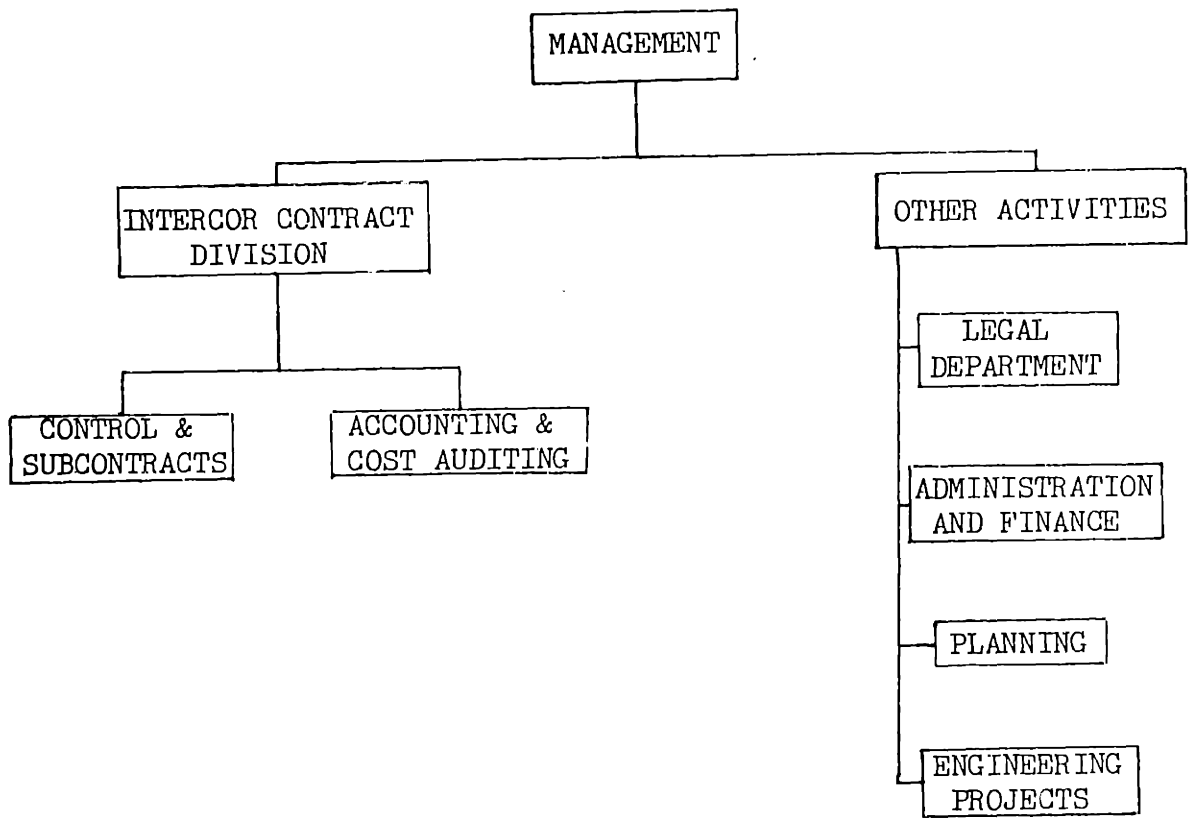
Intercor's organization, on the other hand, had grown rapidly, but not enough to handle both the responsibilities of operator and half-owner, and also its role as a source of technology and know-how for Carbocol. This was the cause of the alienation felt by Carbocol's staff towards the project's implementation, precipitating the resignations which will undoubtedly affect the project's future in important ways. In relation to exploratory work and to preparation of the mining and infrastructural plan, Intercor relied heavily on Exxon's expertise and on outside consultants (for example Morrison-Knudsen), but was mainly geared toward the preparation and presentation of the July 1980 declaration. Intercor failed to detect the effects of its lack of "coaching" Carbocol through the preparation of the Design Basis Memorandum. The importance of maintaining close working relationships with Carbocol was repeatedly mentioned by both partners in the January 1981 interviews.

Carbocol: multiple objectives and decision making levels

Carbocol's executives feel that part of the solution lies in the separation of responsibilities, and they are proposing to reorganize the state enterprise into two basic areas, one to control Intercor's activities in northern Cerrejón, and another to take care of all other activities (for example the development of central Cerrejón). This proposed structure is shown in Exhibit VII-1. It can only be hoped that this separation of responsibilities will provide Carbocol with the means for achieving an acceptable degree of communication with Intercor, which is a basic prerequisite for control. This will become ever more difficult because project management is being further removed from Carbocol's direct supervision: before, Carbocol was supposed to supervise Intercor. Now, Carbocol must supervise Morrison-Knudsen through Intercor. Management discontinuity only increases the problems which could only be solved by making Carbocol a "politics proof" decision making apparatus. This is what Intercor seems to be counting on, but is unworkable in my view. The solution to this problem would be achieved if Carbocol's organization takes into account the multiple objectives which it must achieve, and their corresponding levels of decision making:

1. Policy objectives: from this point of view Carbocol must be geared toward the RAPID IMPLEMENTATION of the project. To this end, it needs a relatively small professional staff ready to help in short term policy decisions like those involved in the declaration of commercial feasibility. This staff should be very familiar with the basic economic characteristics of the contract (at the very least those explored in Chapters IV and VI), and very familiar with the National Integration Plan (PIN). Most importantly, they should be ready to represent Carbocol's negotiating position vis à vis Intercor. For example, future production levels do

Exhibit VII-1 CARBOCOL'S NEW PROPOSED ORGANIZATION



Source: Ricardo Cucalón, Carbocol, January 1981.

Note: This is a rough sketch, and a definite organization structure has not yet been adopted by Carbocol.

not need to be decided upon immediately especially if sales contracts can be signed in the future with better prices, but a final and clear decision should have been made already regarding PRODUCTION CAPACITY, which will irrevocably affect the levels of investment needed initially (and therefore the partner's shares in the project.)

2. Long run objectives: Carbocol must evolve into an organization capable of handling projects very similar to the present venture with one basic difference: it must be geared toward operating contracts or mixed enterprise ventures, if it is assumed that association contracts will not be feasible in the future. As a consequence, Carbocol should learn to do what Intercor is doing right now. Carbocol's answer to this proposition could be: "This is what we are doing in Central Cerrejón!" I believe it is too soon for Carbocol to embark on another large project right now, until it has the experience and the human/technological resources to do so. I think it is a mistake to believe that Carbocol will be able to secure those resources, especially when it would have to compete with Intercor to do it (Intercor alone has enough trouble hiring the required personnel). Moreover, the Northern Cerrejón's deposits are ample enough to assure supplies for all possible medium term needs of the country (Carbocol's initial share of production will surpass the country's total present supply.)

I believe that Carbocol's present management should concentrate on ensuring an adequate transfer of technology from the foreign partner through increased <u>participation</u> of its staff in all of Intercor's (and Morrison-Knudsen's) activities, at least until coal extraction becomes a reality and the mine's operations stabilize into a predictable routine. Transfer of technology is the key issue here, and this needs to be done through the sharing

of information and through close cooperation between the two organizations. An interesting idea was mentioned by Carbocol's managers during the January 1981 interviews: A subcommittee mechanism which would ensure a cross-company team approach to all the activities that Intercor has been performing on its own,presenting only short, final progress reports to Carbocol :

> "The mechanism of subcommittees is expected to help in the control of the joint venture's activities: Carbocol's employee would participate from start to finish in any activity performed by Intercor; for example, from the opening of a bidding competition to the final signature of a subcontract. In this way, Carbocol will know all the details of each activity before its results are taken to the executive committeee for final approval. Carbocol's top management will then be adequately advised on all decisions, and will know that Carbocol's staff STANDS BEHIND THOSE DECISIONS."(9)

This approach should also ensure, as the comments above imply, that the 1980 events will not be repeated in the future, and that Carbocol will hopefully be ready to make decisions concerning the project with more and better information. In the long run, Carbocol's personnel should also be more prepared to deal with its assigned functions of control and auditing.

Intercor: a dual-purpose organization

One could possibly think that the recommendations above would be detrimental to Intercor, if they were implemented, but I do not think this is the case. The January 1981 interviews point to several common areas for concern, and suggest similar solutions. Intercor will have to deal with one important characteristic of the contract: that Intercor is supposed to be both an owner and the operator in this project.

As an owner, Intercor should represent Exxon's NEGOTIATING POSITION vis à vis Carbocol, particularly in its dealings with the executive committee. In these conditions, an "open doors" policy cannot be expected from

Intercor's top management when negotiating important decisions like production levels (which affect, through investment, the partners' shares in the project). As an operator, however, Intercor must submit to the executive committee's decisions, and must implement them promptly and faithfully. According to the contract, the operator is in obligation to supply Carbocol with complete information on its activities at every point in time. This situation creates a contradiction which is not easy to resolve: the responsibilities for the project's execution are in the same hands as the negotiating responsibilities. Intercor's managers are well aware of this problem, and many of their comments were directed to this issue:

> "From a legal point of view, owner and operator are the same entity, although the contract specifies the contrary. In practice, we are trying to achieve a clear differentiation between the two, because otherwise severe problems could develop that may hinder the association. From the operator's point of view, Carbocol must be kept permanently informed about what is being done in Intercor, to avoid things like having to study the DBM's eight volumes in sixty days (as happened in July 1980)."(10)

The 1980 events made clear that good communication between top managers of the two organizations (through the executive committee) is not enough to ensure a smooth functioning of the association. The challenge lies in ensuring a good inter-organizational coordination of activities at all levels. A strategy for achieving this coordination was discussed during the 1981 interviews, and it involves the following points:

1. Maintaining good relationships with Carbocol at the executive committee level: it will be very important to ensure consensus, and to avoid the use of the arbitration procedures provided by the contract. Those relationships have been good until now, and the managers from both companies see no reason why this state of affairs should change. One thing which could work against this is the fact that Carbocol's administrators are being continually changed:

> "Political interferences in state enterprises have always been problematic, but Exxon's long experience in Colombia shows that we can deal with this problem successfully." (11)

2. Increasing Carbocol's staff participation in the operator's activities: although the idea of subcommittees was not mentioned, Intercor's managers envision Carbocol's future organization as similar, or parallel, to Intercor's. We saw that this may not be the best solution for Carbocol, but some degree of parallelism will have to exist if coordination is to be achieved.

3. Increasing cooperation and avoiding competition between the two companies: to this end, an "open doors" policy should be maintained during the project's implementation, and project-related information should be shared without restrictions. Carbocol's managers also seem confident that this operating mode can be achieved:

> "Before, Carbocol and Intercor were totally separate organizations, and the only contact took place between the top managers. In the future, there will be close contact between the two. The problem is that Intercor has an operating discretion that Carbocol cannot have, the former being a private concern while the latter is a government owned enterprise. Legal controls are a reality that Intercor will have to accept, even if it is not used to this state of affairs. In return, we shall have to achieve an acceptable level of effectiveness within the limits imposed upon us by the political and legal environment." (12)

In conclusion, it appears that a greater organizational similarity must exist between Carbocol and Intercor in order for the inter-company decision making processes to be fruitful. Intercor must implement an "open doors" policy in its dealings with Carbocol. This should facilitate cooperation, avoid competition and misunderstandings, and allow an acceptable rate of technology transfer between the partners. Carbocol's increased know-how should, in turn, further facilitate communications between the two entities, increasing considerably the project's chances for success. Building support

for the project from within is the key underlying concept here, for Intercor. Participation is the way to coopt Carbocol's staff, and increase their support for the project. Finding the means to achieve control over the project's implementation is the key concept for Carbocol. Participation in the operator's activities is again the way to increase the staff's capabilities in project management, to improve management's information about every facet of the project, and to allow well informed decisions relative to critical aspects of the project. If participation is not increased, Carbocol's control over the project investments and costs will be very thin, with the resulting stress on the relationships between the partners.

VII.5. Key elements for the success of El Cerrejón project

Exhibit VII-2 shows the factors which in my view will be critical in successfully addressing the problem areas on which the study has focused. These success elements can be classified into five categories according to the degrees of freedom that the partners have in using them:

1. DEFINITION OF OBJECTIVES: The project is a response to different long-term strategies set by the Colombian government on the one hand and Exxon on the other. The objectives of the partners, however, are not fixed in nature, and they can change with time, under pressures created by the sociopolitical and economic environments. Therefore, the degree of stability of the partners' objectives over time is an important success variable. If the partners' objectives are fairly stable over time (e.g. if no severe economic or political disruptions occur during the life of the project), then the contractual arrangements should provide a stable project environment in which the partners can resolve differences of opinion through the procedures set by the contract for its application. If severe changes in circumstances occur (as was the case with the 1973 oil embargo), then the project environment tends to become hostile or detrimental to one of the partners (as occurred with Peabody Company's 1972 contract with Cerrecarbón and IFI). In the latter case, project support is bound to disappear, regardless of the skill of its managers or the power of its supporters.
2. CONTRACTUAL ARRANGEMENTS: These refer to the operationalization of the partners' objectives, and have one important characteristic: they are fixed in legal terms, and cannot be changed in response to changes in objectives, unless this is done through extraordinary measures (such as

DEGREES OF FREEDOM	MAIN PROJECT ASPECTS	CRITICAL SUCCESS FACTORS	CSF DEFINITION	EXAMPLES OF FUTURE ISSUES
LONG-TERM	DEFINITION OF OBJECTIVES	STABILITY OF OBJECTIVES	-Political Environment -Economic Environment -Social Environment	.Project champions .Exxon: diversification market share .Colombia Economic development. Balance of payments.
LONG-TERM	CONTRACTUAL-ARRANGEMENTS	DEGREE OF FOCUSING ON OBJECTIVES	-Desirability of Association contracts. -"Fairness" of contract: Distribution of revenues costs and risks.	.Alternative projects: Shale oil? .Concession vs Association vs Mixed enterprise vs Management Contract vs Consulting.
MEDIUM-TERM	APPLICATION OF THE CONTRACT	DEGREE OF CONTRACTUAL FLEXIBILITY	-Decision-making autonomy -Resolution of conflicts of interest.	.Production decisions. .Investment decisions. .Choice of technologies.
MEDIUM-TERM	ORGANIZATIONAL STRUCTURES	DEGREE OF ADAPTIVE CAPACITY	-Changes in organization structures. -Human and technical resource development.	.Carbocol: Big or small? .Intercor's organizational culture.
SHORT-TERM	PROJECT MANAGEMENT AND IMPLEMENTATION	DEGREE OF CONTROL	-Control procedures. -Capacity for control. -Controllability.	.Participation and cooperation. .Hiring policies .Sharing of information.

Exhibit VII-2: IMPORTANT SUCCESS FACTORS

withdrawal or nationalization). Therefore, the degree of focus achieved by the contract in addressing the partners' objectives and in reconciling divergences of interest is a key variable.This focusing relates to the desirability of an association contract as opposed to other possible legal arrangements. For example, we saw in Chapter III that a concession contract could have been signed by Carbocol in 1976, or a mixed enterprise could have been created for the development of El Cerrejón's coal deposits. This focusing element also relates to the inherent fairness of the contract in terms of the distribution of project revenues, costs and risks, independently from the legal procedues used to create the joint venture. For example, Chapter IV analyzed the characteristics of the 1976 Carbocol-Intercor contract in those terms, finding several important sources of potential conflict.

3. APPLICATION OF THE CONTRACT: The two problem areas above pertain to what may be called the pre-project feasibility analysis that should be performed before the signature of any development contract. In the case of El Cerrejón, they corresponded to the exploration phase of the project for both Peabody's and Intercor's contracts. There was,however, one great difference between the two contracts: Peabody's contract included a"renegotiation clause" that could be used at the end of the exploration phase, while Intercor's contract only included a "declaration of commercial feasibility" clause to be called upon at the end of that initial phase. It is probable that the project would be very different today if Intercor's contract included a renegotiation clause. Be that as it may, the partners' objectives and the contractual arrangements are two long term, relatively stable characteristics of the project. They create a new "project environment" in the form of rules for the conduct of the

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joint venture. Within this environment, some degree of freedom can be exercised by the partners in making decisions regarding project development but always subject to the basic rules spelled out in the contract.

The most important success factor here is the degree of contractual flexibility to accomodate possible changes in the partners' long term (or short term) objectives. Flexibility refers here to each partner's capacity to make project-related decisions that address its own objectives. For example, can Intercor unilaterally decide to increase coal production in response to improved market conditions ? Or can Carbocol unilaterally decide to decrease coal exports in response to an "over-valued" balance of payments' position ? Flexibility also refers here to the procedures provided for the resolution of conflicts of interest regarding the management of the project. The solution of a conflict like the one mentioned above would be an example of this flexibility, and conflicts such as these may appear at all times during the life of the project.

ORGANIZATIONAL STRUCTURES: The organizations involved in a large scale project such as El Cerrejón are bound to change as the project moves from one phase to the next. Therefore, an important success factor is the degree of adaptive capacity on the part of the enterprises involved in the joint venture, to the project's environment and operational characteristics. Adaptation refers here to the capacity and effectiveness of the organizations involved to change their structure and develop their human and technological resources in response to the partners' changing objectives, to the continually changing project environment, and to the operational challenges encountered during the project's implementation. As an example of the adaptive capacity for structural change, Chapter V

partly explained the 1980 events in terms of Carbocol's inability to adapt, during the exploratory phase of the project, to the coming declaration of commercial feasibility, and to the implementation phase of the project.

5. PROJECT MANAGEMENT AND IMPLEMENTATION: A final important success ingredient deals with the project's day to-day operations: the degree of control that the partners can exert over those day-to-day operations indicates their capacity to ensure that their objectives are met in the long run, and that the contract is respected in the short run. Degree of control refers here to the control procedures defined by the contract, to the inherent controllability of the project's main operational aspects, and to each partner's effective control capacity (which is in part a function of its organizational capabilities). An example of control procedures would be the accounting rules established for the maintenance of the partners' participation accounts in the project. An example of a controllable aspect of the project is the production level agreed upon for a specific year (as opposed to international coal price, which is essentially a non-controllable aspect). For example, Intercor, as the operator, can be expected to exert more control over the project's operating costs, although the two owners (Carbocol and Intercor) have equal nominal control over them through the executive committee

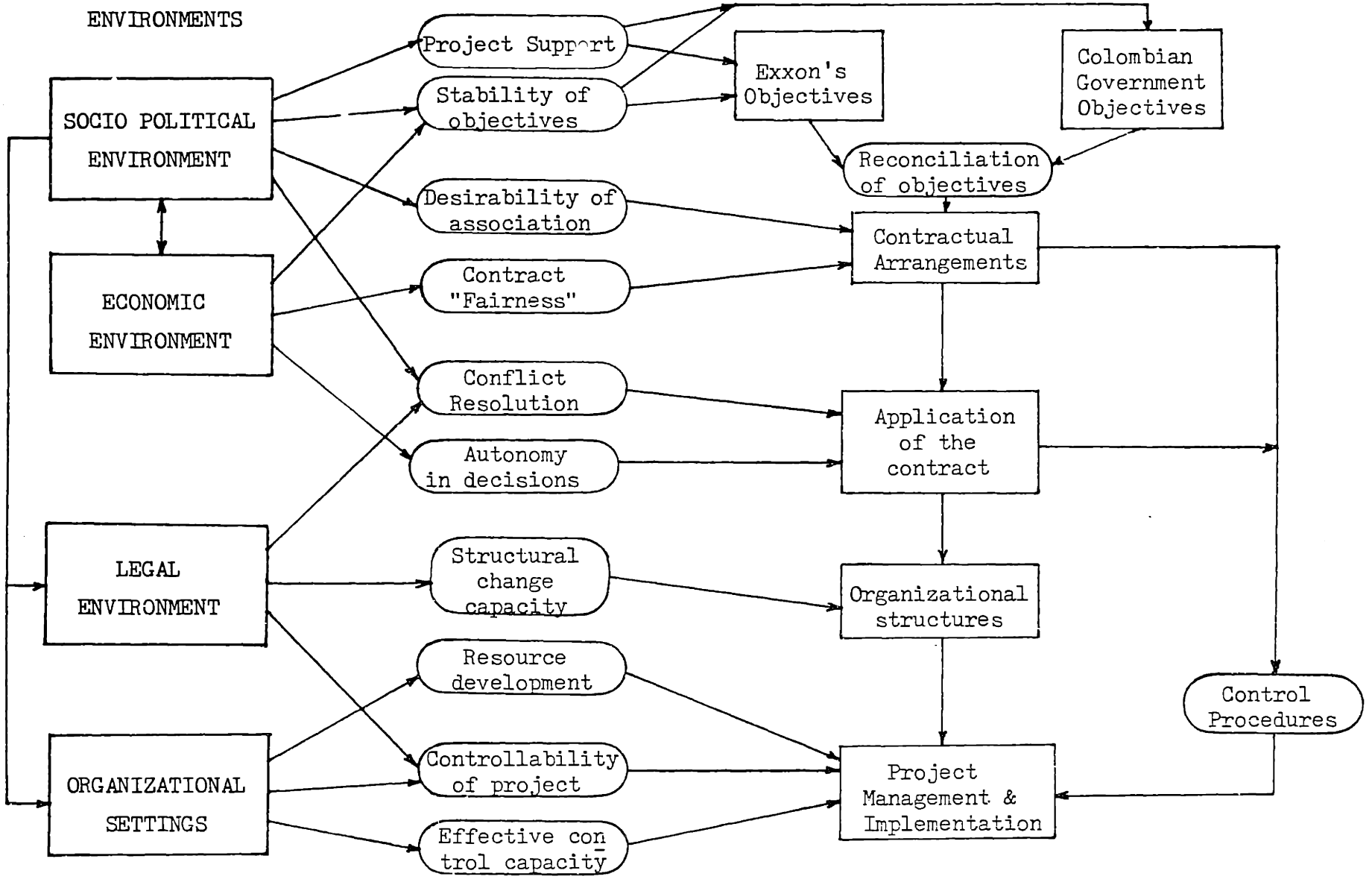
Exhibit VII-3 shows the complete framework proposed: it includes the problem areas identified, and the different environments that may influence the project's course. What has been done is to identify the project's critical success elements in terms of their RELATIONSHIPS with the project's environments and problem areas. The arrows in Exhibit VII-3 indicate

PRECEDENCE or CAUSALITY between the different elements.

This framework can be applied to the evaluation of large scale, transnational, public/private joint ventures, especially in cases where long term natural resource development contracts are performed. The framework addresses the transnational quality of such projects by making explicit how different political and economic environments can affect partners' objectives, and through them, the desirability of the project. The framework also addresses the multisector characteristics of such projects by making explicit how different legal and organizational environments can affect their conduct. The framework finally addresses the large scale nature of such projects by identifying the major problem areas to be considered, and by recognizing their basic interrelatedness, and the relationships between them and their environments.

The inherent economic value of such projects is a necessary but not sufficient condition for success. There should exist no such independent things as "economic evaluation", "social evaluation", and "political assessment" of a large scale project. A correct evaluation must include all of the above, and most importantly, take into account their fundamental relationships.

Exhibit VII-3: RELATIONSHIPS BETWEEN ENVIRONMENTS, CRITICAL SUCCESS FACTORS, AND PROBLEM AREAS



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