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dissertation entitled

STATE-LED PETROCHEMICAL INDUSTRIALIZATION AND URBAN-REGIONAL DEVELOPMENT IN SAUDI ARABIA

presented by

Abdullah A. Mubaraki

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Sociology

Major professor

Date 17 NOVEMBER 1994

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STATE-LED PETROCHEMICAL INDUSTRIALIZATION AND URBAN-REGIONAL DEVELOPMENT IN SAUDI ARABIA

By

Abdullah A. Mubaraki

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology

1994

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ABSTRACT

STATE-LED PETROCHEMICAL INDUSTRIALIZATION AND URBAN-REGIONAL DEVELOPMENT IN SAUDI ARABIA

By

Abdullah A. Mubaraki

In many developing nations, the state plays a role in economic development by controlling strategic, export-oriented industrialization (EOI). Indeed, this approach characterized the recent rise of the newly industrializing countries (NICs). While these states have succeeded in building strong economies, export-led strategies also cause the unequal regional distribution of industrial growth. Governments have attempted to rectify this problem by spatially redistributing industry. However, these efforts have not been successful because they ignored the spatial organization of economic linkages.

In Saudi Arabia, the spatial organization of the EOI process is largely shaped by the oil industry. The Saudi government's development plans have a predominant strategic goal--to reduce the country's dependence on oil. This goal surpasses all other development objectives, including an even spatial distribution of growth. Nonetheless, the government's strategic, export-led petrochemical industry has incorporated a spatial model (the industrial city) with a concern for regional and urban development.

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Abdullah A. Mubaraki

This study examines the relation between development strategy and the spatial organization of production in the Saudi EOI, and the extent to which the industrial-city model has contributed to regional balance. A comprehensive study of the relation between the Saudi industrial strategy and its spatial impacts is undertaken. The strategic aspects of the Saudi industrial-city model are apparent in each city's location, structure, and linkages to the oil industry. The existing regional imbalance in Saudi Arabia, it is concluded, is due to sectoral-based, urban development in the absence of a well-defined regional policy.

To three very spec

My grandfa

My mother,

My brother,

To three very special and cherished people:

My grandfather, Yahya Al-Jreebi (may Allah reward him Paradise)

My mother, Fatimah Al-Jreebi

My brother, Dr. Ahmad Sair Mubaraki

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I would like to thank my sponsor, Imam Mohammad Ibin Saud University, for giving me the opportunity to pursue my higher education. My appreciation also goes to the people of the Saudi Educational Mission in Washington, D.C.,

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especially my former sponsor advisor, Dr. Ahmad Osman, and current advisor, Dr. Ahmad Khair, for their help and cooperation during the course of my study.

In Saudi Arabia, the people of the Royal Commission for Jubail and Yanbu, SABIC, and the Deputy Ministry for Town Planning merit special mention. In Riyadh, special thanks are extended to His Royal Highness, Prince Abdullah Ibin Faisal, for his cooperation and valuable suggestions. My sincere thanks also go to Mohammad Al-Dalaan, Director General of Public Relations in Riyadh headquarters, and Musaed Al-Kahatani, Assistant Director General at the Office of the Chairman, for their exceptional cooperation during my field research.

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In Yanbu, my appreciation goes to the people in the Public Relations and Planning Departments for their help in facilitating my stay at the industrial city, providing needed information, and arranging my meetings with several experts and officials.

I would like to express my gratitude to the people of SABIC. Foremost, I am grateful to my friend Yousef Al-Banyan, in the Public Relations Department, for his

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endless cooperation and help in facilitating and arranging my meetings and visits to SABIC companies in Jubail and Yanbu.

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I would like to thank the people of the Deputy Ministry for Town Planning. Special thanks are extended to Dr. Saleh Al-Hathloul, Deputy Minister of Town Planning, for his valuable discussions and suggestions. My appreciation also is expressed to Fadghosh Al-Muraykhi and Dr. Mohammad Abdulrahman for their cooperation in obtaining the necessary information.

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I am sincerely indebted to my beloved wife for her help, support, and tolerance throughout my writing of this dissertation. Regardless of her own pressing school work, she was there for me. Her devotion in sharing with me the burden and aggravating moments caused her to sacrifice her time and happiness so I could complete my research and graduate.

I also would like to extend my appreciation to my brother Hatem for his helpful friendship, and to his family members for their continuing support. My thanks also go to my brother Hasan for his support and devoted concern. To my brothers Mohammad and Saad, and all my other brothers and sisters, I say "Thank you" for being there for me.

Last, but certainly not least, I thank my typist, Sue Cooley Miller, for her friendly advice and help in typing and finalizing my doctoral dissertation.

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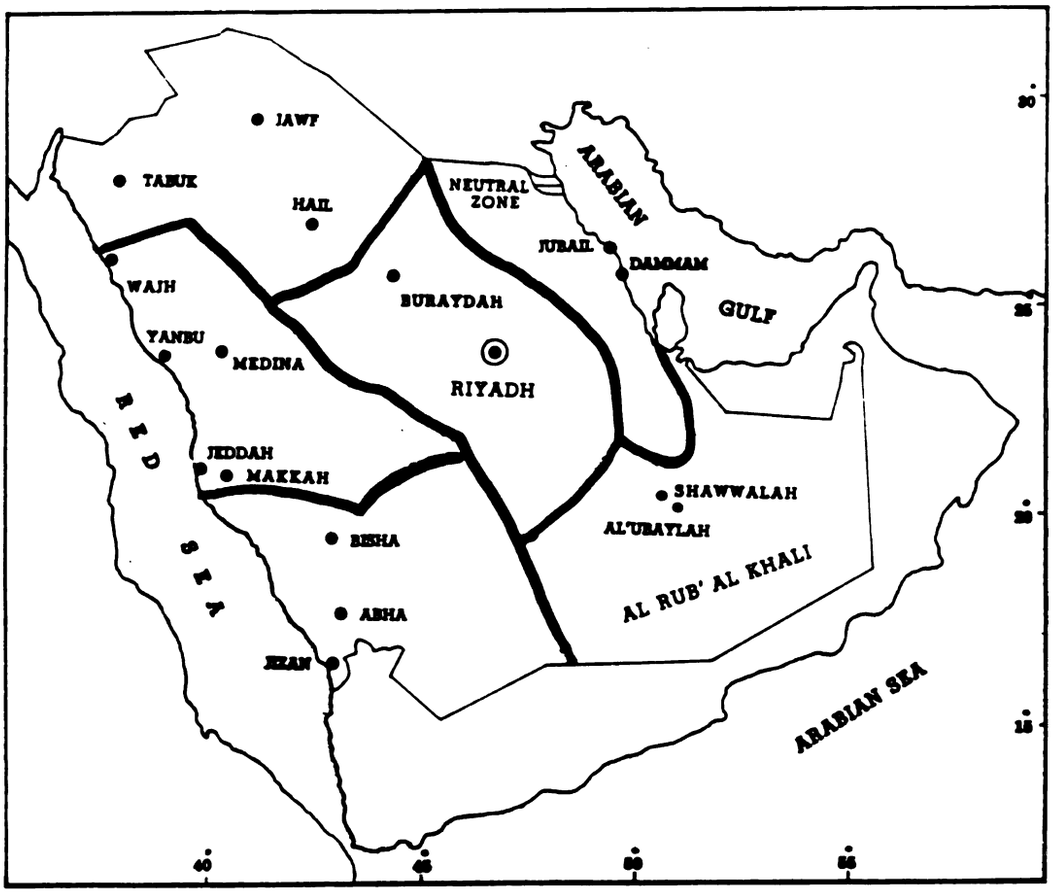

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CHAPTER I

INTRODUCTION, RESEARCH PROBLEM, AND METHODOLOGY

Introduction

This study examines how state oil-based, export-oriented industrialization (EOI) has shaped national development and urban and regional growth in Saudi Arabia. Focusing on the petrochemical industry, one goal is to investigate how oil-dependent development influenced the state's industrial strategy and with what implications for the nation's economic transition. A second objective concerns the impact of state-led growth on regional and urban development.

The Saudi state EOI is dominated by the national goal to reduce dependence on oil. The Saudi state uses oil and gas resources to build a national industrial base and promote local potentials for growth. These strategic and spatial aspects of EOI are recognized through an industrial, urban, and regional-centers model.

This study links the strategic and spatial aspects of the Saudi EOI to understand the political economy of oil-based industry. This approach is particularly important given the role of oil as the source of national income, its dominant outward orientation, and its spatially concentrated production. In Saudi Arabia, these three aspects of oil-based economy and industry are the underlying

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determinants of the state's industrial strategy, which is designed to achieve a diversified industrial base, and therewith a process of spatial redistribution of oil-based industrial growth.

The Saudi government has, over the past two decades, developed an oil-based, export-oriented industrial system as a basis for economic and social development. The Saudi oil-based industry was developed through a spatial model aimed at diversifying industrial growth within the national territories. This spatial model was developed through a system of industrial-urban centers--the Jubail and Yanbu industrial cities.

In this study, the strategic and spatial dimensions of the Saudi EOI will be examined emphasizing the economic and regional implications of Jubail and Yanbu industrial cities. The Saudi petrochemical-led, EOI process aims to reduce the country's dependence on oil through:

1. Adding value to the national oil and gas resources by expanding productivity, especially in the downstream petrochemical industry.

2. Reducing the negative impact of fluctuating oil prices on national revenues. This goal is decisive because of the role oil plays as a source of income, and as a source for the development of other local industries.

3. The localization of productive resources, mainly through a joint-venture strategy. The localization process involves the development of technological, human, and marketing structures.

4. Saudi industrialization is a drive toward economic diversification through basic and downstream industrial activities, hence the rise of an import-substitution sector.

The industrial cities of Jubail and Yanbu are regional and urban growth centers. While strategically located to serve as export-led zones, the cities are

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also expected to achieve balanced regional growth. The location of Jubail within the Eastern Province, and Yanbu in the Western region, outside the traditional oil region, was expected to diversify regional economies through spill-over effects in service and manufacturing industries.

The cities' strategic and spatial dimensions have been criticized on two accounts. The first criticism concerned the viability of Saudi industrial programs due to the strong dependence of industry on the oil sector. Oil represents the source of raw materials and capital for the operations of the leading petrochemical industry. The second critical view stresses the limited spatial linkages among industries in the Saudi EOI. Economists emphasize the lack of relationship between oil-based industrial projects and other domestic manufacturing sectors.

Critics argue, the problem is inherent in the export nature of these large projects, their strategic nature, their capital-and-technological-intensive operations, and their spatially concentrated, self-sustaining system of industrial production. These features of the Saudi EOI have spawned skepticism about its success. Some skeptics label these projects mere "showcases," while others believe that the future outcomes will depend on the fluctuations in the oil economy. Still others consider the slow returns of Saudi basic industry to be the result of the still unfolding process of economic transition. In this last view, the Saudi EOI strategy requires only the passage of time to achieve success.

While acknowledging the main concerns of the critics, this writer believes that Saudi Arabia has made remarkable progress in transforming her economy and

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society during a short period of time. This is witnessed by the state's use of oil wealth to improve the social well-being of its population, to build economic and physical infrastructure, and the focus on productive, long-term development through oil-based EOI. These effects are significant, given the comparatively short history of development. In fact, the strategic decision by the Saudi government to build the spatially concentrated heavy industry indicates the nation's recent entry into the industrialization process. Therefore, this study is concerned with the political and economic forces shaping the Saudi state's development strategy and the implications for national and regional growth.

One aim is to outline the development aspect of the state's strategy and how it is influenced by the geography of the oil industry and the political economy of urban-led growth. Throughout the Saudi development process, the location of the oil industry in the Eastern part of the country and the strength of urban forces in the Central and Western regions have shaped state planning and distribution of growth. Indeed, these locational and urban forces have led to the rise of oil-generated, and oil-based industrial sectors.

The oil-generated industrial sector is the product of oil income distribution and state-planned manufacturing and service economies. Oil-based industry has been linked to oil production in the Eastern Province and Aramco's production system after the discovery of oil in the mid-1930s. The Saudi state's oil-based EOI was developed to deepen the process of oil production and to diversify its locational base.

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The second aim is to link the state's development strategy with the nature of the petrochemical production system in order to provide a more systematic evaluation of the industrial and spatial linkages of oil-based EOI. The conceptual ground for this question was adopted from Hill's (1989) comparative works on transnational production systems (TPS) in the automobile industry. This concept's variables are then applied to the petrochemical industry in Saudi Arabia.

Applying the TPS framework to a different industry and in a developing, oil-based economy is justified for two reasons. Recent studies on industrial economies and their geographical formation have emphasized the nature of production systems as an approach to evaluating the success and failure of regional policies. Most of these studies were done in Newly Industrializing Countries (NICs). Among them was a study by Storper (1991) of the Brazilian government's efforts to relocate industry to underdeveloped regions. Storper considered these efforts a failure because they neglected the external division of labor and spatial linkages created during the course of industrialization.

Storper's argument provides an especially decisive reason for considering the social and spatial organization of oil-based industry in Saudi Arabia.

The Research Problem

Over the past two decades, Saudi Arabia has built the infrastructural base needed for national industry. Because of the dominant role of oil in the Saudi economy, this building process is shaped by the national goal of reducing dependence on oil by diversifying the economic and industrial base. This goal has

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surpassed other elements of planning and development strategy in Saudi Arabia and has been made all the more important by the country's shortage of human and non-oil resources, and the nonexistence of a prior industrial base.

The state's and society's integration within the international political economy of the oil industry have shaped the economic and spatial linkages within the national territory. Given the strategic importance of oil, the Saudi state has been the leading actor in national development planning. Because it controls the oil industry, the state has also become the main vehicle for the implementation of national development. Other local actors, including private entrepreneurs, are mostly dependent on the state provided infrastructure and investments. Concerned about oil-dependent development, the Saudi government has been constantly preoccupied with establishing the means for economic diversification. After the required infrastructure was in place, basic, export-oriented industry was promoted to set the stage for a productive economy.

The goal of reducing dependence on oil is the basic factor in the Saudi national development strategy. Most of the economic and sociological writings on the Saudi economy have emphasized oil-dependent development. Here, the basic argument revolves around the relationship between oil extraction and industrialization. Critics question the Saudi approach to industrialization, and the extent to which industrial goals have been achieved. Influenced by classical dependency theories, most Middle Eastern sociologists emphasize external determinants in analyzing Saudi industry.

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In my view, this approach is inadequate because it fails to seriously consider historically specific, domestic economic political factors. The Saudi EOI strategy and its regional prospects can be better evaluated on the basis of how external and local forces have shaped Saudi industrial development.

In this study, emphasis will be given to the strategic-spatial relationship in the Saudi EOI which emanates from the locational process of the oil industry and state-led planning. Concerning the locational factor, the concentration of oilfields in the country's eastern region has had great strategic and spatial significance. A distinct regional economic and social structure developed during the course of oil production.

State-led development of an oil-based, export-oriented industry was reflected in the government's decision to build the industrial cities of Jubail and Yanbu. Jubail is strategically located on the Arabian Gulf near the oilfields, and Yanbu is strategically located on the Red Sea. The Saudi government hoped that locating the basic industrial projects in these cities would spawn manufacturing activities on the national level and with potential for local growth through urban expansion.

Notwithstanding the spatial component of the Saudi EOI, the industrial-city model was determined largely by strategic factors. Hence, this writer argues that the expected local effects of Jubail and Yanbu, described above, will be limited when compared with national development priorities. The externally oriented, petrochemical production system (PPS) developed in these two cities also shape spatial outcomes.

The Saudi PPS influences oil-based industry's spatial linkages in two ways. Emphasis on the petrochemical industry creates an uneven sectoral distribution of state investments. Investment priorities are given to industrial activities using the outputs produced by the petrochemical industry. On the regional level, this approach favors firms located in the industrial cities or in the leading urban centers of Riyadh, Jeddah, and Dammam.

The second spatial feature of the Saudi PPS concerns the level of integration between the Jubail and Yanbu industrial base and their respective regional economies. The two cities' regional effects will be determined by the extent to which their technological and organizational structures are spatially linked with the rest of the regional economy. Here lies a major empirical question of this study. First, how have state investments contributed to the regional balance of industrial growth indicated by the spatial organization of the Saudi PPS. Second, how does the inter-regional and intra-regional industrial effects of Jubail compare with Yanbu? Answers to these empirical questions are required for any systematic evaluation of the backward linkages expected to emerge in the Saudi oil-based EOI.

Research Strategy, Methodology, and Data Sources

In this research project, the political and economic aspects of the oil-based EOI strategy and its potential for regional and urban are examined. The external and local context of Saudi state-led petrochemical industrialization is examined. The social and spatial organization of the Saudi petrochemical production system

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as revealed in the industrial-city model and the operations of the Saudi Arabian Basic Industries Corporation (SABIC) is described and evaluated.

The researcher relied primarily on existing literature for theoretical and analytical issues pertaining to EOI and Saudi Arabia. Drawing upon the experiences of the East Asian and Latin American NICs, this researcher was particularly concerned with those concepts related to the state's EOI strategy and its implications for regional planning and development. The goal was to determine a framework for the evaluation of Saudi experience.

The analysis of the Saudi EOI centered on the period between 1975 and 1990. The year 1975 marked the initial launching of the national EOI. Most of the industrial-related construction and investments occurred during the period from 1975 to 1985, after which the second phase of industrial operations began.

To examine how these industrial processes unfolded, the national development plans, especially those since the Second Plan (1975-80), were an exceptionally useful source of information. These development plans reveal how industrial objectives and their implementation progressed, and the extent to which industrial objectives affected the development outcome.

I compare and contrast development plans to:

1. Determine the effects of the EOI sector on the state's planning process, infrastructure and distribution of investments.

2. Establish the regional context of these investments and determine how the state strategy for oil-based EOI has shaped spatial outcomes.

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Historical and document sources were used to investigate:

1. The general character of state-led development and export-oriented industrialization (EOI).

2. The general impact of the state strategy on inter-regional and urban growth.

3. The social and spatial dimensions of industrial production systems.

4. The general nature of petrochemical industry, its production system, and the social and spatial dimensions of its economic activities.

5. Oil states and their petrochemical-based EOI.

6. The Saudi state development strategy and its effects on national and interregional planning and development.

7. The Saudi Arabian oil-based economy and petrochemical-based industrialization.

8. The Saudi organization of oil-based industrial production, its spatial dimensions, and its implications for regional balance.

The above issues were examined to evaluate: (1) The viability of the Saudi state's EOI strategy, given oil-dependent development; (2) how domestic and international forces in the Saudi EOI shape the state's spatial policy and the implications for regional and urban growth. Both the strategic and spatial aspects of the Saudi EOI are stressed because of their significance for industrial success.

Another major source of documentary data was a field trip to Saudi Arabia. Over a four-month period, the researcher conducted a search in various govern-

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ment and nongovernment agencies, using three main tools of data collection. The first consisted of a search for documents and reports published by all government agencies involved in industrial development and regional planning. To obtain the needed materials, the researcher submitted the necessary official letters written by his research advisor, the Saudi Educational Mission in the United States, and his sponsor, Imam Mohammad Bin Saud University. The government agencies frequently visited included:

The Ministry of Industry and Electricity
The Ministry of Planning
The Ministry of Finance and National Economy
The Deputy Ministry of Town Planning, (an agency within the Ministry of Municipalities and Rural Affairs)
The Saudi Arabian Basic Industries Corporation (SABIC)
The Royal Commission for Jubail and Yanbu
The Saudi Aramco
The Saudi Consulting House
The Saudi Industrial Development Fund (SIDF)
The Saudi Arabian Monetary Agency

The second, complementary, tool of data collection was selective and informal interviews with government officials and corporate experts in planning and industry. The interviews were conducted for guidance to sources of information, questions and ideas. The interviews also revealed Saudi planners and experts' perception of industrial-related prospects and shortcomings, the extent to which they are aware of the relationship between EOI strategy and its spatial linkages, and how they perceive the role of the industrial model in achieving regional equality.

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The third method used in data collection in Saudi Arabia was field observations. These observations were conducted to describe the Saudi industrial-city model and petrochemical production system. Field observations were carried out:

1. To establish the geographical, industrial, and urban settings of the Saudi industrial cities. The researcher spent more than two weeks in Jubail and about one week in Yanbu. During his stay in Jubail, the researcher experienced daily life in the city and the working atmosphere and organization of the Royal Commission. This clarified in the city's physical organization of industrial and residential complexes. The researcher also had an opportunity to meet with some of the city's urban planners and industrial experts, whose insights were helpful in understanding the overall industrial and urban model.

In Yanbu, the researcher conducted the same types of observations and interviews with government officials and engineers. Although the visit to Jubail would have been adequate to gather the required data, Yanbu was an essential component in the comparative analysis of the spatial effects of the Saudi industrial-city model. Given its location in the Western region, Yanbu represents differences of oil-based spatial linkages on the intra-regional level.

2. To analyze the social and spatial organization of the Saudi petrochemical production system (PPS). The researcher conducted preliminary field observations within the United States, which included some petrochemical and refinery plants in the Houston, Texas area. The plants visited were Exxon

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Refinery and Chemical plants in the Baytown area, Oxy Chemical plant in Houston, and Texaco headquarters, chemical, and refinery plants in Houston and Baytown. Through tours of plants, discussions with engineers, and handout materials, the researcher came to understand petrochemicals as an industry and organization, and as a part of the oil-based production system. Such preliminary data were helpful in developing the study questions and the field research for examining the Saudi PPS.

In Saudi Arabia, field observations were arranged by SABIC headquarters in Riyadh and took place in Jubail and Yanbu industrial cities. In Jubail, the researcher visited three petrochemical and fertilizer plants: Saudi Petrochemical Company (SADAF), Arabian Petrochemical Company (PETROKEMYA), and National Chemical Fertilizer Company (IBN AL-BAYTAR). In Yanbu, the field work was conducted in Saudi Yanbu Petrochemical Company (YANPET). During visits to each of these industries, the researcher was interested in establishing the nature of the following:

a. The physical layers of operations.

b. The social organization of production.

c. The spatial system linking plants to (1) raw material sources within and outside the cities, (2) other plants, and (3) markets (both international and domestic).

By the end of the field trip, the researcher had learned a great deal about the Saudi basic industry. Throughout his stay in Jubail and Yanbu, the tours of the

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Saudi petrochemical plants and discussions with corporate managers and engineers, the researcher obtained sufficient data, maps, and illustrations to develop a unique view of the Saudi industrial-city model and petrochemical industry.

Data Limitations

The investigator encountered two major problems during data collection for the analytical and empirical parts of the research. There is little available literature on production systems and their economic and social geography in industrializing countries in general and Saudi Arabia in particular. This problem was further exacerbated when the search involved data on the petrochemical industry and its production system.

The second major problem arose during the search for data related to the Saudi industrial and regional distribution of growth. Given the continuing national priorities and the still small influence of regional concerns, problems were encountered in obtaining the necessary statistical materials. A similar limitation existed when gathering data on the Saudi petrochemical production system. Among the difficulties this researcher faced was explaining to government officials some of the terms and concepts used in this study. For instance, when introducing the research, such terms as "production system," "spatial linkages in the petrochemical industry," and "industrial-related regional effects" were unfamiliar. In other cases, especially in the state and private corporate firms, these semantic difficulties were minimal.

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In general, Saudis are unaccustomed to a social scientist attempting to conduct a study about a technologically-based and business-oriented environment. Especially during the field observations, the researcher met with wondering looks or surprised remarks. In many instances, he had to engage in thorough discussions to convince government and corporate officials of the merits of the research project. Although these discussions can be useful and will have a positive effect, their magnitude is an indication of continuing problems facing interdisciplinary researchers. In many developing countries, this problem is even greater and sometimes leads to obstruction to accessible data.

Although these limiting factors occur in many studies, the problem was compounded by the challenge inherent in attempting to construct a new level of study. This is particularly evident in those areas related to the petrochemical production system in an underdeveloped, oil-based economy.

Organization of the Study

This dissertation is organized into five parts. The first is the introductory chapter. The second part is a theory and literature review. Theoretical issues pertain to the role of the state in export-oriented industrialization (EOI) and related spatial development. The writer then focuses on how these theories have been applied in the case of Saudi Arabia. Building upon literature developed for both developmental states in the new industrializing countries and the automobile production system, the writer attempts to incorporate the EOI process and its spatial linkages within the context of the state's development strategy. The

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strategic and spatial context of the Saudi state's industrial development reveal the analytical and empirical concerns of this study.

The third part analyzes the Saudi state and economic structure, its industrial policy and regional planning, and sectoral and spatial outcomes. In Chapter 3, the main forces that have shaped the state political and economic development are reviewed. Stressing the role of the oil industry, the writer examines how the Saudi state developed and then was incorporated within the international political and economic system, as well as how local forces developed in relation to the state and was manifested in decision making concerning oil policy.

The state and oil industry are presented as the leading factors shaping the national planning approach to development. Here, the main emphasis is on the Saudi oil-dependent economy and how the state has undertaken development measures to reduce this dependence. In Chapter 4, this national goal is revealed to be the factor underlying industrial policy in general and the EOI process in particular. Industrialization is viewed within the context of the state's oil-based, sectoral-led development strategy and rising regional concerns. The final chapter (Chapter 5) in this part contains an examination of this general economic and industrial strategy, focusing on its implications for achieving the national goal and the extent to which it has contributed to regional imbalance.

Part four introduces the role of oil-based EOI as a new approach to both industrial and regional development. Chapters 6 and 7 examine the strategic and spatial context of the Saudi industrial-city model and its organization of production.

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In part five, the preceding analyses are evaluated. Chapter 8 examines the study's empirical questions in light of the statistical data presented in previous chapters.

The final chapter (Chapter 9) includes a summary of the study, conclusions, and policy recommendations.

CHAPTER II

THEORY AND LITERATURE

Introduction

The theoretical basis underlying this study was the state's industrial strategy for developing export-oriented industrialization (EOI) and its implications for regional planning and development. In this context, the conceptual framework used in this study consisted in combining the theoretical conceptualizations that have been developed in the areas of political economy of industrialization and urban political economy. The researcher used selected concepts and propositions developed in these two areas, especially with regard to the issue of linking the state's strategic objective of industrialization and its related implications for regional and urban development.

The main theoretical question pertained to the state-strategy relationship in the EOI process and how that shapes urban and regional growth. Specifically, the writer examined the applications of this relationship for oil-based EOI in the Saudi Arabian oil-based economy, with the hope that the findings will lay the groundwork for other oil economies in general. Emphasizing the Saudi EOI, namely petrochemical-based industrialization, the main inquiry of this study concerned the attempts by the Saudi government to accomplish its EOI strategic objective while

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incorporating regional aspects through an industrial-city model for growth. However, due to the inadequacy of literature on the EOI in oil-based economies in general and the Saudi EOI in particular, this researcher believes it is necessary to provide a background on the nature of the Saudi EOI and its strategic importance for the economy and society.

In this chapter, literature is reviewed on aspects of state-led export-oriented industrialization, with particular reference to the experiences of the newly industrializing countries (NICs). In the next section, an attempt is made to link the state's EOI strategy to what has come to be recognized as the regional effect of industrialization, which has resulted from the state's industrial policy. Because this researcher believes that the state's industrial strategy alone cannot provide a satisfactory explanation of industrial-related regional growth, the concept of "industrial production system" is introduced next. The extent to which strategic and spatial aspects of growth are compatible in achieving planned regional balance is examined.

In the final section, based on the preceding theoretical arguments, the conceptual framework on which an analysis of the Saudi case can be established is presented. Emphasis is placed on the Saudi petrochemical industrialization and how both the Saudi government's industrial strategy and the nature of the petrochemical production process shape regional planning and policy in Saudi Arabia.

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The State's Export-Oriented Industrialization

Export-oriented industrialization (EOI) in the Third World states has been associated with the recent rise of the so-called newly industrializing or industrialized countries (NICs). In these countries, the state has played a significant role in planning and managing the process of the EOI sector (Amsden, 1985; Barrett & Chin, 1987; Cho, 1985; Cumings, 1987; Deyo, 1987; Koo, 1984; Van Dijck, 1990).

The state's involvement in the industrialization process in general and export-oriented growth in particular has resulted from various external and internal forces. Externally, the state's intervention in dependent development has been viewed as a strategic measure for reducing national dependency on exports of lower-valued raw materials (Barrett & Chin, 1987; Deyo, 1987; Hughes, 1984). To escape national dependence, a country pursues an industrialization process in which the state plays a major role in achieving this strategic goal. In the case of EOI, Masood (1989) and Barrett and Chin (1987) considered the state's involvement in the industrial process as a "transitional" and "temporary" stage in which the state leads the economic process and intervenes in directing economic decisions. Deyo (1987) called this process "state-led strategies," which "entail continuing, selective intervention by state agencies in private-sector decision making and market transactions to achieve strategic goals" (p. 17). Internally, the state's EOI is viewed as a product of two main factors: the country's "comparative advantage" of certain factor endowments, be it labor or natural resources, and the

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In Third World countries, the comparative-advantage argument was associated with the rise of EOI as a solution to the problems of import-substitution industrialization. Cho (1985) argued that "export-led industrialization was seen as a way to avoid these problems, since production for the world market would encourage 'efficiency' while enabling poor countries to make use of their 'comparative advantage'--their low-priced labor" (p. 67). Although the comparative-advantage model has been usefully employed by the NICs, geopolitical and sociopolitical factors and a suitable environment in the world system are also essential to the rise of their economic miracles (Cho, 1985; Koo, 1986; Rodan, 1989).

In comparing the experiences of the NICs and those countries that are still on the road toward achieving similar economic development, the success of East Asian development, in which the state played a "directive" role in the industrialization process, can be adopted as a theoretical model for other Third World countries. However, some researchers have debated this argument, considering the NIC model unsuitable for other countries because of the historically specific development of a given country. In this regard, Cumings (1987) concluded that, in the cases of some East Asian NICs, "the developmental 'successes' of Taiwan and Korea are historically and regionally specific, and therefore provide no readily

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adaptable models for other developing countries interested in emulation" (p. 81). In the present study, however, the aim was not to examine the applicability of the NIC models or the structural aspects of the state and society in these countries. Rather, the comparative analysis was merely concerned with how the state's industrial strategy for developing export-led growth was formed and shaped by its directive selection and implementation of industrial projects.

Taking the example of South Korea's EOI, as well as that of other East Asian NICs, industrial policy has been seen as a product of the state's "directive intervention" in planning, selecting, supervising, and implementing industrial projects. The state's intervention in this respect is fundamentally related to the strategic nature of the industrialization process in general and the export sector in particular (Luedde-Neurath, 1988). Koo (1986) described the Korean economy, in general, as "one of the free world's most tightly supervised economies, with the government initiating almost every major investment by the private sector. Indeed, the state's involvement in the Korean economy has been deep and extensive" (p. 168). According to Deyo (1987), this interventionist role has been the product of the "relationship between state and strategy." This relationship is described by the state's intervention in strategic industrial and "capital- and technology-intensive industry," in which the state's involvement appears as to insure the achievement of diversification and economic growth. In the case of South Korea, the government has been a predominant actor in the strategic export sector. Using the example of the automobile industry, Luedde-Neurath (1988) argued that it

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> illustrates how the government "selected" firms to undertake particular activities, "designated" certain parts and components for local production, "allowed" specific new firms to enter the sector . . . and, how "production volume was allocated according to the actual performance of the domestic content schedule." (p. 74)

The same policy has been witnessed in both electronic and heavy and chemical industries. In the heavy and chemical industries (HCI), which are referred to as the "second industrialization" (Cho, 1985), the Korean state has played a "directive role" in the restructuring and decision-making process (Luedde-Neurath, 1988). The logic behind this interventionist program, according to Lee (1991), is related to the strategic position of these industries. These state-owned enterprises have various social and political overtones. In addition to the geopolitical concern for national security embedded in the international political economy (Lee, 1991), the state's control over strategic industries has both sociopolitical and market factors. This view, although preconditioned by the state's "ownership and control of means of production," represents the dependent-development approach developed by Duvall and Freeman (1981). Emphasizing the so-called "entrepreneurial state" within the context of dependent development, Duvall and Freeman asserted the socioeconomic and political importance of the capitalist state's intervention in the economy and society. They argued, "This direct involvement in processes of economic production and capitalist development through state owned and operated enterprises is a socially and politically important phenomenon in dependent countries" (p. 103). It has also been argued, however, that the state's role as an entrepreneur is not a perpetual process. Rather, the

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state mainly intervenes to "correct or overcome inadequacies in the functioning of the private sector," hoping to establish an "adequate" local class that will take over the economic process. In the case of the state's industrial process, "the state assumes a very prominent role in dependent industrialization in such areas as development planning, regulating MNCs, and especially in managing state corporations and enterprises" (Clark, 1988, p. 106).

This argument also was supported by Koo (1987), in his analysis of the Korean and Taiwanese states. Although the state's role in the economy of these two countries was perceived to be dominant vis-a-vis the developed and strong local classes, their power seems to have emerged from their control over the leading industries. In the case of the Taiwanese state, Koo argued that "although the Taiwanese state has exercised less direct control over private firms, it intervenes in the economy through a large number of state-owned enterprises in key industrial sectors" (p. 173). However, in many developing countries, the state assumes direct intervention for both the establishment and operation of the industrial sector due to the lack of "indigenous entrepreneurship," as well as the lack of manufacturing experiences (Hughes, 1984). This is particularly evidenced in the strategically led industrial development.

Rueschemeyer and Evans (1985) viewed the state's involvement in strategic heavy industries and the state's ownership of and involvement in the strategic industrial process as being a "central" policy in developing countries, especially in the NICs. The "strategically located" industries, they argued, are "prerequisites"

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for the state's involvement in the operational process and marketing, in order to achieve effective industrial growth. Empirically, they viewed the state's intervention as being promoted by the nature of the industry, where there are both high capital and technological requirements. These requirements are also accompanied by "longer payback periods" in these industries, where the private sector is either "unwilling or unable" to undertake these enterprises (Hughes, 1984; Lal, 1980).

Further, the strategically located industries "have important forward and backward linkages" (Rueschemeyer & Evans, 1985). In developing countries, particularly in resource-based economies, this factor has been the cornerstone of the government's industrial policy. And there is no better example of the interplay between government and strategy than the ongoing process of petrochemical industrialization in oil-exporting countries.

In the case of oil-based EOI, the comparative-advantage model has been emphasized by many economists and, to a lesser extent, political economists (Askari, 1990; Auty, 1990; Looney, 1990; Masood, 1989; Richards & Waterbury, 1990). Both economists and political economists agree, however, on the suitable policy for "mineral-export-led growth" in the short run. In oil-exporting countries, EOI has emerged largely as a result of the "comparative advantage in hydrocarbon resources" and the national quest for diversification (Askari, 1990; Looney, 1990). However, emphasizing oil-based industrialization, they realize the distinct problems of an oil-based economy and its effects on the state and society, as well as the inadequate human and natural resources that hinder using fully this specific

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pattern of resource endowment (Richards & Waterbury, 1990). Hence, an essential component of the present analysis was to consider the difference between the pattern of comparative advantage that exists in oil-based industrialization and that introduced in the analysis of other Third World industrializing countries.

In the case of petrochemical-based EOI, the comparative-advantage argument is an inadequate explanation when comparing the experiences of the NICs to those of the oil states. This argument can be justified by comparing three cases of petrochemical development in developing countries. The first case is South Korea, which is highly competitive and leads other developing countries in exports. The second is Indonesia's petrochemical industry, which is characterized as emerging; its state-owned petrochemical projects have become a model for resource-based industrialization in developing countries (Auty, 1990; Harris, 1986; Vergara & Bebelon, 1990). The third one is the Saudi case, in which petrochemical development has caused protectionist moves in the European and American markets (Richards & Waterbury, 1990).

The main aspect that distinguishes the South Korean case from the other two is its dependence on oil imports; the others are oil-exporting countries. However, South Korea's highly diversified economy and its dynamic and large domestic market have contributed to the rapid growth of its petrochemical sector. On the other hand, Indonesia and Saudi Arabia share the problem of unstable oil markets, which hinders the implementation of their petrochemical projects and

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hence raises questions about the long-term viability of their industrialization process. However, in the case of Indonesia, the domestic factor seems to provide her with a secured market for petrochemical projects, whereas Saudi Arabia appears to concentrate mainly on the world market due to her small and underdeveloped market (Looney, 1990; Vergara & Bebelon, 1990). This domestic bottleneck is considered an impediment to the process of petrochemical industrialization in Saudi Arabia and the overall diversification policy.

The preceding brief comparison of Korea, Indonesia, and Saudi Arabia stressed the comparative advantage on which these countries rely to carry out the petrochemical industrialization process. The major difference, however, is the timing of the process and how those states use the comparative advantage. In the Korean and Saudi cases, the petrochemical industry was established on two different domestic economic structures. In this respect, the important element to be stressed here is the timing of the petrochemical industrialization process. In Korea, the construction of the petrochemical and other heavy industries came as a second phase of the industrialization process, where an already-built, diversified economy already existed. "Domestically," Lee (1991) argued, "Korea's successful construction of light industries as well as lessons from late-industrialized countries, gave planners confidence that Korea should indeed construct its own HCI [heavy and chemical industries] sector" (p. 437).

For Saudi Arabia, the picture is reversed. The Saudi government, enjoying capital capability and access to the world technological market, has developed a

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heavy industry in the petrochemical sector and other hydrocarbon-based industries, hoping that import-substitution industrialization will emerge as the outcome of these basic projects (Bedore, 1984; Looney, 1990; Masood, 1989). The fundamental rationale underlying the Saudi Arabian industrial policy is that the country possesses abundant capital and oil and gas, on the one hand, and shortages in other structural, human, and economic requirements, on the other. In fact, Looney (1990) argued, these physical limitations embody serious obstacles facing the Saudi quest for diversification.

The nature of comparative advantage is also a crucial factor distinguishing Korea's industrialization from that of Saudi Arabia. The basic difference between South Korea and Saudi Arabia is the abundance of labor force versus the abundance of oil resources, respectively. However, it should be emphasized that both countries, in order to use their comparative edge, have needed capital and technological know-how from abroad (Al-Zamile, 1981; Cho, 1985; Presley & Westaway, 1989; Sang-Chul, 1979). It is this similar dependence on the advanced world that leads one to ask whether the successful experience of the South Korean outward-oriented industrial strategy can be emulated in Saudi Arabia. Although Cumings (1987) argued against such an inquiry, the concern in this study is to emphasize the outcome of dependent export-led industry while acknowledging the timing and nature of integration in the world economy, as well as the domestic factors associated with industrialization. In other words, this study was limited to

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investigating how the model of the state's export-oriented strategy leads toward industrializing and diversifying the domestic economy, given the differences in the economy and industry. For Saudi Arabia, this task involved examining two main industrialization-related issues. The first is a policy-based investigation of the Saudi state's industrial strategy, with special emphasis on petrochemical-based industrialization--the Saudi model for economic diversification. The second industrial-related issue is an empirical analysis of the spatial dimensions of Saudi industrialization in general and the EOI in particular.

Both the general and specific spatial-related dimensions of industrialization, this writer believes, will add a new perspective on examining the implications of the state's strategic process for domestic economic growth. To establish the theoretical base of this empirical inquiry, the concept of "industrial production system" is introduced in the next section as an explanatory factor that not only provides a better understanding of industrial-related spatial linkages, but also establishes a concrete basis on which to examine the implications of the overall state strategic EOI process for the economy and society. In the case of Saudi Arabia, introducing this empirical measure is particularly useful in examining the extent to which the state-led transitional process, led by basic industrialization, has progressed toward the strategic end of economic diversification.

The Empirical Question: The EOI-Related Regional Process

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government's industrial-related regional policy and the production process of a corporate industry is emphasized in this study. The issue of a government-corporate relationship has been one of the dominant areas in urban political economy literature, where the government's industrial policy and the corporate production system are developed to construct a regional growth and decline that is historically, strategically, and structurally specific (Feagin, 1985; Hill, 1989; Hill & Feagin, 1987). Although this government-corporate relationship has been developed predominantly with regard to the "restructuring" process of cities within the international division of labor, this researcher used some of the concepts of this relationship to establish an empirical analysis on the national level. These concepts have been developed primarily in the comparative analysis of transnational production systems (TPS), particularly in the automobile industry (Hill, 1989). Here, it is important to keep in mind that, in addition to the application of TPS for national corporate industry, an attempt was made in this study to apply its variables to a different industry, namely, petrochemicals.

In his comparative analysis of the automobile industry in Japan and the United States, Hill (1989) established the framework for the interrelationship between the industrial production process and the related spatial and regional concentration. Here, he defined the transnational production system (TPS) as "a concept for viewing the ways economic activities among firms are organized over space. A production system is a collection of operating units linked by technology

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and organization into the manufacture of final products" (p. 463). Emphasizing how the industrial production system shapes regional development and spatial division of labor, the preceding spatial and operational definition of the TPS was used in this study to empirically examine the Saudi petrochemical production system and to explore its implications for industrial-related urban and regional development.

In addition to the structuring of the production process of an industry, both governmental planning and the nature of corporate organization are seen as essential components of regional development. In their analysis of the rise and fall of cities within the global political economy, Hill and Feagin (1987) argued that governments and corporate interests "are not always compatible" in the structuring of urban form. Hence, they emphasized that

> The idea of international production system is a synthetic concept which retains an emphasis on internal corporate organization and relations of production while acknowledging the significance of nation-states and unequal relations of market exchange among producers within and across national borders. It is a concept that seems to leave us better equipped, than a singular emphasis on internal corporate organization, market exchange or the nation-state can do, to explore the complexities of urbanization in a global system. (p. 161)

In this study, the main concern was to focus on the interplay between the nature of the industrial production process and the attempt by the national government, through industrial planning, to create "interregional linkages" for assuming the achievement of balanced regional growth. This objective was inspired mainly by empirical and policy analyses. Empirically, Hill (1989) conducted a comparative analysis of the Japanese and American automobile

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industries in which he established the basic indicators for investigating the concept of production system. Emphasizing the Japanese car-production system, Hill attempted to link the nature of the car-production process to the globally structured system of production. Hence, regional development, resulting from social and spatial organization of production, seems to reflect the patterns of production of an export-oriented industrial strategy. The government, in this respect, plays a crucial role in the reorganization of production in order to stimulate regional balance of growth. In Japan, Hill argued, "the state has emphasized an export industrialization strategy in conjunction with an internal investment programme to keep regional growth in balance" (p. 473). For both the Japanese and American automobile industries, Hill considered state intervention as being "engendered" by the changes in the production process and the rise of conflicts of interests. He stated that

> Governments have a stake in advancing net wealth and the standards of living of the citizenry within their borders. In the auto-producing regions of Japan and North America, subnational governments have similar interests: They want to attract and retain high value activities and foster intraregional linkages among firms in their auto production systems. (p. 476)

Based on the above-mentioned political economy of industrial production, this writer was concerned with how government and production forces shape regional development in oil-based industrialization. Hence, this introduces the second aspect of analysis with which this researcher was concerned, namely, the Saudi industrial-related regional policy. Although the Saudi regional policy is dominated by the strategic planning objective of economic development--

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diversification--, the primary concentration of Saudi export-oriented projects in the two industrial cities of Jubail and Yanbu was expected to achieve East-West linkages of regional and urban growth. In this respect, Johany, Berne, and Mixon (1986) argued that these cities

> are expected to provide regional balance to the Kingdom's development. Each city is seen as a "growth pole." It seems likely that a 100-kilometer-long coastal development will materialise, stretching from Jubail to Dahran [on the Gulf Coast]. Yanbu will presumably provide the impetus for development of the area north of Jeddah [on the Red Sea Coast] and will also serve as a seaport for Madina. (p. 129)

Indeed, this industrial-related regional policy was introduced by the government to induce intraregional linkages through industrial-related structural change, where the two industrial growth poles were built to achieve diversification and also to reduce regional disparity. The main point of departure here, however, is that this relationship depicts the dominance of the strategic objective and the regional by-product policy goal. This is reinforced by the fact that, up until the Third Development Plan, Saudi Arabia, according to Presley and Westaway (1989), "did not have a pronounced regional dimension." The reason, they argued, is that the government's distribution of expenditures relied not on "population distribution or economic activity" in the regions, but rather on the strategic importance of certain regions. Here, they stated, "What the distribution of government expenditure does reflect, however, is the role of Riyadh as the center of government and administration and the Eastern province as the main oil-producing region and possible focus for industrial development" (p. 174).

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In the Third Development Plan (1980-1985), this regional imbalance was identified. However, it was reinforced by the imbalance embedded in the nature of the industrialization process (Presley & Westaway, 1989). As the industrial strategy greatly emphasized hydrocarbon-based industrialization, the regional linkages to be accomplished have been dependent on the structuring of industrial cities and the industrial production process of an export-oriented strategy. Masood (1989) described this interrelationship between the government's industrial policy and the possible regional linkages as a product of the system of export-oriented production. In the two industrial complexes, Masood stated,

> The major programme for industrialization centers around the development of large-scale export-oriented hydrocarbon-based and energy-intensive industries which convert the petroleum resources into high-value processed products. The major industries set up in the two industrial complexes include petrochemical complexes, fertilizer plants, steel mill and aluminum smelting plants. In order to generate forward and backward linkages, a system of secondary and supportive facilities was also planned by providing oil refineries, gas-gathering and treatment plants and East-West pipelines. (p. 16)

The interplay of the industrial production process and governmental industrial policy in shaping regional development is a common pattern in most developing countries. With regard to South Korea, for example, Lee (1991), Lee and Choke (1990), and Song (1980) referred to the spatial concentration of "export-oriented large-scale production," the nature of "economic conditions," and governmental policy as the main factors in shaping regional development. Song characterized this as the "top-down approach," in which the regional policy is linked to the industrial strategy and process. Industrial concentration in South

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Korea, according to Lee (1991), has led to "negative effects on resource allocation, income distribution, macroeconomic stability, and sociopolitical imbalances" (p. 484). These negative effects of concentrated industrialization have been the major concern in many countries. As a result, governments have launched policies to encounter these problems.

Using the case of Korea, Choke (1990) highlighted governmental attempts to solve industrial-related spatial problems. The Korean government introduced a relocation policy and strict zoning to "disperse industry" away from the Seoul metropolitan region. According to Choke's evaluative study of Seoul's relocational policy, the government's attempts to spatially disperse industrial production were minimally successful. Although such a conclusion reflects the nature of industrial manufacturing specific to Korea's economy, the point to be stressed is Choke's remarks on the conflicts between the strategic and regional policies that seemed to contribute to the disappointing results. In one of his concluding statements, Choke argued that the problematic findings of his study

> imply that spatial policies have not been notably effective in achieving their purpose in Seoul, and they have had important adverse effects on efficiency and economic development. The adoption of public policies to influence industrial location may do more harm than good. (p. 435)

Herein lies the connection between strategic and regional policy objectives: The political economy of growth plays a major role in shaping the regional process.

This interrelated aspect of strategic and regional policies is not uncommon in those countries with oil-based economic development. In the case of the oil state's export-oriented industrialization, although uneven regional development has

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not been exacerbated due to the continuing reliance on income from oil exports and the still insignificant EOI contribution to the domestic economy, the early process of industrialization is seen to provide some form of regional distribution of regional growth. Storper (1991), however, stressed the structural changes that emerged in the first stages of industrialization. He argued,

> In the early stages of industrialization, once a set of productive forces takes root at any specific set of locations, the developmental trajectories of industrial systems help to consolidate those locations as the privileged geographical loci of the emergent industrial economy. (p. 91)

Storper continued his argument by indicating that the aftermath of rapid industrial growth in a specific location forecloses further economic linkages, hence leading to a "limited," yet concentrated production process. He explained,

> Initially, industries have "window of locational opportunity," but as they generate their own agglomeration economies, the window rapidly closes around a limited number of locations. It only reopens as a consequence of the dynamic growth processes which bring into the economy whole new dominant production ensembles. (p. 91)

The preceding assertion is part of Storper's overall view of the "relationship between polarization and the process of industrialization and economic development" in the Third World. Being the dominant approach in most industrializing countries, polarization has been established in the regional-development literature on three main grounds. First, it is assumed, Storper (1991) argued, that "polarization within the process of industrialization is largely avoidable." Second, it is also claimed that "polarized industrial regions are directly responsible for the underdevelopment of regional peripheries in industrializing countries." Finally, to resolve the problem of uneven regional development,

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regional policies adopted the approach of spatially "redistributing activities away from polarized regions, especially in the form of urban-industrial growth-pole policies" (p. 84).

In his book Industrialization, Economic Development and the Regional Question in the Third World, Storper (1991) provided a theoretical critique of these assumptions with the hope that "positive" recommendations can be established for an alternative regional policy consideration. In general, Storper's primary goal was to examine the industrial-related spatial dimensions and the implications they have created for regional imbalances of growth in many Third World countries. The central issue that has rendered such a subject significant was the political and economic importance of what Storper referred to as "regional polarization and interregional polarization reversal." He presented the following definitions of these terms:

> Polarization refers to the condition in which a very large share of a country's economic activity (especially industry) or population is concentrated in one or a small number of cities or regions. "Polarization reversal," a relatively recent concept, refers to a point at which a country begins, definitively, to distribute a greater proportion of its economic activity or population outside of its central region and into other regions of the national territory. (p. 3)

Emphasizing the relationship between industrialization and polarization, Storper introduced the following research question: "Does the process of industrialization of a nation commence with geographical polarization of industrial activity and end with its dispersal and thus the elimination of regional inequalities?" (p. 3). In general, Storper's attempts to tackle this question revolved around the notion of the interrelationship between external and internal forces in shaping the

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process of polarization in Third World countries. Emphasizing the development process of the division of labor in industry, he believed that polarization emerged as an outcome of the link created between external economic forces and the internal development process crated specifically during the "course of industrialization." Therefore, his overall argument was based on the concept of external-local linkages created through the development of division of labor in industry. Accordingly, Storper rejected the politically and economically motivated spatial redistribution in developing countries whose apparent failure (e.g., Brazil's growth-pole policy) is believed to be the result of ignoring the interrelationship between "external economies of scale" and the nationally specific "spatial linkages." These external economies, he argued,

> are responsible for the *endogenous* creation of regional factor markets in the course of industrialization. By understanding some of the microeconomic aspects of these processes of spatial resource creation, we can establish a firmer basis for agglomeration theory, and desegregate and specify the particular *organizational* mechanisms that generate polarization, urbanization, and city-system development in an industrializing economy. . . . Polarization is related to specific organizational characteristics of industry which are in turn related to specific characteristics of the growth process as a whole. (p. 9)

For the purpose of this study, this interrelationship between external and endogenous forces in shaping the spatial dimensions of industrialization is an essential component in the analytical framework of resource-based industrial development. It is even more of a compelling analytical base in the evaluation of those economies with a dominant external-oriented, oil-based industrialization

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process where regional concerns are still an irrelevant component in the national economic strategy.

Auty (1987) examined the spatial-structural effects of resource-based industrialization (RBI) in oil-exporting countries and its implications for regional growth. In his study of eight oil-exporting countries, Auty attempted to link the nature of the RBI process in each country to the political and economic determinants of industrial development. He first contrasted "highly capital-intensive" industrial projects to those "labor-intensive" industries and found that the former, especially in Indonesia, provided small stimulus as compared to the latter one. Second, Auty investigated the backward linkages of the Saudi industrial cities of Jubail and Yanbu on the basis of the growth-pole approach. Although the two cities were designed to achieve regional linkages, he argued that the intended objective had been minimally realized for two main reasons. The first is embedded in the nature of design of industrial plants in these two cities. They were designed, he said, "to be as self-contained as possible and to minimise dependence on local maintenance" (p. 21). The second reason for the failure of the growth pole to enhance satisfactory backward linkages in Saudi Arabia is the diversion of the bulk of the "domestic backward linkages" from the immediate area of industrial cities to that of adjacent, already established cities.

On the regional level, Auty viewed the Saudi growth-pole approach as only partially achieving its goals, resulting in uneven regional growth among the country's regions. The two industrial growth poles, he argued,

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> were intended to simultaneously extend the economy into the northern port of the country while diversifying its structures. They reinforced the pull towards the northeast triggered by the rapid growth of Riyadh as the hub of public oil windfall spending. Whereas the west region (mainly Jeddah) received two-fifths of the investment during the 1975-85 construction boom . . . , the centre (mainly Riyadh) accounted for almost one-third; and the eastern region (Dammam and Jubail) just under thirty percent. The national dominance of Jeddah and the more populous southwest (where over one-third of the population lived) correspondingly declined. (p. 20)

Finally, Auty, while acknowledging the efficient construction in the Saudi RBI, concluded that the "lagged spillover" of the Saudi growth poles--in contrast, for instance, to Venezuelan projects--lies, in addition to other factors, in "the production function of the sector involved," namely, steel in the case of Venezuela and petrochemical in Saudi Arabia.

In the case of Saudi Arabia, industrial-related regional development is generally overshadowed by the continuing dominance of the national economic strategy. Regional development in oil-based economies, such as that of Saudi Arabia, is left to occur throughout the course of the oil-related economic growth process.

State-Led, Oil-Based Industrialization

The course of change in oil countries, be it economic, political, or social, generally has evolved under circumstances shaped by specific national, regional, and international forces. The mixture of these forces has not only characterized the process of economic survival in these countries, but also has led to a voluminous, albeit controversial, body of literature attempting to place the experiences of oil states within an acceptable conceptual framework. The main

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point of departure in these theoretical works was based on the reevaluation of Western thought on the economy and society. While rejecting the straightforward economic analysis of oil-related growth, conceptual attempts were built on political-economy theorizing, which claimed new direction in the understanding of the state and economy in oil countries. Influenced by the dependency perspective, some Middle Eastern theorists attempted to develop a conceptual framework that fits the nature of the state and economy in the Middle East. While falling into the trap of theoretical emulation (externally oriented analytical approach), contributions by these theorists primarily appeared in the introduction of some underlying concepts, such as the "rentier state" (oil state) and the incorporation of an explanatory paradigm, such as that of an "allocation versus production" process. Oil states in the Middle East are referred to as "rentier" states with predominantly allocative economies.

Writings on the nature of allocative oil states can be established through a conceptualization of the political economy of Middle Eastern states in general and oil states in particular. This theoretical process includes the political economy of rentier states' industrial development (Beblawi & Luciani, 1987; Chatelus & Schemeil, 1984; Luciani, 1987) and the new political economy of Middle East states (Richards & Waterbury, 1990). Emphasizing the state and economy in the Middle Eastern Arab countries, the rentier state concept was generally introduced to distinguish the nature of Arab states' dependence from that adopted by the "dependencia approach" to characterize Latin America's states. In general, the

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main distinction seemed to revolve around the external nature of the rentier state and economy and its influence on the structural change of the state and development process (Beblawi & Luciani, 1987).

With regard to economies that are dependent on rent as the main domestic resource, Chatelus and Schemeil (1984) defined the concept of rent as

> any income not originating from the productive activity of the concerned unit, the flows and dimensions of which are not directly linked to the beneficiary's activity (i.e., any income the amount of which is determined for the most part by decisions the concerned unit cannot control). (p. 255)

For oil-producing countries, especially those in the Arab World, a state is rentier if it accrues its revenue, or most of it, from oil rent. Rent of this nature is also an income generated mostly external to the local production (Abdel-Fadil, 1987; Beblawi, 1987; Luciani, 1987).

Based on the preceding definitions, Luciani (1987) further characterized the oil rentier state on the basis of the "origin" of state revenues and the role of the state in domestic economic development. With regard to the origin of state revenues, Luciani distinguished between the so-called "exoteric" and "esoteric" states. The latter, he argued, describes those states with an economy "predominantly based on domestic revenue and taxation." The former term classifies those economies whose revenue is "accruing directly from abroad" (p. 69). The exoteric economy, in his view, as well as in the rentier-state literature, is largely linked to the nature of an oil-based economy due to its heavy reliance on oil exports.

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Another important feature of the rentier state is related to the dominant role of the state in managing economic and social development. Here, those writing on the concept of rentier state have labeled the oil state as "allocative" in order to distinguish it from the nonrentier "productive" state (Chatelus, 1987). Within the so-called "allocation versus production paradigm" (Chatelus, 1987; Luciani, 1987), allocation states are referred to as those "whose revenue derives predominantly (more than 40%) from oil or other foreign sources and whose expenditure is a substantial share of GDP" (Luciani, 1987, p. 70). This characteristic, Luciani argued, fits all of the Arab Gulf states, especially since the oil boom of the 1970s. Acknowledging the limited natural resources and the poor economic infrastructures in the Arab Gulf countries, however, this oil boom has had an unprecedented effect on the state and economy (McLachlan, 1980). Concerning the effect on the state, Abdel-Fadil (1987) viewed its role as "the main intermediary between the oil sector and the rest of the economy" (p. 83). In other words, this role of the oil rentier state can be seen as predominantly allocative. This role, in addition to the state's role with regard to spending on infrastructural projects, led to the neglect of establishing the producing domestic capacity, which in turn limited the relation between the oil sector and the rest of the economy (Abdel-Fadil, 1987). It is this nature of the rentier state that led many Middle Eastern scholars to classify the Arab oil states as rentier states.

In general, the preceding arguments were based on the notion of rentier in the early writings of classical as well as Marxist economists. According to Beblawi

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(1987), the word "rent" was seen in Adam Smith's view as opposed to "wages" and "profits." For Marxists, it is price that affects low or high wages and profits. However, for classical economists, it is rent itself that causes high and low rent. In the Marxist view, the notion of rentier was derived from rent, which Marx linked to the coercive relations existing in the feudalist system. Also for Marx, rent, especially as a result of exploiting the "forces of production" by power, is the "unearned benefits" that "takes the form of rent-in-kind or corvée labor (feudalism)" (McMurtry, 1978). The main word here is "rent," and its linkages to nonproductivity have led rentier-states theorists to apply it to rentier states in the Middle East, and oil-exporting countries in particular (Chatelus & Schemeil, 1984).

Although rent in general can be applied to other commodities, oil rent, especially in the Arab oil-exporting countries, provides distinct characteristics of both the nature of the state and the economy. To reemphasize the concept of allocation and production states, the oil states have been seen as allocative and "represent the example of par excellence of rentier states" (Beblawi, 1987, p. 53). This allocative nature of the oil rentier state, in the writings of rentier state theorists, seems to reflect three basic roles of the state in the process of economic development. The first is concerned with the "state presence" in building of infrastructure. Second, the state plays the role of an "allocative agent." Third, the state is involved directly in the ownership of projects such as state-based enterprises (Chatelus, 1987). These roles, while rendering oil rentier states prominent economic actors, are also developed within a specific form of

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dependency, mainly in terms of reliance on the world market for oil exports. Therefore, the rentier state is a dependent state, primarily because of its dependence on "exogenous unearned" income (Stauffer, 1987). And because this income is not earned through productive economy, the nature of dependence becomes, as Stauffer called it, "dynamic dependence."

Primarily influenced by the dependency school of thought, rentier-state literature has downplayed the importance of the historical process during which oil states have developed on both domestic and international levels. Drawn on the recent literature on "dependent developmental states" and TWC-state relations, the external form of dependence of oil-exporting countries suggests a "unique model of dependent development" (Luke, 1985). In explaining this unique model of dependence in the oil countries, Luke rejected the "macrological" view of dependency and world-system perspectives and contended that an intrasocietal view should be appropriate in approaching the dependent oil countries. The dependency model developed here emphasized what Luke referred to as "dependence as need," not as a "causal outcome." This, he argued, can be applied to the dependent oil states, especially in their relations with transnational oil companies (TNCs). Duvall and Freeman (1981) and Evans (1985) argued on the same theoretical line as Luke did, with a broader emphasis on the nature of the state in dependent capitalist development. Here, they seemed to agree on the historically specific process that shapes both the role of the state in economic

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development and the nature of dependency each state experiences. Therefore, Duvall and Freeman rejected those theories of the state that

> purport to be universally applicable across all possible contexts of capitalism. Fundamental differences in context--the structural form or expression taken by the capitalist mode of production in a particular society that underlies that nature and direction of its development--are not entirely idiographic. To reject universalism in theories of the capitalist state, then, does not mean to accept a doctrine of complete social uniqueness. Instead, it leads one to identify what we have called fundamentally different types of capitalist societies--different structures of capitalism, different logics according to which the "laws of motion" of the capitalist mode of production operate. (p. 101)

Duvall and Freeman emphasized the historical context of a particular state, as well as the type of dependence of the state in its relation to the world capitalist system.

Luke (1985) also emphasized this notion and viewed the states of Iran and Saudi Arabia according to the historical formation of their structures and the type of dependence these states experience in their relation to the international political economy of the oil industry. Concerning the role of the international oil regime, Luke contended that members of the Organization of Petroleum Exporting Countries (OPEC) have benefited economically from their dependence on the TNCs and the Organization for Economic Cooperation and Development (OECD).

Evans (1985) linked these "transitional" factors to the strengthening role of the peripheral state in the economy. Evans argued that, in "extractive" economies, such as oil-producing states, "intensive penetration of local economies by such transnational actors has, with increasingly shorter lags, been followed by the rise of state apparatuses that not only gain control over local extractive activities, but in certain cases become the dominant actors in the local economy overall" (p.

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197). Evans asserted that, although the linkage between the TNCs and the rise of the state role in the extractive industries does not indicate the increased capacity of the state vis-a-vis the TNCs, on the domestic level, however, the states in extractive economies have become more pervasive and evidently dominant vis-a-vis other political and economic actors.

Emphasizing the rising strength of oil states, external economies, which seem to be mostly influencing the rentier state argument, cannot be taken as prominent indicators without considering the domestic political and economic structure specific to a given country. In this respect, Richards and Waterbury (1990) identified two major domestic factors that they considered essential to the rise of interventionism and a strong state role in economic and social development in Middle Eastern states. The first factor is concerned with the legitimacy of state intervention (Chatelus & Schemeil, 1984; Richards & Waterbury, 1990). In general, legitimacy is a right given to the state. In addition to the influence of religion and traditions, people usually accept the state as long as it pursues policies and uses public resources to achieve societal goals. Hence, Middle Eastern states are involved in more than merely maintaining law and order, as is usually emphasized by the Western liberal tradition. Instead, Richards and Waterbury argued, "the Middle Eastern state has taken on functions vastly more complex than these, and its citizenry has endorsed the effort" (p. 185).

The second factor that is essential to the rise of the interventionist state in the Middle East is the weak and unreliable private sector. According to Richards

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and Waterbury (1990), the private sector in Middle Eastern societies has been less, if at all, involved in the transformation process because of its weakness, inexperience (especially in the manufacturing process), and/or its short-term interest. Thus, they argued,

> Throughout the region it was assumed that the private sector could not be relied upon to undertake this kind of resource mobilization and planning. The least critical saw the private sector as too weak financially, too close to a commercial and trading, rather than an industrial, past, and too concerned with short-term profit to be the agent of structural transformation. More severe critics emphasized the greed and exploitiveness of the private sector, its links to interests in the metropole, and its tendency to export capital rather than reinvest profit. Private sectors might be tolerated, nowhere, save in Lebanon, did they enjoy legitimacy. Reliance on private entrepreneurs and on the law of supply and demand to allocate scarce resources would be wasteful, it was believed, and would not extricate the economy from its trap. (p. 186)

In the case of Saudi Arabia, the above-stated unreliable nature of the private sector has been widely recognized and further reinforced by the nature of the single resource-based industrialization process. More important, the strategic nature of the Saudi state-owned enterprises has led the state to undertake the role of an industrial entrepreneur to, presumably, ensure the viability of the country's long-term economic objectives. Hence, it is this strategically oriented nature of the state industrialization process that not only has shaped the secondary role of the private sector's involvement in the diversification process, but also has characterized the overall economic planning and development in Saudi Arabia (El-Mallakh, 1982; Johany et al., 1986; Soufi & Mayer, 1991).

Whereas the interplay of domestic and international forces has furnished the path for the Saudi state to strengthen its hold on the economy and society, the

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nature of a single-commodity, export-led growth is yet another essential factor for the Saudi state's interventionist role. This role, according to Richards and Waterbury (1990), has been manifested through the Saudi state's strategy in the use of oil and its revenues. Over the past two decades, Saudi oil-based economic development has been involved in three major areas of investments. The first has been apparent in the development of the country's physical infrastructure, on which a sound economic growth process can be established. The second economic strategy involves the investment of surplus money in foreign businesses, especially in "Western financial institutions." The third, and more important, development strategy is the establishment of capital- and energy-intensive industries, with the hope of expanding the sources of oil- and gas-related returns. These industries include investments in oil- and gas-based projects led mostly by petrochemicals, fertilizer, and steel production.

Lacking the availability of other nonoil resources, the above-mentioned oil-based development strategies have been generally criticized. Taking, for example, the case of states foreign investments, the common risk of such an approach is seen to be inherent in the nature of "international political developments," which, Richards and Waterbury (1990) argued, can easily change, resulting sometimes in the impounding of these financial assets. For a city-state like Kuwait, for instance, they suggested that a "future without oil may be bleak" (p. 23). Even though such a future may come about in Saudi Arabia, the country's massive oil returns and large population compared to other Gulf States can be advantageous

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factors in the long run. Although Richards and Waterbury (1990) gave more leverage to other oil-producing states, e.g., Iran, Iraq, and Algeria, because of their human and nonoil resources, they viewed Saudi Arabia as being in a "class by itself." As the "world's largest rentier state," although Saudi Arabia lacks the advantages of renewable resources, "its current and future petroleum resources and access to capital are so enormous that it, too, can contemplate specializing in capital- and energy-intensive industry" (p. 78).

However, critiques of the Saudi approach to oil-based industrialization by both economists and political economists have been extensive. Within the political economy of oil rentier states in the Middle East, Chatelus and Schemeil (1984) considered state industrialization as largely positive with regard to the state-building and not the economy-building process. In their analysis of state industrialization in the Middle East, they asserted that the emergence of entrepreneurial states was shaped by two exogenous and local realities. Through the influence of external factors on Middle Eastern economies, the domestic context of industrial development was seen as only "impressive" and locationally selective. Emphasizing the example of the large hydrocarbon-based industries, they argued that these projects were mainly designed to look impressive and to serve as "spectacular" showcases to prevent grounds for public unrest. Hence, they claimed that

> Huge industrial plants or gigantic refineries are designed to look impressive to international experts: Can any international consultant remain indifferent to projects worked out by a government which has just inaugurated the

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> biggest and most modern hydrocarbon complex? Would it not deter potential adversaries from becoming open enemies? (p. 262)

On the local level, Chatelus and Schemeil (1984) also stressed the locational pattern of these industrial projects. These locations, they argued, seemed to benefit certain communities and regions, rather than being based on a national maximization of sustainable growth. This locational pattern, they argued, has been a general trend in Middle Eastern societies throughout history. Here, they referred to the historical display of tendencies in those societies toward city-state models. The creation of politically dominant urban centers was believed to fit the nature of rentier income, which mainly shows the "preference for circulation economies over production economies" (p. 258).

The preceding critical views of oil rentier states were introduced to negate the possibility of a single disciplinary approach, be it political or economic-based analysis, of the Middle Eastern societies. Chatelus and Schemeil's (1984) concluding statement to such an argument, however, stressed a combination of both politics and economics "into a true political economy," which, they believed, "is a necessary intellectual reorientation if we are to understand contemporary trends in Middle Eastern areas" (p. 245). This interdisciplinary approach was introduced to consider the distinct nature of the development of the state in the Middle East, as opposed to the mainstream thinkers in the Western world. Although this may generally be true, their argument suffers from the same problematic generalization. This writer believes that those who espouse the rentier state concept fail to consider the historically specific nature of each Middle Eastern

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state. Viewing the region's states based on their economic use and misuse, it is apparent that those writers either know little about the history of each state's incorporation into the world system, or they are biased by their external orientation to the suggested political economy perspective.

The reality of the Middle Eastern oil-based states is the product of both external and domestic forces. Oil states, as Luke (1985) argued, are the product of the oil regime that seems to link them to the world economy. Also, unlike most Middle Eastern states, the case of Saudi Arabia, which is usually cited in rentier-state literature as the leading example, differs substantially due to her non-colonial past and the circumstances of her integration into the world system. Further, the nature of each state's political and economic structure cannot be generalized without understanding the domestic forces, their relationship to the state, and most of all the historical evolution of both political and economic classes.

The new political economy of oil states emphasized by Chatelus and Schemeil (1984) was needed, but on the condition that it should have considered the domestic-international interlinkages in shaping economic development. In their book A Political Economy of the Middle East: State, Class, and Economic Development, Richards and Waterbury (1990) considered such an approach by classifying the Middle Eastern states into categories based primarily on how each state's development process reflects the specific nature of the national economy. In this respect, they introduced states in the Middle East with a common interest

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> Without prejudging whether economic-development strategies are "choices" or "sequences," or whether they are politically imposed from within (e.g., by domestic proprietary classes) or from without (e.g., by international financial agencies), we can identify five major routes from predominantly rural, agricultural political economies to urban, industrial ones. These are the paths of agro-exports, of mineral exports, of import-substituting industrialization, of manufactured exports, and agricultural-development-led industrialization. (pp. 20-21)

Richards and Waterbury's conclusion to their empirical analysis of the Middle Eastern economies is a testimony to their theoretical framework. They distinguished among five groups of countries according to the patterns adopted for "national economic growth and structural change." The first group, referred to as "the Coupon Clippers," includes Libya, Kuwait, Oman, the United Arab Emirates (UAE), Bahrain, and Qatar. These countries are characterized as having much oil and little of any other resource. The second category includes "the Oil Industrializers": Iraq, Iran, Algeria, and Saudi Arabia. These states have "substantial oil exports and revenues as well as large enough populations and/or other resources to make industrialization a real option" (p. 78). The Saudi case, however, was identified in the same description as being "lesser to" the other three states in terms of diversified resources. Yet Saudi Arabia seems to have the leverage of more capital and oil resources. States in the third group are called the "Watchmakers"; these include Israel, Jordan, Tunisia, and Syria. These countries are characterized by their skilled human resources and "limited natural resources." The fourth category is referred to as the NICs; these include Turkey, Egypt, and

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Morocco. In comparison to other countries in the region, these states "have relatively large populations, relatively good agricultural land or potential, and a long experience with industrial production" (p. 78). Finally, the "agro-poor" states, Sudan and Yemen, are considered the "poorest" in the region. Their agricultural sector is their only hope for the future.

The foregoing "taxonomy" of the Middle Eastern states, according to Richards and Waterbury (1990), is only "suggestive" because of the difficulty of establishing clear-cut boundaries. Other categories can even be created within each group of countries. Hence, to put the Middle Eastern states, the Gulf or oil states, for that matter, in the same boundaries of a political economy perspective is rather misleading and theoretically incorrect.

In this study, the political economy perspective is based on the interplay of domestic and international forces with various magnitudes and levels of influence in shaping the state's economic and industrial strategies. The political and economic forces that have given rise to the developmental state in the Third World cannot be seen merely as a product of suitable circumstances developed during the course of change in the international political economy. Neither can one say that a state can claim sovereignty over its national economic and social processes. The two extremes, therefore, are unacceptable. Only a combination of both forces can be rendered responsible in the make-up of almost every state in the world system. Hence, this researcher believes that oil states, with particular reference to the Saudi case, are dominant in economic development. Not only are they

geopolitically or strategically essential, but also certain domestic characteristics have permitted their strong hold over the economy and society. The above-mentioned weak private classes and the alliances between religious and political leadership throughout the historical process of state formation have all placed the Saudi state in a dominant position to be the prime actor in the economy on both the domestic and international levels. Whether this state domination in the national economy permits one to speak of a strong state is an irrelevant issue in this study. Rather, the main question concerns the state's economic and industrial strategies and their implications for domestic economic development, given the realities associated with the nature of the economy and industry and their export-oriented structure.

Emphasizing the experience of Saudi Arabia, the above question can be established on the basis of two of the three major components of oil-based development strategies--namely, the building of the domestic economic infrastructure and export-oriented, hydrocarbon-based industrialization. The third strategic component in Saudi development, as well as that of other oil-based states, is in the form of foreign investments with possible expertise and investment returns (Richards & Waterbury, 1990). This third strategy, although irrelevant to the present study, can be seen as a source of revenue accruing to the state, with market implications similar to those of the oil industry. The other two strategies, however, were selected to evaluate the state-led growth because of their direct implications for the domestic economy and society.

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With regard to the Saudi state's oil-based industrialization, Masood (1989) and Richards and Waterbury (1990) provided the conceptual base on which evaluative measures can be directly established. In response to the Saudi state's export-oriented industrial development strategy, both arguments addressed the nature of the Saudi industrial undertakings, their viability, and the inherent problems facing their economic ends. Specific to the Saudi state's hydrocarbon-based industrial investments, Richards and Waterbury argued:

> It is evident that none of these industrial schemes would be viable without oil; they are in no sense, then, "creating a future without oil." Instead, they are increasing the percentage that remains in Saudi Arabia of the value-added embodied in the final output of petroleum-or energy-intensive industries. Saudi petrochemicals are now so highly competitive internationally that there have been protectionist moves against them in Western Europe and the United States. Despite such problems, the strategy of stretching out the life of their already massive reserves of petroleum makes good sense for Saudi Arabia. However, it is not really a viable strategy for other oil exporters, none of which enjoys reserves on a Saudi scale. (p. 24)

Concerning the direct effects of the Saudi state's industrialization on the domestic economic base, Masood (1989) further argued:

> In a country like Saudi Arabia where the state has been using the oil rent to maximise its revenue, there is inherent danger that it might promote a policy of industrialization leading to narrow specialization. This in turn could lead to the development of industrial complexes having very little impact on the development of the productive forces at the national level. The development impact of industrialization, therefore, to a great extent depends upon the backward and forward linkages created by it in the national economy, thereby changing the enclave nature of the oil sector and reducing the prevailing structural dualism. (p. 3)

Both arguments encompass the two most criticized components of the Saudi state's industrialization: the questionable viability of oil-based industrial

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projects (Presley & Westaway, 1989) and the limited productive effects on the domestic economy, especially through basic industries' forward and backward linkages (Al-Hathloul, 1991; Askari, 1990; Johany et al., 1986; Looney, 1988, 1990; Rueschemeyer & Evans, 1985; Wells, 1986). Questioning the rationale of oil-based downstream activities, Presley and Westaway (1989) asked, "Does not the advocacy of 'oil-related' industries lose some of its meaning?" This question has been introduced mainly because of the belief that reducing dependency on oil through oil-based industrial production perpetuates the dependent economic process. Further, it was argued that this questionable rationale for industrialization is constrained by other forms of dependence associated with the lack of technology, skilled manpower, and managerial and administrative expertise (Masood, 1989).

For Saudi Arabia, the above-mentioned problems related to industrialization strategy, although they may be unavoidable, were largely weighed against the reality of single-commodity-based economic growth. The Saudi government was faced with either this total-dependence, wide-range-of-industrialization process through foreign direct investments or the establishment of hydrocarbon-based industries with initial importation of technology, know-how, and foreign labor. The last option was one that, Masood (1989) argued,

> envisaged not only setting up large-sized internationally competitive, highly capital and technology intensive hydrocarbon-based industries but also simultaneous upgradation of technological base of the country, improvement of technical skills of the indigenous workers, in-plant training of the Saudi nationals in both Saudi Arabia and abroad, and making provisions for

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These industrialization-based technical and human-development objectives, while necessary for a country like Saudi Arabia, have also been questioned on the basis of the "political structure and imperatives" developed by the oil-based "welfare system" (Richards & Waterbury, 1990) and the limited prospects of export-oriented, capital-intensive projects for creating a large base of employment (Looney, 1988; Wells, 1986).

Although prejudging the dimensions of structural change in economic development can be equally questionable, indications arising from the early and current stages of the development process can be identified, especially within the context of policy orientation and physical implications. These indications of the industrial strategy and its implementation process can be established on the basis of the implications of industrial-related domestic economic growth. There are two main areas of analysis. The first pertains to the economic contribution of the non-oil sector to the country's gross domestic product (GDP). This indicator is largely linked to one of the main goals of the Saudi state's industrialization, namely, adding value to the oil resources. The second, albeit more important, industrial-related domestic effect can be identified in terms of how industrialization strategy and process have promoted backward and forward linkages, which in turn may lead to reduced dependence on oil in general and the uneven regional development created by the oil industry in particular. Given the underlying

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structural objective of the Saudi development process--economic diversification--the latter factor is seen as the basic precondition of the former.

The stimulation of backward and forward linkages by the oil industry in general and oil-based, export-oriented projects in particular is an essential component of the industrialization process. Backward linkages, for example, can be referred to either as effects on economic growth within certain sectors, largely construction and service industries (Schliephake, 1984), or as raw-material sources in the form of diversifying its basic components (Masood, 1989). The forward linkages of resource-based industrialization, on the other hand, are the economic activities arising as the product of the potential downstream (secondary) industries stimulated by the diversified basic industrialization process (Masood, 1989; Schliephake, 1984). For oil-based industrialization, these economic linkages can be established in terms of the direct rise of the infrastructural and service base (backward) and that of expansion in the industrial base (forward).

To confirm the extent to which these linkages have changed the rentier nature of the oil industry, thereby enhancing the level of diversification, this study introduces a third developmental impact of industrialization, namely, "spatial linkages." Spatial linkages can be generally referred to as the distribution of industrial-related activities over space. With regard to oil-based industrialization in Saudi Arabia, spatial dimensions of economic activities are those associated with both the state's infrastructural planning in general and the industrial-city model in particular (Auty, 1987, 1988).

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Forward and Backward Linkages

In oil-based industrialization, especially that adopted in Saudi Arabia, the two structural components of the state's development strategy, namely, the infrastructural- and hydrocarbon-based industrialization processes, are believed to be the basis for direct effects on the domestic economic structure (Askari, 1990; Bedore, 1984; Richards & Waterbury, 1990; Schliephake, 1984). In Saudi Arabia, both development strategies reflect the process of structural transformation of the national economy from total dependence on oil exports to self-sustained economic growth. Through five-year increments of development planning, the Saudi government, using the massive oil returns, embarked on the process of building the national economic and social structures. During the short span of almost two decades, Saudi Arabia rose from a virtually backward society to one of the most dynamic economies in the world. The effect of this economic growth has been enormous, especially with regard to the increase in the standard of living through social allocation of wealth (El-Mallakh, 1982). The allocation programs undertaken by the Saudi state have not only involved the building of a prominent welfare system, but have also extended to the massive subsidization and expenditures designed to boost private-sector activities (Askari, 1990).

Whereas social and economic enrichment has taken place, the direct effects on productive activities have been minimal. Schliephake (1984) attributed this situation to a combination of factors related to what he called "fugitive" oil production and the state's political economy of growth distribution. Even though

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Saudi Arabia is believed to have achieved a "sensible impact" (Schliephake, 1984) on the national level, the strategically and politically motivated distribution of infrastructure and industrial development has led to disproportionate social implications, especially in the area of productive economy. This, in turn, has perpetuated the "enclave nature of the oil sector," leaving a large segment of the social structure dependent on allocation programs (Masood, 1989).

In economic terms, the allocative versus productive pattern of growth can be problematic, especially in the area of distinction. In Saudi Arabia, for example, government allocation programs can be examined on the basis of both the welfare system and the state-led economic development. The latter includes the building of the economy through state-led development projects and government subsidization of nonoil sectors. Over the years, the state's development strategy has been questioned on the basis of its effects on nonoil domestic outcome, especially when GDP has been presented as an indicator of diversified income (Askari, 1990). Economic achievement has been established in the form of the ratio between oil and nonoil GDP. Since the First Development Plan (1970-1975), the oil sector's share of GDP shifted from almost 80% in 1974 to less than 30% in 1985 (Ministry of Planning, 1991; SAMA, 1991). Although this may be taken as a statistical conclusion, the reality of the subsidized economy in Saudi Arabia can lead to a "distortionary effect."

Examining various targets of government subsidies in Saudi Arabia, Askari (1990) distinguished between two main types of subsidies. The first, albeit general

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and more pervasive, comprises "means of distributing oil wealth" (p. 121). These include government sectoral subsidies (e.g., utilities, fuels, agriculture, essential commodities, social services [private and public], industry, and others). These subsidies have included promotion of the nonoil private sector to have an effective role in economic diversification. This, Askari argued, is the source of "distortion" to domestic output, especially in contrast to "direct production subsidies." Productive sector subsidization is the other target of government subsidies. These include the state-led export-oriented basic industries. Askari referred to this target as productive because of its long-term benefits to the economy in general and the future generation in particular.

Although the government subsidization approach may be endemic to productivity, political gains can be seen as the driving force behind such economic public policy in Saudi Arabia. To establish the merits of this argument, it is important to weigh the forces of political economy on the basis of how the Saudi development policy has arrived toward its social and economic objectives. To do so, this writer stresses the question regarding the extent to which the Saudi state's development strategies have achieved a balance of "sustainable" growth. Here, it is important to introduce the "spatial linkages" as a verification of the extent to which the state's development strategies have altered the nature of the oil-based domestic structure. On the other hand, the spatial dimensions of growth can be used to offset the ineffectiveness of GDP measurements of income distribution. The latter assertion is presented to avoid further distortion of growth, especially on

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the issue of using GDP as "evidence on distribution." This has been echoed in the critical views on GDP representations. In this regard, Richards and Waterbury (1990) argued that, in addition to problems associated with its invalidity for measuring "nonmarketed outputs," "social welfare" growth and "international GDP comparisons," the concept of GDP is especially difficult to use in countries where revenue is derived predominantly from unrenewable natural resources. In general, they argued that "most of this revenue is not income that can be sustained over time" (p. 11). Rather, especially in the Gulf countries, a portion of the "GDP is not 'income' but 'liquidation of capital.'" In the case of Saudi Arabia, as well as other oil-exporting countries, using GDP can distort "the level of income that could be sustained without oil. . . . The 'reproducible' component of GDP of Saudi Arabia may be as little as one-quarter to one-half of reported GDP" (p. 11).

Notwithstanding these criticisms of GDP, Richards and Waterbury (1990) considered using it because of the absence of compatible statistics on national income. This researcher will also follow suit in using GDP in the general evaluation of the Saudi economy.

The Spatial Question of State-Led Industrialization in an Oil-Based Economy

Reemphasizing the Saudi development strategies, the spatial question in this study revolves around two interrelated patterns of the state's economic planning, namely, the infrastructural and industrialization processes. Given the nature of the Saudi oil-based economic development, the building of the physical

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infrastructure was an essential prerequisite for establishing a sound long-term productive economy. Spatially, the infrastructure process was conducted within a national priority framework, influenced mainly by the locational imperatives of the oil industry, the political and economic weight of certain urban regions, and the strategically oriented, outward-led industrialization programs. Acknowledging the nature of the oil industry, the "locational imperatives" are introduced here to distinguish the direct effects of oil on the immediate area surrounding its production activities.

Within the integrated perspective of both growth and location theory, Storper (1991) referred to the general aspect of such a process as the "agglomeration" nature of industries. The rise of an industry, he argued, is the basis on which a certain location attracts an economy of scale normally associated with the industrial production service and maintenance requirements. "Agglomerated industrial complexes are a principal basis for the rise of territorial growth centers, whose appearance on the landscape is often associated with the rise of new industries" (p. 14). Hence, infrastructure seems to follow the industrialization process, not the other way around. In his critique of neoclassical urban economists, Storper believed that "industries, as they grow and develop economies of scale, are capable of creating around them the preconditions of production, such as markets, factor markets, infrastructure, etc." (p. 23). These industrial-related activities are not already there, leaving the discretion of locating industries.

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In the case of oil economies, the discovery of oil in certain regions has been the main force behind the rise of their importance on the national and international levels. In Saudi Arabia, the Eastern Province, the location of the largest oil fields in the world, was of little importance before the discovery of oil. Since the 1940s, this region has grown as rapidly as has the importance of oil as a leading energy source. This oil-related spatial concentration of economic activities has created a shift in population as well as in private capital from the preoil-dominating western and southwestern subregions in the Eastern Province. By 1974, almost 69% of industrial investment by the private sector was concentrated in this region. Within the region itself, even greater political and economic shifts had occurred as a result of oil activities. A "Tri-City Area," or Dammam Conurbation, was created in 1935, with a subsequent political shift of the regional capital from the old city of Hofuf to the modern city of Dammam (Schliephake, 1984).

Because of the Saudi state's control over oil revenues, however, the backward effects of oil money reached beyond the physical location of the oil industry. Although the general effects of oil wealth have benefited almost the whole population, the political and economic weight of some urban centers has been an influential factor in attracting most of the state's development process. In oil-based economies, such as that of Saudi Arabia, the state has played a crucial role in creating a change to the location roles of the oil industry's spatial linkages

through the political weight of urban-led planning. This is believed to be the result of two main factors. The first is generally related to the long domination of cities throughout the history of the Middle East (Chatelus & Schemeil, 1984; Richards & Waterbury, 1990). In contrast to the European feudal landlords and rulers, Richards and Waterbury argued, in the Middle East

> The *medina* was the center of gravity of economics, politics, religion, and intellectual life. This historical legacy continues today. The cities of the region hold most of the industry, a large and growing percentage of the labor force, and the bulk of government officials. They contain most of the modern health facilities and universities; they are the centers of drama, film, television, publishing, and intellectual life generally. Their residents generally enjoy higher incomes and better standards of health and education than do their rural cousins. Cities also display severe economic and political problems, many of which are caused by the rapidity of urbanization: acute housing shortages; insecure and unremunerative employment; water and sewage failures; and political riots. (p. 263)

In Saudi Arabia, political and economic factors have shaped the state's bias in pouring most of the oil wealth into certain cities with historical, political, economic, and religious significance. The result has been massive growth in the urban population. During the period of the oil boom, this shift led to an increase of the urban population from 39% in 1965 to 72% in 1985 (Richards & Waterbury, 1990). On the national level, this population shift was not primarily directed to the oil region in the East. On the contrary, the Eastern Province comes only third, after the capital city of Riyadh and the commercial and national port of Jeddah (Auty, 1987).

Although oil has had a direct effect because of the geographical concentration of its production, it has been more important as a tool in the hands

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of the state, whose development strategies have been influenced primarily by the political and economic forces in urban centers. This has created agglomeration economies in a few urban centers outside of those areas that are immediately linked to oil-production activities. To use Storper's (1991) meaning of industry, the dominant urban centers in Saudi Arabia are mainly poles of growth, expanding on the basis of their control over the manufacturing and service sectors. These services, following Storper's classification, "are not necessarily oriented toward final demand. They are better thought of as services provided to industries or industrially organized service complexes and so can be included under the rubric of 'industry' in general" (p. 8).

In Saudi Arabia, these industrial activities are concentrated mainly in three urban centers, forming an East-West axis. This urban line is spatially configured to represent a specific urban and regional character. Hence, on the urban level, Riyadh, Jeddah, and the Dammam tri-city area form the country's agglomeration centers. On the regional level, these three centers also represent regional differences and the central concern in the state's regional planning. With regard to this latter concern, the Saudi government has begun to realize the problem of urban-based "polarization" of growth and has considered what Storper (1991) called "polarization reversal."

As a regional policy, some developing countries embarked on the creation of "growth poles" in order to divert investments from the urban center to isolated areas in the periphery. Storper considered such a policy a proven failure, as

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witnessed by Brazil's "attempts to redistribute economic activities in space" (p. 94). This failure was not attributed to isolation in space, however. The growth-pole approach failed, mainly due to the isolation of its economics from the external nature of the division of labor in industry. Hence, Storper concluded by emphasizing the nature of industrialization during which polarization can result in "interregional inequalities." Yet, from the "economic standpoint," "polarization per se . . . is not a problem." Thus, reducing the problem of polarization for interregional inequalities can be justified only when such a move will benefit the economy as a whole. In this respect, Storper stated,

> There is no reason that spatial or regional equilibrium should be privileged as the goal of economic policy, unless we can demonstrate that it would necessarily bring more development, more welfare, or more human satisfaction than could be had in its absence. (p. 97)

This concluding remark brings us to the final aspect of spatial linkages of the Saudi state's development strategy, namely, strategically oriented, hydrocarbon-based industrialization.

Driven largely by economic and strategic considerations (Humble, 1990; Johany et al., 1986; McMinn et al., 1983; Schliephake, 1984), the establishment of the Jubail and Yanbu industrial cities also carried growth-pole characteristics. In contrast to the above-mentioned policy goal behind the growth-pole approach, Saudi planners were influenced primarily by the locational imperatives of the oil industry and the strategic prospects of export-oriented, oil-based industrialization. This was evidenced by the location of the two cities. (Jubail is located on the Gulf, near the oil fields in the Eastern Province; Yanbu is a port city on the Red Sea in

the western region.) The latter location, although it has spatial significance, was chosen mainly to secure safer access for the national crude oil and refinery products to the European market (Humble, 1990).

Spatially, the two industrial cities were built to relieve pressure on the urban cities; this was by no means a process of redistributing industrial plants to peripheral locations. In fact, Jubail City, the largest of the two, is located within the highly dynamic subregion in the Eastern Province. As urban industrial growth centers, the two cities were perceived to attract both domestic and foreign investments and national employment away from the traditional urban centers in the Eastern Province, possibly extending to the central region through Jubail City and the north-south line along the Red Sea coast through Yanbu City (Johany et al., 1986; Royal Commission for Jubail and Yanbu, 1984). In response to such policy prospects, this researcher attempted to examine the validity of their implications for the domestic economy in general and the spatial dimensions of the industrial-city model in Saudi Arabia, especially with regard to the implications for achieving regional balance of growth.

To establish the theoretical and empirical basis for this inquiry, two interrelated concepts of spatial linkages can be identified concerning the Saudi industrial-city model for promoting hydrocarbon-based industrialization. The first is generally related to the geographical location and backward linkages of state-led, export-oriented industrialization (Auty, 1987, 1988, 1989; Healey & Lütkenhorst, 1989). The second concept is drawn from the idea of the

transnational production system (Fujita & Hill, 1993; Hill, 1989; Storper, 1991), on which to establish an empirical basis for the petrochemical industry, the leading sector in the Saudi state's efforts to build the national industrial base. Within this conceptual and empirical framework, however, it is important to point out that the Saudi industrial-city model is the principal work of the state and the nature of export-oriented, resource-based industrialization. The industrial cities of Jubail and Yanbu, although built in isolation from the traditional urban centers, are very much linked to the raw material and foreign market. They are simply an extension of the oil industry in terms of location and export orientation.

The model of building industrial zones, also referred to as export-processing zones, is not a new approach in the world economy. In fact, it is a phenomenon most widely applied in developing countries. The number of countries applying such an industrialization approach "increased from 10 in 1970 to about 35 in 1985" (Healey & Lütkenhorst, 1989, p. 1). The number of EPZs also increased from 10 to 80 during the same period. What is the general rationale behind the adoption of such an approach? Healey and Lütkenhorst viewed EPZs as "a means of attracting foreign investment and promoting manufactured exports" (p. 1). Focusing on the experience of the Republic of Korea, they attempted to examine the "controversial" issue surrounding EPZs' effects on the domestic economy. The general critical view considered the East and South-East Asian experiences in EPZs to have been characterized by "substantial" returns on exports of manufactured goods and employment training; however, they lacked the domestic

economic linkages due to the industrial concentration of these zones. In response to such a claim, Healey and Lütkenhorst identified several issues relevant to the Korean EPZs' exports and backward linkages. With regard to the former, they refuted the claim that EPZs in Korea initiated export-oriented growth. In fact, they believed that the Korean government introduced the first zone in 1971 mainly to "maintain the rate of growth of exports" to meet the short-term domestic demands for "capital-intensive projects."

On the issue of backward linkages, they also refuted the claims made in the literature concerning isolation of these zones. They believed that the Korean case seemed to be the exception, at least in comparison to other countries. Domestic raw materials, subcontracting, and sales (sales here can be a forward linkage) were believed to be substantially linked to the production process that existed within the EPZs. This exception to the tradition of EPZs, they argued, was the result of both the government's encouraging incentives to firms buying domestic raw materials and of firms' long-term establishment of commercial links with domestic industry by firms. Regardless, however, two realities of these zones seemed to surface. The first was that domestic growth resulting from these zones was only marginal when compared to the level of imports and exports by zones. The second reality was related to the fact that this relative growth in the domestic economy was occurring mainly during the first phase of Korean EPZs.

Taking into consideration the differences in industrialization and the timing of building outward-oriented industrial zones (timing here refers to the stage of

industrial development), the above two problems identified with Korean EPZs were also evidenced in the Saudi Arabian experience. In the latter case, however, the problems associated with the establishment of the two industrial cities are difficult to measure in economic terms. They can be identified only as a part of the government infrastructural strategy. Hence, the backward linkages of the industrial cities of Jubail and Yanbu were mostly related to the construction phase, during which there was an accelerated growth of the nonoil economy. This phase of high growth was also a part of the overall national infrastructure building.

In this regard, Auty (1987, 1988, 1989) did extensive work on the spatial linkages of resource-based industry (RBI). RBI refers particularly to the "processing of hydrocarbon into petrochemicals and ores into metals," mostly by oil-exporting countries. Within the strategic framework of oil states, Saudi Arabia's investments in RBI were principally motivated by expectations for long-term development goals. RBI "was expected to contribute to accelerated economic growth, healthy structural change, and spatial decentralization" (Auty, 1988, p. 216). Unlike the Korean case, these expectations reflect the initial process toward economic transformation rather than toward maintaining existing domestic economic growth. Hence, the phases of developing export-oriented RBI in Saudi Arabia can be perceived only on the basis of short-term, construction-related growth. Domestic effects were measured by the "transitory" stage of growth that took place mainly during the oil boom. The long-term structural change, led by the RBI, was actually expected to be the product of the forward linkages associated

with the rise of the secondary industry and light-manufacturing sector. This was believed to be developed in the stages following the construction period and the beginning of on-stream production of industrial projects.

Concerning the accompanying spatial decentralization, the construction and production phases of RBI development can be seen as the main indicators of the social and economic effects of the new growth centers. As indicated earlier, the location of the two industrial cities of Jubail (on the Gulf Coast) and Yanbu (on the Red Sea coast) was mainly influenced by factors related to raw material concentration and the strategic nature of oil and petrochemical exports. As a means of spatial redistribution, the two industrial complexes seemed to create a new east-west axis north of the traditional urban line, which, Auty (1988) argued, led to integrating the "oil enclave" with the western region. For state planners, this would serve as a means of achieving regional balance of the country's development and, at the same time, relieve the pressure on the urban centers in the East and West.

By emphasizing the "growth-pole" approach, there is a missing link between the Saudi EOI and regional planning. This mislinkage of growth, this researcher believes, emerges from ignoring the nature of the production system of the Saudi petrochemical-based industrialization located in these growth poles. In addition to the fact that these two industrial cities are "self-contained" (Auty, 1987), the petrochemical production system (PPS) is mainly a plant-based process linked through a feedstock- and technology-based division of labor. The two industrial cities are connected to a raw material supply system furnished by state

companies. Therefore, by adopting the concept of an industrial production system developed in industrial geography and urban political economy (mainly in the writings of Fujita & Hill, 1993; Hill, 1989; Storper, 1991), the problem of analytical emulation is largely apparent in the application of related variables. This is due primarily to differences in the political and economic environments where these research variables are established in general, and the industry in which these variables are applied (e.g., the automobile industry).

Notwithstanding these differences, the production system concept is probably the best-equipped theoretical base on which an empirical framework can be founded to examine the nature of industrial systems, such as the petrochemical industry. Taking into consideration the political economy of the oil industry, the urban-industrial model, and the nature of PPS, this researcher attempted to establish the dimensions of petrochemical production as both an industry and nationally specific. These dimensions, Hill (1989) said, are "connected to social and spatial division of labor" in industrial production. Here, he specified "tired specialization, social and spatial control, stratification and uneven development" (p. 477) as the main variables of production systems. In general, he wrote,

> A production system is a concept for viewing the ways economic activities among firms are organized over space. A production system is a collection of operating units linked by technology and organization into the manufacture of final products. (p. 463)

Generally, the PPS can be identified with the above definition of the production system. Considering the nature of the industry's organization, raw-material dependence, and the nature of final products, however, the petrochemical

production chain, in contrast to that of the auto industry, for example, is developed as an intermediary process linking the primary raw materials (mainly petroleum and natural gas) to the manufacturing of processed and final products. Simply put, some parts manufactured by layers in the production chain of a specialized industry, be it the automobile or aircraft industry, can be the final stage of the production system in the petrochemical industry. Herein lies the main difference in the application of variables developed in the production system concept. Although such a difference may be apparent when a comparison involves two totally different industries, the basic assumptions and variables can be built upon to construct an industry-specific system of production.

Using the case of the Saudi petrochemical industry, certain aspects surrounding the PPS are crucial in the configuration of the industry and its social and spatial division of labor. In general, the Saudi petrochemical industry is in some ways similar to what Hill (1989) and Fujita and Hill (1993) called "the company town model." The two industrial cities of Jubail and Yanbu, where all of the production process takes place, are organized in a way similar to that of Toyota City, especially in terms of spatial concentration and a self-sustained urban-industrial center. The main differences, however, are those related to the nature of the industry and the political and social organization of activities within these industrial communities. Politically, the contrast between the two cases is principally embedded in the corporate-led welfare model in Toyota City (Hill, 1989) and the central government-led social structure in the Saudi urban industrial

model. With regard to the latter, both industrial cities are managed by governmental corporate and planning agencies whose responsibilities are initiated at the headquarters located in the capital city, Riyadh.

CHAPTER III

THE SAUDI STATE AND ECONOMIC POLICY STRUCTURE

Introduction

The Kingdom of Saudi Arabia is an oil state, much of whose structures for policy making and planning revolve around its heavy dependence on oil exports as the main source of income. This economic importance is attributed to the fact that oil is the main and indeed the only abundant source of economic and social development, as well as of political power and security for the Saudi state. Therefore, it is important to view the Saudi policy and planning process within the framework of an oil-based economy in which the policy-making process in general and industrial and regional planning in particular are formulated and carried out. Hence, this chapter contains a discussion of how the Saudi state structure developed in the oil-based economy and how policy is formulated within the governmental and nongovernmental structures. Concerning the development of the Saudi state structure, the evolution of the Saudi state within the process of structural change in the oil industry is briefly examined. With regard to the policy and planning process, the formulation of the Saudi oil policy is presented as an example because of its importance in the country's economic and political process.

The Saudi State and the Oil Industry

The modern state of Saudi Arabia has always coincided with the oil industry and the related economic and political changes that have taken place over the past three decades. Since King Abdulaziz Ibn Saud established the Saudi state in 1932, writings on the country's political, economic, and social structures have stressed the unequivocal linkage between oil and the national development process. This linkage has been identified throughout the historical, political, economic, and social processes of change in the Saudi society.

Historically, the Saudi state began to achieve an international and national role as a result of a military power quest by Ibn Saud to establish political power and stability in the Arabian Peninsula and the discovery of abundant oil. In her work on the Saudi political and economic process, Lackner (1978) presented a historical overview of the emergence of the modern Saudi state from the period before its establishment through the late 1970s. In general, Lackner characterized Saudi Arabia as "unique" compared to other developing countries. She argued that

> No analysis of it can fit into any pre-conceived model of development as the country's specificity far overrides any features it may share with other developing nations. Like most other Third World states, its borders were recently defined, but unlike many it was never colonised; therefore, its traditional mode of production lasted well into the 20th Century, while that of most underdeveloped countries was destroyed in the 19th. (p. ii)

More important, however, Saudi Arabia's unique character as a preserved traditional society has been economically and politically shaped by its nature as an oil state. Therefore, it is important to stress how the processes of development

and change in Saudi Arabia have been linked to the structural evolution of the oil industry and how the consequent domestic structural change has shaped the planning and policy process in Saudi Arabia.

Concerning the process of change in the oil industry, many political economists have identified the relationship between the oil companies and the Saudi state as the most apparent factor that not only has shaped the nature of the international political economy in the last three decades, but also has contributed to the rise of the oil state as an actor in the international arena and, more important, to its predominant role in the domestic process of structural transformation (Evans, 1985; Gilpin, 1987; Lackner, 1978; Luke, 1985; Masood, 1989; Richards & Waterbury, 1990). The state-company relationship, in this context, has two main aspects that can relate to the case of Saudi Arabia. First is the rise of the state as powerful vis-a-vis other actors in the society. The second aspect of the state-company relation is the nature of industry and the subsequent process that shapes the domestic structure.

Here, it is worthwhile to discuss Evans's (1985) work on the relationship between transnational corporations (TNCs) and the state in the Third World. Emphasizing the "extractive industries," Evans argued that the transnational actors involved in extractive activities in peripheral countries preferred to deal with the state mainly to ensure the maintenance of "law and order." The consequent outcome of this state-TNC relationship was the emergence of the state as a powerful actor in the local economic development process, especially in the

leading industrial sector. "In country after country, intensive penetration of local economies by such transnational actors has, with increasingly shorter lags, been followed by the rise of state apparatuses that not only gain control over local extractive activities, but in certain cases become the dominant actors in the local economy overall" (Evans, 1985, p. 197). Evans considered the oil industry, a prominent example of an extractive industry, to be "strongly suggestive." In this respect, he pointed out the progressive process that has taken place in the oil industry during the past three decades. This progress in the state-TNC relationship has evolved, Evans stated, "from state passivity and transnational appropriation of the surplus, through rising state shares in the returns, to nationalization and state ownership" (p. 197) of the extractive industry, especially in the Middle East and North Africa.

Based on the above argument concerning the TNC-state relationship, it is this linkage between the state as an emergent predominant actor in the domestic political economy and its role in the structural change in the economy and society that was taken in this study as the explanatory factor in how the policy and planning process is formulated and carried out. In the case of Saudi Arabia, the transnational linkages introduced by Evans can be identified through the history of the Saudi state's struggle to take control of its local oil industry away from the oil companies. Although the interaction between oil companies and the state has several implications with regard to the nature of local political and economic development, the main concern here is how such interaction has shaped the

state's formation and its emergence as a strong actor in national economic planning and development.

Luke (1985) and Lackner (1978) analyzed the process of modern state formation within the International Energy Regime, with special focus on the oil TNC-state relationship. Luke emphasized the general aspects of dependent development of a "petroleum-based export economy," namely the Saudi and Iranian cases, and the unique nature of oil-state formation in those economies. In contrast, Lackner focused on the Saudi experience and how the government-oil company interaction has led to the rise of state power in the economy and society. This process took place mainly during the period before and after World War II.

Historically speaking, Lackner (1978) argued, the initial stage of the Saudi experience was marked by conflict between American and British oil companies over the control of Middle Eastern oil. This conflict continued until World War II. The United States, represented by Aramco, won the war and the Saudi oil. Lackner (1978) described this scenario as follows:

> As the war drew to a close, U.S. supremacy over Britain in Saudi Arabia became clear. The struggle between the two had forced the U.S. government to take some interest in internal developments in Saudi Arabia and to make some commitment to assisting the Saudi regime. This was meant both to protect Aramco (Arabian American Oil Company, the name adopted by Caltex in 1944) and to ensure the survival of pro-Western conservative regime in a world where opposition to imperialism was gathering momentum. (p. 37)

Until the birth of OPEC, the relationship between the Saudi government and Aramco went through various phases, from the 1933 concession agreement through the government's complete ownership of the company. During this period,

Aramco's role in Saudi Arabia was more than that of merely an oil company. It assisted the Saudi government in building the basic infrastructure of the country's economy. These "extracurricular" activities included building roads, especially in the Eastern Province of the country, and a railroad to link the capital, Riyadh, with the Eastern Province, building airports and seaports, and helping the "local commercial enterprise by assisting in the establishment of service industries" (Rawls, 1987, p. 139).

The next stage in the relationship between the Saudi government and the oil companies was characterized by continuous negotiations on the share of oil prices until the birth of OPEC. The formation of OPEC in 1960 was not good news for the oil companies, which continued to ignore its existence until OPEC was able to raise its oil prices in 1969 (Lackner, 1978). During this period and until 1973, Saudi oil revenue was estimated to reach $1,150 million. In 1975, the amount leaped to $29 billion (Birks & Sinclair, 1982). Although this increase in oil revenues was a result of the changes in the international energy regime in the early 1970s, the role played by the oil exporting states cannot be ignored. This, according to Luke (1985), resulted from the oil states' "growing capabilities to manage their oil-based development" (p. 38).

In the evolution of the Saudi government's relationship with the oil companies, in the pre-1973 era those companies set the stage, through their manipulative nature, for the subsequent importance of the oil industry in world affairs. Their power vis-a-vis the oil-producing states later diminished as the oil

states' management capabilities developed. In the case of Saudi Arabia, the emergent strength of the state was also evident in national economic planning and development. This appeared to be the result of two main factors. The first was that the government was the only actor negotiating and dealing with the oil companies. The other factor, albeit a complementary one, was the weak nature of the private sector during the development of the oil industry.

This historical conclusion seems to support Evans's (1985) argument concerning the role of the state in the extractive industry and Luke's (1985) view of the historically specific dependent formation of the oil state. Before examining such conclusions for the purpose of this case study, however, a brief look at the nature of the Saudi state's political and economic structures and how they have shaped the state's oil, industrial, and regional policies should be considered.

The Structure of the Saudi State

According to the voluminous body of literature on the Saudi polity and economy, three common factors that are considered to have shaped the nature of the Saudi political, social, and economic structures are (a) the noncolonial experience, (b) the Islamic nature of the state and society, and (c) the oil-based economy. Hence, the structure of the modern Saudi state can be characterized as the outcome of these factors (Niblock, 1982), and its policy as the consequence of the structural integration of their evolution.

With regard to the first factor, the absence of a colonial history, the Saudi state differs from other developing countries in two main aspects. The first aspect

is the lack of "developed bureaucratic trappings of empire" (Lackner, 1978), and the second is the preservation of "pre-capitalist" political and ideological structures (Olsen, 1984). In his analysis of the Saudi form of regime, Olsen characterized the Saudi regime as pre-capitalist, whereas the economy is "highly capitalist." Emphasizing the noncolonial experience of the Saudi society, however, Olsen stated that

> three different form of regime can be found in the peripheral societies. Two of these are capitalist, the third is pre-capitalist. To my mind, the Saudi Arabian form of regime belongs to the group of pre-capitalist forms of regime. The existence of a pre-capitalist form of regime in Saudi Arabia may be ascribed to two factors: (1) Having kept free of formal colonialisation, the country has never experienced any forced dissolution of its political (and ideological) structures, which is the case in the colonised countries. (2) The non-colonial status of Saudi Arabia has had the result that the classes founded on pre-capitalist economic, political and ideological structures are comparatively stronger than their counterparts in colonised societies. Therefore, they have been able to preserve the pre-capitalist form of regime in the Kingdom. (p. 197)

The strength as well as the preservation of the Saudi pre-capitalist form of regime can also be attributed to the fact that Saudi Arabia is an Islamic state. Both the noncolonial history and the Islamic foundation of the Saudi society have contributed to a distinct political structure based largely on Islamic constitutions and traditions.

The Saudi Political System

In general, the Saudi political system is based on a combination of religious, traditional, and modern governmental institutions. The extent to which each of

these institutions has influenced the formation of the political structure in Saudi Arabia depends on the policy framework and domain.

Because Saudi Arabia is an Islamic state, her political system is based on the Holy Quran as the Constitution and the Shari'ah as Islamic law (Al-Farsy, 1990; El-Mallakh, 1982; Lackner, 1978; Mehrose, 1985; Soufi & Mayer, 1991). Saudi Arabia is also a monarchy. Being at the top of the political system, the King

> exercises authority within the framework of the Shari'ah law. He promises to govern in accordance with the laws of Islam, and the traditions of the society. However, the succession to the throne is made by the Royal Family's choice, and supported . . . by Ulama (religious leaders). In Saudi Arabia, Islam plays an important role in the political, social and legal structure in all--persuasive and fundamental. (Mehrose, 1985, p. 23)

The Ulama, or the highest ranking religious leaders in Saudi society, are an organized committee, usually appointed by the King, whose main aim is to maintain the Islamic law. They are influential primarily in Saudi internal affairs, ". . . particularly in the areas of the judicial and educational systems, and [this] ensures an Islamic orthodoxy of political decisions" (Mehrose, 1985, p. 24). Another important area of Ulama influence lies in their relationship with the government. Although they do not intervene directly in governmental affairs (Soufi & Mayer, 1991), the government usually seeks these religious leaders' advice on and legitimation of certain public actions because of their direct relations with the people. Olsen (1984) described this role as acting as an "intermediary between the political leadership and the population" (p. 203). The religious leaders also play the role of reinforcing the government policy and practice as long as these are in the society's interest. This role is based on Islamic tradition, which emphasizes

that social responsibilities should be considered before individualism and "personal advancement." Within this social framework, the state is considered the representative body that should assume such social responsibility. As a result, Saudi citizens accept the concentration of economic, political, administrative, and military power in the hands of the state. The extent to which the religious leaders supervise this social role depends on their technical capability and expertise, which this group apparently lacks, with the exception of the areas specified above (Olsen, 1984; Richards & Waterbury, 1990; Soufi & Mayer, 1991).

The religious leadership in Saudi Arabia is influential primarily in the are of decision making regarding the legal and educational systems, yet its authority is limited in other areas, particularly in regard to economic development, oil policy, and foreign affairs. Olsen (1984) noted:

> the Ulamaa seems to be an important element in the decision-making of the Kingdom. However, this influence is probably reduced to areas such as security, parts of the foreign policy, and setting limits to the behaviour of the regime and to the style of public discussions. At the same time, it should be emphasised that the Ulamaa is not a powerful force in influencing Saudi foreign policy, in determining strategies of development and oil production, or even the direction of Saudi aid to Islamic countries. (pp. 203-204)

In addition to the religious factor, the traditional factor, namely the tribal leadership, continues to play its part in Saudi Arabia's political process, yet recently tribal leadership has become less effective than in the early period of the state's formation. This decline in tribal power has been attributed to the strengthening of central authority and the emergence of oil wealth as an economic power in the hands of the state. However, it must be emphasized that the tribal role in

the political process has continued in the form of traditional gatherings in the King's presence. This customary practice is referred to as Majlis (the "King's audience"), which can be traced back to the reign of King Abdulaziz Al Saud, (Lackner, 1978; Niblock, 1982).

The Majlis system has been described in the Saudi literature as "a form of democratic representation." However, this description has been rejected by Western scholars, whose views differ on the substance of people's participation in a democracy. In this regard, Niblock (1982) argued:

> The access which citizens had to the King in his daily Majlis has caused some observers to describe the Majlis system as a form of democratic representation. This is incorrect, for the ability to express views to the decision-maker is not equivalent to having a share in determining what decisions are made. (p. 89)

To support his claim, Niblock stressed two major characteristics of the Majlis system: its informality and its limited influence on the decision-making process. The informal nature of the Majlis led Niblock to question the ability to discover which arguments were influential and who participated in discussions of the debated policy.

Niblock said that the influence of the attending audience was limited to the personal motives of the majority of the audience. Although the King usually started the Majlis session with some issues of national concern, most of the people attending came either to make personal requests or to "collect" certain gifts or subsidies. Therefore, Niblock concluded, "such contact between rulers and ruled

no doubt served useful purposes; it did not, however, constitute a channel whereby state policy could be significantly influenced" (p. 90).

Nevertheless, it should be stressed that certain members of the audience have some influence in formulating state policy. These individuals represent the religious, tribal, and business leadership (Niblock, 1982). The influence of these groups, especially the religious and tribal leaders, has increased throughout the process of state formation. The influence of these actors is evidenced in the structural outcome of the state's formation, within which religion and tradition remain compatible with the modern form of the government political system. Economically, however, both the religious and traditional groups are more or less reactionary, rather than being active in the decision-making process. With regard to the business leadership in Saudi Arabia, its status is similar to that of the other two groups, yet in a different context, as will be seen in the discussion of state-private sector relations.

The third and final element of the Saudi political structure is the Council of Ministers. Founded by King Abdulaziz in 1954, the Council is a contemporary organization that emerged as a natural outcome of the expansion of the central government and its concomitant political and economic responsibilities (Al-Farsy, 1990; Dahlan, 1990). The Council of Ministers represents the modern Saudi Arabian governmental structure (see Figure 3.1). At present, according to Dahlan (1990), the Council

> is the most powerful political institution in the Kingdom, having both the power to legislate and to implement laws, as well as to formulate

> government policy on internal and foreign affairs. The Council of Ministers represents a type of governing body which is perhaps unique in the world. Its powers and functions are in part the result of the conservative religious environment in which it operates and partly due to the historical and political situation in which it was established and subsequently developed. (p. 61)

The King is the president of the Council; he holds the dominant position and exercises full authority over both the legislative and administrative bodies. However, the King's authority is constrained by the Constitution and law of the Islamic faith; he also is influenced by members of the cabinet, especially those within the Royal Family. In this respect, Mehros (1985) pointed out that "the King is the chief of the state and source of political power, but in practice he is one among several personalities in the Royal Family who actually participate in policy decisions relating to the Kingdom (p. 21). Nevertheless, it must be emphasized that participants in the policy decision-making process may vary, depending on the nature of the policy and its importance for economic, political, and security objectives, as seen in the discussion of oil and industrial policy process.

On August 20, 1993, a new legislative body, the Majlis Al-Shoura or Consultative Council, was established through a Royal Decree announced by King Fahad. This body consists of a president and 60 members. The Council's role is generally defined as being involved in the country's legislative, political, and economic systems. Its responsibilities include:

> consultation on general state policies, especially the deliberation of the general plan for social and economic development, studying the foreign policies and regulations, relations and treaties, and aids; and reviewing the annual reports submitted by the Ministries and other government agencies. (Asharq Al-Awsat Newspaper, 1993, p. 4)

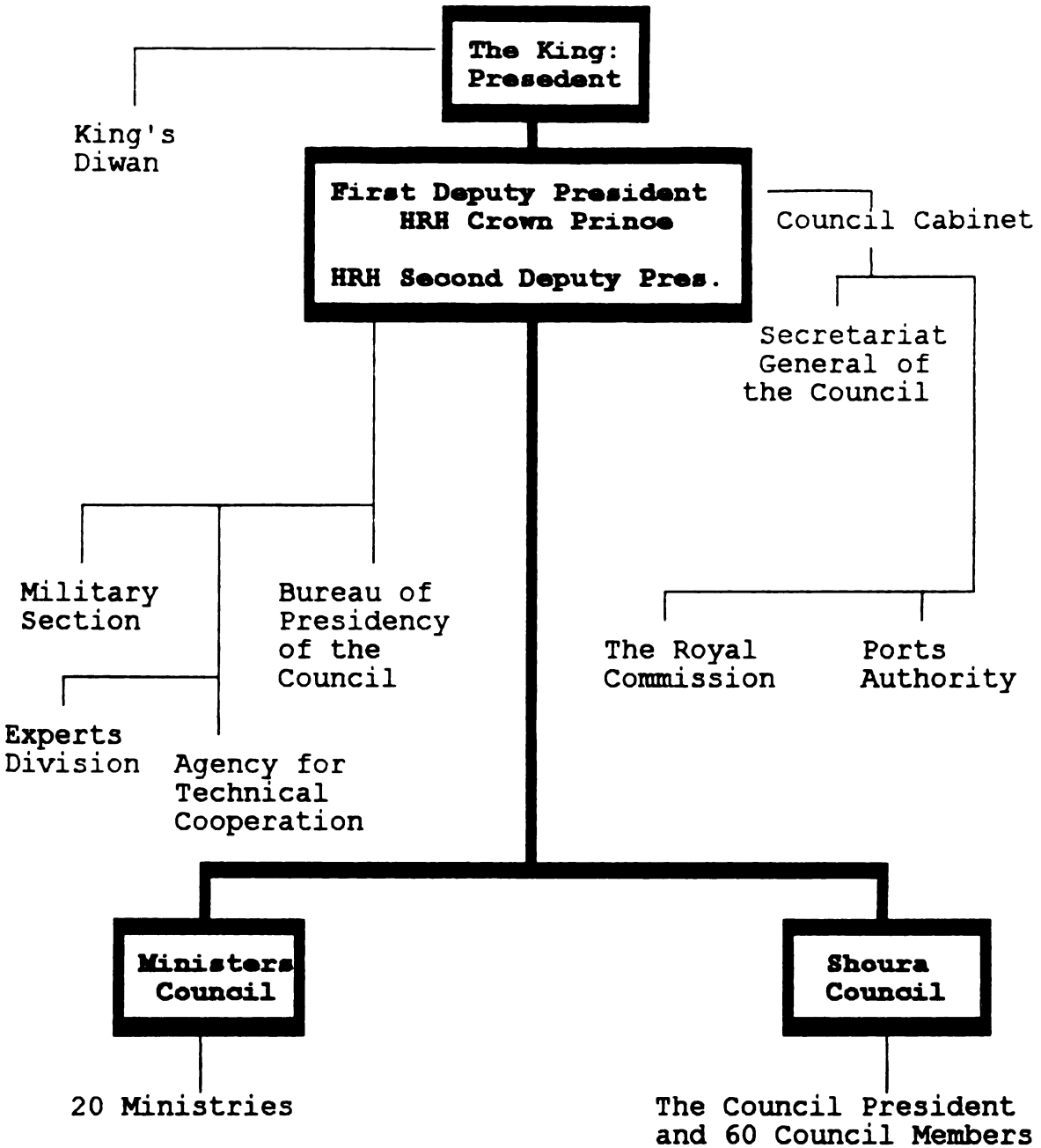


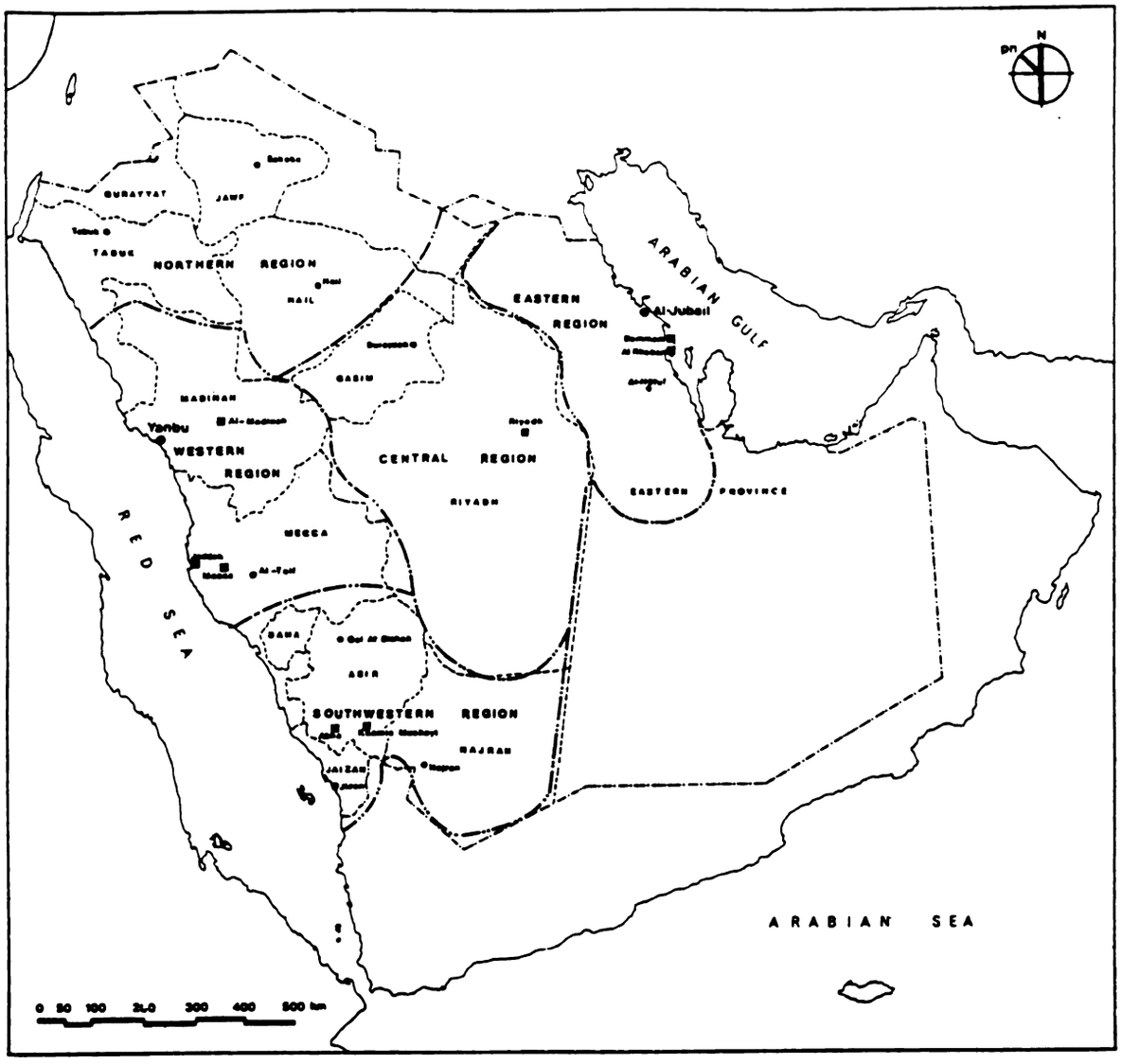
Figure 3.1: The Saudi government structure: The Council of Ministers and Shoura.

Source: Adapted from Al-Farsy (1990), Chart Va, p. 49.

Although the Shoura Council has been one of the government's legislative bodies since modern Saudi Arabia was founded, this new body has a more systematic and formal organization, with an identified agenda and national strategic responsibility. At this time, no detailed information is available on this new legislative body or its relations with the existing government agencies.

The Regional System

Economically, Saudi Arabia is divided into five planning regions: the Eastern, Central, Western, Northern, and Southwestern regions. Each of these regions consists of a number of Amarahs (administrative regions), which represent both planning and political units (see Map 3.1.) In all, there are 14 Amarahs, each of which is represented by an amir (governor) who reports directly to the Minister of Interior. Of the 14 Amarahs, three are the most dominant ones in the country. These three--Riyadh, Makkah, and the Eastern Province--are the country's leading Amarahs in terms of urban growth and population size, as well as in political influence. Riyadh, Saudi Arabia's capital, is the center of the government's political, administrative, and military agencies. It is the location of the King and his Cabinet, the two councils, the Diplomatic Quarter, and the two leading universities. The Makkah Amarah, on the other hand, is the site of the Muslim religious center, the Holy Mosque, which is the destination of all Muslims throughout the world who visit the Mosque yearly to perform the Hajj (Pilgrimage) or other religious activities prescribed by the Islamic religion. The other significant city in this Amarah is Jeddah. It is as old as Makkah and as highly urbanized as



Boundaries of Planning Regions

Boundaries of Administrative Regions

Map 3.1: Planning and administrative regions in Saudi Arabia.

Source: RCJY, MAJAS: Master Plan Update (1984), Vol. II. Figure 3.1.1.

Riyadh. Jeddah is the commercial center of Saudi Arabia and the country's largest international port. Finally, the Eastern Province is the location of the country's strategic resources, the oil fields, and recently has become the center of the ambitious development of the industrial city of Jubail.

Whereas Makkah and the Eastern Province represent religious and economic importance in Saudi Arabia, Riyadh is the dominant region in terms of political leadership and is the location of the decision-making body. The political role of the other Amarahs is limited to matters concerning the economic security and welfare of their citizens; they are under the direct supervision of the central government. However, at the end of last year, after announcing the establishment of the Shoura Council, the King introduced a new regional system. Although the old regional political structure persists, the new system emphasizes more direct involvement by regional governments in the country's development process. Each Amarah is expected to participate in the administrative, development, and security processes in a more organized and goal-oriented fashion, in order to contribute to the overall economic development of Saudi society.

On the organizational level, the new regional system divided the country into 13 instead of 14 Amarahs, combining two of the Northern Amarahs into one. Each Amarah is divided into governorates or provinces, and each province comprises several centers. Provinces and centers vary in number and size, based on the Amarah's geographical and demographical nature. Again the Ministry of Interior

and its representatives, the governors, are directly responsible for security and legal affairs in each Amarah.

Economic and Planning Structure

Whereas the Saudi state's political system is an outcome of both its Islamic and noncolonial past, the Saudi economic structure is the product of the third factor shaping the state's structure, namely, the oil-based economy. This reflects Olsen's, (1984) view of the nature of the Saudi state and economy; he described the latter as highly capitalist and the state's regime as pre-capitalist. Within this context, the Saudi economic structure is characterized as being dependent on the export of a single commodity, oil. The structural-transformation process that has taken place in the Saudi Arabian economy over the past two decades was the direct outcome of oil-based economic planning and development. The predominance of the oil economy in Saudi Arabia is the natural result of an economy with abundant oil resources and little else (El-Mallakh, 1982; Johany et al., 1986; Masood, 1989; Presley & Westaway, 1989; Richards & Waterbury, 1990). Emphasizing the Saudi oil-based economy, El-Mallakh stated:

> Saudi Arabia has a single-commodity economy. The dominance of oil in the country's foreign exchange earnings, government revenue, and as a source of growth of the national income, is the most obvious characteristic of the economic system. (p. 27)

The structural effect of oil on Saudi economic and social development is unprecedented in the world's economic history. This notion has been widely echoed in most of the literature on the Saudi economy and society. Although oil-

related growth in Saudi Arabia began in the early 1960s, coinciding with the creation of OPEC and the consequent slight increase in the government's oil revenues, the sudden growth spurt did not occur until the early 1970s, as a result of the massive increase in oil prices worldwide (Askari, 1990; Johany et al., 1986; Kay, 1982; Lackner, 1978; Looney, 1990; Masood, 1989; Niblock, 1982; Presley & Westaway, 1989). As a result of the oil wealth accrued by Saudi Arabia, the country's virtually underdeveloped social and economic structures have undergone the most highly dynamic development ever experienced in modern history. In this regard, Askari (1990) stated:

> During the span of three development plans (1970-1985), the economy of the Kingdom of Saudi Arabia has undergone a dramatic transformation. Because of its large export earnings from oil, Saudi Arabia was able to implement an extensive development program. Social services, infrastructure, and basic industries were constructed and developed at rapid speed. Hospitals and clinics, universities and schools, houses and apartments, highways and roads, airports and ports, refineries and petrochemical plants, agribusiness and farms, and cities, have literally risen from the desert. All of these have provided the average citizen with a high standard of social services. (p. 1)

In addition to building the country's infrastructures, another important aspect of the oil economy is its implications for economic-development policy and planning. To introduce the oil-based structural effects on the Saudi economy, general attention will be paid to how it has shaped the planning and development process, the nature of the decision-making structure, and more specifically industrialization and regional planning.

With regard to Saudi oil-based economic planning, the most prominent aspect revolves around the basic fact regarding the Saudi economy: Oil is the

prime mover behind the implementation of development plans and is the main tool for achieving the country's long-term objectives. Since its introduction in the First Development Plan (1970-75), economic-development planning has been considered the main approach to using oil resources to achieve economic growth and social well being. It also has been viewed as the tool for realizing the country's long-term economic objective, namely, reducing dependence on oil through the diversification of the economic base. These economic objectives have been stressed throughout all of the national development plans as the fundamental long-term economic strategies (Masood, 1989).

In the current Fifth Development Plan (1990-95), these long-term objectives continue to dominate the Saudi development planning process. The Plan's strategy, in addition to ideological, social, and political concerns, strongly emphasizes the expedition of the diversification process, hence reducing dependence on oil, with a further call upon the private sector to become involved in this strategic development process. Although these planning objectives have been introduced in all of the country's development plans, in the Fifth Plan these objectives, among others, are stressed even further. The following are the Plan's main objectives, as submitted by the Council of Ministers:

1. To safeguard Islamic values by duly observing, disseminating and confirming Allah's Sharia (God's Divine Law);
2. To defend the Faith and the Nation; and to uphold the security and social stability of the Kingdom;
3. To form a productive national work force by encouraging citizens to avail themselves of the benefits from the infrastructure and institutions provided for them by the State--ensuring their livelihood and rewarding them on the basis of their work;

4. To develop human resources, thus ensuring a constant supply of manpower, upgrading its quality and improving its efficiency to meet the requirement of the national economy;
5. To raise cultural and information standards to keep pace with the Kingdom's development;
6. To reduce dependence on the production and export of crude oil as the main source of national income;
7. To continue with real structural change in the Kingdom's economy so as to establish a diversified economic base--with due emphasis on industry and agriculture;
8. To develop mineral resources and to encourage discovery and utilization thereof;
9. To concentrate on qualitative development of already-established utilities and facilities by improving their level of performance;
10. To complete the infrastructural projects necessary to achieve overall development;
11. To further encourage private sector participation in socioeconomic development;
12. To achieve balanced growth throughout all regions of the Kingdom;
13. To achieve economic and social integration among the Gulf Cooperation Council (GCC) countries. (pp. 12-13)

The above-stated long-term economic objectives have been pursued in a fashion that reflects the oil-based economic process. In other words, for Saudi Arabia to use her depletable oil resources, state planning seems largely to reflect a specific type of diversification process, public-private sector relations, and regional pattern of growth.

With regard to diversification, the long-term objectives, necessitated by the reality of the oil economy, have been carried out mainly through the development of "hydrocarbon-based, energy-and-capital-intensive" industrial projects. These projects are state-owned, hydrocarbon-based industries that were established as the primary sector and as the means to accomplish the transformation to a self-sustained national economy. The nature of the Saudi industrialization process is

an essential issue in this study and is discussed extensively in the following chapters. However, two major aspects of industrialization are of significance in the Saudi economic structure and thus are briefly introduced here. The first is the strategic nature of the industrialization process, especially export-led industries; the second is the industrial-related regional planning and growth. The latter, the regional question, is also a prominent issue in this study and will be examined. Strategically oriented industrialization, however, will be introduced here through the investigation of the domination of the state vis-a-vis the private sector in export-oriented industrial planning and development. This situation has been widely rationalized as resulting from the state's taking control over the industry to ensure the success of the industrialization process.

The State-Private Sector Relationship

One of the main characteristics of Saudi economic planning has been the predominant role played by the state. Because of the Saudi state's control over oil revenues, the "state plays a crucial role in the decision-making of the structural diversification process, particularly in regard to the generation of an indigenous economic process for the creation of entrepreneurs, technical know-how, managerial and administrative expertise" (Masood, 1989, p. 4). Emphasizing Saudi industrial planning and development, the state's role is illustrated mainly in the rise of state-owned enterprises, namely petrochemical-based industrialization. According to Turner and Bedore (1979), this sector has been state-owned, planned, financed, and commercialized since its initial phase in the second

national development plan (1975-80). This trend in the Saudi state-led economic process has persisted in the form of direct involvement in basic industrialization, and indirectly through financial support of the private sector's investments in industry and agriculture. Because of the weak, unwilling, and/or unreliable private sector in Saudi Arabia, the state plays a dominant role in economic planning and development, whereas private investments are merely reactionary.

Emphasizing the industrial sector, Soufi and Mayer (1991), reflected this general view in their exclusive survey of the Saudi government-business relationship. They identified the factors that have shaped the government-private business relationship with the hope of establishing the structural basis for more private-sector involvement. Stressing the importance of "communication and cooperation" between the public and private sectors, they recognized the inadequate role of the Saudi private sector and stated that joint efforts between the two sectors are crucial for overall national industrial development. Although this assertion supports Richards and Waterbury's (1990) general view on Middle Eastern states, taken as evidence in the Saudi experience, Soufi and Mayer based their argument on the belief that effective economic development is highly dependent on mutual efforts by both government and the private sector.

Acknowledging the importance of understanding the government-private sector relationship for economic growth, Soufi and Mayer (1991) argued that:

> Crucial to any successful effort over the long term, as evidenced by the 1989-90 upheavals in the economies of Eastern Europe, is acceptance by political leaders and government planners that centralized government control alone is not the most efficacious mechanism for economic

> betterment. Although such hierarchical direction can bring forth amazing fruits--as in pulling a modern infrastructure out of the sand in one short decade, as the Saudis did in the boom era of the 1970s--long-term improvement requires the cooperation and commitment of every sector, a condition that can only be facilitated, not forced, by government fiat. (p. 1)

This emphasis on the importance of the structural relationship between government and private-sector interests resulted from the continued absence of coordination between the two parties and the consequent insignificant role played by the private sector in economic development. This lack of coordination arises when

> Governments . . . too many times initiate policies that interfere with business performance, thereby detrimentally affecting the overall prospects for that country's economic development. Similarly, the business sector engages in activities all too frequently injurious to the public interest and the nation's long-term growth. (Soufi & Mayer, 1991, p. 2)

In the case of Saudi Arabia, conflicting interests of the state and the private sector are augmented by political and economic concerns. Within the industrial sector, the government virtually owns and organizes all of the export-oriented, hydrocarbon-based industrial projects. Economically, this strategy was undertaken in response to the government's concern with ensuring the economic viability of the national basic industrialization process. It has been argued that the Saudi private sector is structurally and financially unable or unwilling to undertake the basic industrial projects necessary to achieve such a strategy (Askari, 1990; Johany et al., 1986; Masood, 1989; Presley & Westaway, 1989; Soufi & Mayer, 1991). The weak position of the private sector, it has been claimed, appears to

be associated with the fact that oil revenues, the main source of the nation's income, entirely accrue to the state, and none go to the private sector.

Politically, Saudi Arabia's basic industrial development is vitally interconnected with her oil policy. Due to this strategic linkage, the Saudi state has taken responsibility for the development of the country's industry. Hence, the state can easily maneuver when conflicts between the two policies arise. This means the state can control the oil policy without intervention by the private sector. Johany et al. (1986) pointed out the political implications for the Saudi oil policy of oil-industrial policy linkage. They identified two possible political considerations for the implementation of oil policy generated by this policy linkage. First, the government may make strategic decisions that are not in the best interest of the national industry. The second political concern is the private sector's possible influence on oil policy, which is unacceptable for the state's long-term and security interests. Johany et al. described these concerns as follows:

> First, the government is likely to make decisions that are judged to be in the country's best interest, but which might not be in the best interest of specific hydrocarbon-based industries. The added uncertainty caused by the industry being a captive of oil policy might discourage investment. At the same time, the private firms could be expected to bring political pressure to bear in opposing oil policy actions which would adversely affect their interest. Thus, private firms could come to have an unacceptable degree of influence over oil policy. (pp. 119-120)

This interaction between oil and industrial policy underlies the rationale for the state's assuming a dominant role in the industrialization process. This rationale has emerged as the result of the apparent overlap and interrelation of both policies' stated national objectives. Stevens (1982) identified the interaction

between oil and industrial policy by pointing out the two most stressed objectives in Saudi development planning in general and in her oil policy in particular. He stated,

> Two of the specific oil objectives provide the ***raison d'etre*** of industrial policy: the diversification of the economy away from dependence on crude exports and the use of oil as a leading development sector. Taken together, these two goals mean industrializing the economy. (p. 39)

The main concern here is not the implications of this interaction for either policy. Rather, the intention is to establish a sense of how the government-private sector relationship in Saudi Arabia is largely influenced by the fact that industrial development is highly dependent on a single, albeit crucial, source of income, namely oil. This strategic and vital economic resource has given the state the political and economic reasons to undertake the industrialization process and, presumably, to avoid possible mishaps had the private sector been involved in the process, at least in the early stages of industrial transformation.

Beginning with the Fourth Development Plan (1985-90), an important transition in government-private sector relations was made, toward private business playing a profound and active role in the country's manufacturing sector. The plan "strongly emphasized increased private business involvement in national economic spheres, with the manufacturing sector assuming significant responsibility for economic diversification" (Soufi & Mayer, 1991, p. 14). According to the Fourth Plan, the government-private sector relationship reinforced a new perspective, with more private sector involvement. The proposed perspective was announced in the Plan as follows:

> Previously the Government took the leading executive role, especially in developing the country's infrastructure and in the large industrial developments at Jubail and Yanbu. With these programs nearing completion, and with the growing strength of the private sector, the Government will in future concentrate more on regulatory and promotional functions and allow the private sector, through the market system, to meet the Kingdom's demand for goods, services and facilities.
>
> Thus, during the Fourth Plan period and beyond, many of the key development goals and objectives will be achieved through the activities of the private sector, in particular the continued diversification of the economy through further development of the producing sectors of industry, agriculture and mining, and improvements in the efficiency and productivity of existing economic units. (p 108)

In the Fifth Development Plan (1990-95), the role of the private sector with regard to its involvement in the diversification of the national economy has continued to change. Within the industrial sector, private businesses are encouraged to use the already developed basic infrastructure and raw materials to help build the industrial base. This new and enhanced role of the private sector has been established by the government. In other words, the government's policy initiative has been to encourage and provide the necessary means for the private sector to become involved in economic development, especially after the required economic and industrial infrastructure is in place. This responsibility that has been given to the private sector has resulted from various factors. The most apparent, interrelated factors were the strategically oriented national development objectives, accompanied by an incapable and/or unwilling private sector. Hence, because of the continued strategic importance of development and the still-developing private enterprises, on the one hand, and the government's control over national resources, on the other, the private sector's role in the economy is, to some extent,

dependent on and reactionary to government policy discretion and allocation capability. The primary factor shaping the roles of the private and public sectors is the importance of oil in the national economy and security. Therefore, as long as the oil policy is a crucial component of the national economy and politics, the state will maintain its strong hold over the decision-making process.

The Saudi Decision-Making Structure: The Oil Policy Process

From the outset, it is important to acknowledge that the policy-making structure in Saudi Arabia is established within the boundaries of the state's power. This fact, as indicated earlier, has been attributed to the historical process of the state's formation and the role of the Saudi state in the struggle with oil companies for control over the oil industry. Hence, the state has risen as the only powerful actor in the domestic decision-making process. To examine the Saudi policy-making structure, the oil policy-making process will be used as a representative example. The rationale for using the oil policy is the fact that such policy is not only crucial for the Saudi economy and society, but it has worldwide importance as well. According to Lackner (1978), the discovery of oil in Saudi Arabia is the principal factor that has helped in stabilizing the domestic political and economic affairs and in attracting the external world to ensure further stability. Indeed, for Saudi Arabia, the oil policy is a crucial element in the state structure because of the vital role of oil in the country's survival.

In general, the Saudi oil policy-making structure is organized in a hierarchical form resembling that of the political structure. Because of the highly significant role of oil in the Kingdom's economic and political affairs, however, the oil policy remains the responsibility of those at the highest level of government, with technical and advisory help provided by the Higher Committee (HC) and Higher Petroleum Council (HPC). Stressing the political and economic aspects of the Saudi oil policy, Askari (1990) argued:

> Oil policy in Saudi Arabia is determined at the highest levels of government. The King, the crown prince (deputy prime minister), and the second deputy prime minister, are the ultimate decision makers. Some input is solicited from the Higher Petroleum Council, composed of selected members of the cabinet. As a result, Saudi Arabia's oil policy has been historically motivated by broad political and economic considerations, as opposed to purely technical factors. (p. 36)

Politically, the Saudi oil policy has been shaped by events that have taken or are taking place on the Arab and regional (Middle Eastern Region) level, as well as by those on the Third World and international level. The Arab-Israeli conflict and the 1973 oil-price increase, the Iran and Iraqi war and 1979 oil crisis, and the recent Gulf crisis and the subsequent alarming oil shortage are some of the political factors affecting the Saudi oil policy. Economically, on the other hand, Saudi oil policy makers are influenced by domestic economic factors, namely the need to establish a "rational strategy" to use oil resources for the achievement of "long-term diversification." For the short term, Saudi Arabia needs oil revenues to meet both domestic and external financial obligations" (Askari, 1990; Quandt, 1982).

Concerning the policy structure, Stevens (1982) acknowledged the same structural pattern of the Saudi oil policy-making process described by Askari. However, he further introduced the downward structure of the pyramid, pointing out those government agencies involved in implementing and operating the process. In addition to the top level of decision making, Stevens mentioned the lower-level government bodies and their assumed functions. Below the Higher Committee, he wrote, comes the Council of Ministers, which in reality plays an insignificant role in the oil policy-making process because of the "importance of oil in the Kingdom's affairs and the general complexity of the subject." Hence, the Higher Petroleum Council (HPC), a decision-making body, was established in 1973 "to examine broad issues of policy that concerned oil and industry (given the links between the two)" (Stevens, 1982, p. 29). Beneath the decision-making structure is the executive body, which is mainly concerned with converting broad policy issues into "specific actions" and preparing for the implementation process. This body includes the oil- and industry-related ministries and other governmental organizations. These include the Ministry of Industry and Electricity (MIE), the Ministry of Petroleum and Mineral Resources (MPMR), Petromin (a state petroleum company), Aramco (now Saudi Aramco), Saudi Arabian Basic Industry Corporation (SABIC), and the Royal Commission for Jubail and Yanbu (RCJY).

In general, the assumed functions of each of these organizations are to implement the policy decisions coming from above and to assist in providing information and advice on oil- and industry-related projects and operations.

Petromin, established in 1962 under the auspices of the MPMR and as a state oil company, was involved in the development of both oil and industrial projects. However, due to the burgeoning development of industrial projects, Petromin was burdened by increasing responsibilities. This situation led to the establishment of SABIC in 1976 to carry out industrial projects, leaving Petromin with responsibility for oil-related refining, marketing, and distribution. SABIC, operating under the supervision of the MIE, is involved in the development of the country's heavy industry, mainly petrochemical projects. The RCJY, established in 1975, is involved in building the basic infrastructure of the industrial cities of Jubail and Yanbu, where SABIC's projects are located. These two industrial cities are considered the hope for the Saudi Arabia's future industrial and economic growth. Hence, the importance of the RCJY in oil policy making is reflected in its role as a major player in the industrialization process (Al-Farsy, 1990; Askari, 1990; Stevens, 1982).

The last organization involved in the oil policy-making process is Aramco (the Arabian American Corporation). According to Stevens (1982), it is not clear where Aramco fits into the decision-making process. However, it is assumed that Aramco, "acted as executive body to the Ministry of oil," now MPMR, especially in the oil fields located in the Eastern Province. Aramco's role in formulating oil policy is unclear, given the still-obscure nature of its interaction with the government. Considering its role in oil production, however, Aramco, like other organizations at the executive level of the policy structure, is involved in

implementation of that policy, in addition to providing technical and advisory information.

In general, the obscure or ill-defined role of Aramco in oil policy decision making is characteristic of all of the involved organizations. Thus, it is difficult to identify local players that influence the pattern and direction of Saudi oil policy. Stevens (1982) attributed this situation to the nature of the Saudi policy-making structure, which he characterized as having a great deal of "overlap" in both "fields of responsibility" and personnel. Thus, "the same person could (and does) keep appearing in different policy-making bodies. The result of this practice is that policy will be a compromise between the different views held by a few senior policymakers" (p. 29).

Stevens further described the Saudi policy decision process as "cumbersome and slow." This nature, as well as factors pertaining to the world oil market and inadequate information and analysis, indicates that the Saudi oil policy-making structure is in a stage of transition. What is known, however, is that making oil policy is primarily the responsibility of the highest government levels within which certain players, be it individuals or interest groups, are not identified as entities within the policy structure. This situation can be ascribed to the undisputable strong hold of the state over the country's policy structure vis-a-vis other social or interest groups within society or the state system of government. This state-led social and economic policy in Saudi Arabia has been reflected throughout the national development process, in which central planning has been

established to ensure the nation's economic transition, especially through industrial-led growth.

In the following chapter, the Saudi industrial policy is established as a direct example of state-led growth and how that has shaped development planning in general and at the same time undermined the importance of regional balance of growth. All of this, of course, has been a result of the dominant strategic objective, namely, to reduce the nation's dependence on single-commodity exports (oil).

CHAPTER IV

SAUDI INDUSTRIAL POLICY AND REGIONAL PLANNING

Introduction

In Chapter III, the primary focus was to provide a background on the Saudi state structure, how the economic and political processes were developed, and how the consequent state structure has influenced the nature of the policy decision-making process. In addition to the religious and noncolonial history of the modern Saudi state, the oil-based economic and political structure was introduced as the prime factor that has influenced the Saudi policy structure, especially those aspects related to economic planning and oil policy.

Over the past three decades, Saudi Arabia has emerged as an oil state, the development of whose economic, political, and social processes has been derived primarily from oil revenues. With the oil industry as the main source of income, the Saudi state has been the owner of that industry and the collector of its revenues. Hence, in addition to the state's control over oil resources, the Saudi planned economic and social development can be ascribed to the fact that a depletable oil resource is an essential factor that permitted the state to intervene in the development process to ensure successful economic planning. As a result,

this strategic nature of oil has led to the rise of the state as the main planner and policy maker for economic and social growth.

Using the example of oil policy, the Saudi state's decision-making process predominantly reflects this strategic nature of oil and its role as the source of economic and political power. Yet although the Saudi oil policy is unquestionably the backbone of the country's political economy, other related oil-based development aspects have been a natural product of the oil-based economic structure. Two related development aspects of the Saudi economy have been products of an oil-based economy, namely the industrial policy and regional planning. The former, being the country's leading tool to transform the economic structure, has been a state-led process and is highly linked to oil policy. Regional planning, however, is a by-product of both the oil economy and industry, and its past process and present status are dependent on the state's policy for industrial development. Therefore, an attempt is made in this chapter to establish the nature of these two interrelated development aspects of the Saudi economy and their progression over the past two decades.

The Saudi Industrial Policy

In his analysis of the Saudi Arabian industrialization policy, Looney (1990) stated:

> In almost every country, industry is the glamour sector of economic development. People look to industrial development to provide much-needed employment, to generate higher individual and national income, to relieve balance of payments constraints through import substitution, to open up markets for primary products such as those from the mining and fishing

> sectors, to give the country greater economic independence, to generate new tax revenues, and to furnish an important source of national pride. By and large, these hoped-for benefits of industrialization are realistic--provided a country makes sensible choices. (p. 67)

This economic hope of industrialization is one of the ultimate goals that is emphasized by all developing countries. In oil-based economies, particularly that of Saudi Arabia, the quest to build the industrial base is, indeed, reinforced by the unreliable nature of oil-derived income and the virtual nonexistence of industry before the discovery of oil.

In this section, the main purpose is to provide a general background of the Saudi industrialization policy, with particular focus on the export-oriented industrialization (EOI) process. The aim is to examine the nature of the Saudi EOI sector and its role in achieving the country's long-term objectives.

To understand the nature of the Saudi industrial policy, two main features of the Saudi economy and industry must be taken into consideration. The first is the dominance of oil-based economic planning and development. The second feature is the prevailing role of the Saudi state in the industrial policy and planning process. These two aspects are integral components for understanding not only the Saudi industrialization process, but also the country's economic development as a whole. Further, state-led industrialization in an oil-based economy is a product of a long-term stated national strategy, namely, "to lessen dependence on the crude oil sector by diversifying the economic base" (Saudi Consulting House, 1992, p. 43). Because of this strategic goal, the Saudi state's dominant role in industrial planning and implementation process is rationalized as ensuring the

economic viability of industrial projects. It is this relationship between oil and industry that has shaped the Saudi state-led industrial policy in general and its EOI in particular.

Within the above context of the state-strategy relationship in an oil-based economy, the Saudi industrialization policy can be characterized as a product of the country's comparative advantage, coupled with the national shortage of both skilled and unskilled workers.

Basic industrial development in Saudi Arabia has been undertaken solely through government-owned projects because of the government's dominant economic role as "revenue collector, seller and buyer, regulator, entrepreneur and catalyst, and financing entity" (Soufi & Mayer, 1991, p. 22). These five roles played by the Saudi government have not only characterized the nature of the industrialization process, but have also shaped the private sector's involvement in the development process. Hence, throughout all of the past development plans, the basic principles of the Saudi industrial policy were to be achieved solely by various government agencies with solicited input from national and foreign businesses.

The main principles of the Saudi industrial policy were drawn up and announced in 1974 as follows:

1. The Government aims to encourage and expand manufacturing industries, including agricultural industries, which can contribute to the increase of national income, raise the standard of living and employment, and diversify the economy of the Kingdom. In diversifying the economy, the Government will adopt plans which, while increasing the national income, will reduce the effect of outside

economic disturbances on the Kingdom and broaden opportunities to increase the abilities and technical capabilities of the people of Saudi Arabia.

2. Since the economy is based on competition among private, commercial and industrial enterprises, the government realizes that the long term objectives of industrial development may be more effectively attained if the business community bears the responsibility of implementing industrial projects. Accordingly, businessmen who are prepared to take the risks of success and failure, motivated by prospects of profit, will enjoy the full support of the Government in the preparation, establishment and operation of industrial projects beneficial to the Kingdom. The Government is also ready to supplement the efforts of businessmen in the private sector by establishing, financing and participating in the management of large industrial projects requiring wide technical experience that the private sector cannot undertake alone.

3. The Government considers competition . . . to be the best means of influencing industry towards beneficial manufacturing and market-oriented projects. . . .

4. To ensure that businessmen who want to participate in the industrial development of the Kingdom have all the information they need to identify, implement and operate feasible projects, the Government will, from time to time, familiarize them with such industrial and feasibility studies together with such other useful information as may become available. The Government will also provide existing industrial establishments with available management and technical services.

5. To encourage businessmen to invest in projects of prospective benefit to the national economy, the Government is prepared to offer encouragement and financial incentives to all industrial sectors, making it possible for every well-conceived and well-managed project within this sector to realize reasonable profits for its investors. . . . The incentives may include the following: (a) provision of loans and participation in equity capital under favorable conditions; (b) assistance to businessmen in the formation and organization of new industrial companies; (c) provision of assistance in the selection of industrial projects, the preparation of economic feasibility studies and evaluation; (d) operational assistance (technical, managerial and financial); (e) exemption from customs duties of imported machines, equipment and raw materials; (f) exemption from taxes on the profit

share to foreign partners. . . ; (g) preference given to local producers in government purchases; (h) imposition of protective customs tariffs on competing imports; (i) granting plots of land for establishing factories in industrial cities; (j) granting of subsidies for training Saudi employees; (k) assistance in exporting of products.

6. [The Government will] organize the assistance granted to industry and make it more effective. . . .

7. When the Government establishes large and important industrial projects on its own initiative, it will encourage as much participation as possible from the private sector. In such cases, and in cases where the government participates in the capital of private projects to supplement investment from the private sector, in respect of industries other than those relating to national security, it is the policy of the Government to sell its share to the public in due course, if this serves the public interest.

8. In implementing its industrial policy, the Government shall do its utmost to avoid the imposition of quantitative restrictions or price control. . . .

9. The Government recognizes the right of the business community in the industrial field to select, utilize and manage the economic resources, including industrial workers, insofar as this does not contravene statutes in force, that the productivity of industry may be raised to its maximum.

10. The Government welcomes foreign capital as well as foreign expertise and participation in industrial development projects in cooperation with Saudi businessmen. . . .

11. The Government shall provide public utilities and make any such basic arrangement as are necessary for the setting up of economically feasible industries. Appreciating the dependence of industry on the general development of the Kingdom, the Government will promote the growth of all economic sectors to make local resources available to producers in sufficient quantities and to increase consumers' purchasing power within an ever growing national economy. (Saudi Consulting House, 1992, pp. 45-47)

The industrial policy principles quoted above were developed with the intention of facilitating the diversification of the country's economic base, and

hence lessening dependence on the oil sector. This economic strategy is intended to be accomplished through the realization of the following industrial-sector-based national objectives:

1 Increasing the economy's capacity to produce a range of commodities at costs that will enable it to compete effectively in domestic and foreign markets.

2. Exploiting the advantages of low-priced energy, the abundance of raw materials extracted from oil and its derivatives and the agricultural, mineral and fisheries resources available to diversify the industrial base.

3. Encouraging full utilization of the capacities of the private sector in the manufacturing industries.

4. Expanding and deepening links with modern international technology.

5. Balancing regional industrial development.

6. Raising productivity in the industrial sector by encouraging the establishment of factories with optimum production capacity.

7. Lessening the dependence of industry on non-Saudi labor through education and the adoption of on-the-job training.

8. Increasing cooperation between and the integration of existing industries. (Saudi Consulting House, 1992, p. 43)

The above-cited general industrial principles and objectives represent the country's quest for industrialization, and hence the achievement of national economic and social development. Whereas the industrial sector as a whole occupies the leading position among development sectors, EOI is considered the engine of growth and the cornerstone of the country's pursuit of a diversified economic base and self-sufficiency. The Third Development Plan, 1980-85,

identified the role of EOI as the "keystone in the Kingdom's industrial and economic development strategy."

For Saudi Arabia, the rationale for pursuing such an industrialization approach has been the country's comparative advantage in both crude oil and natural gas (Askari, 1990; El-Mallakh, 1982; Johany et al, 1986; Looney, 1990; Masood, 1989; Presley & Westaway, 1989). Thus, it is argued, when the decision to industrialize was made, "it then [became] necessary to select those industries most suitable to the endowments of the country" (Presley & Westaway, 1989, p. 64). In the Saudi case, particular emphasis was placed on the development of export-oriented, hydrocarbon-based industries. Such a choice was made to pursue a strategy of reducing dependence on oil exports through a national industrialization process. This choice was undertaken as a result of a combination of several factors identified with the domestic economy. Among other proposed options for deploying the large oil-derived revenues, the Saudi government favored the establishment of capital- and technology-intensive, hydrocarbon-based industrial programs using the country's energy- and oil-derived capital, with imported technology and know-how, to develop the country's industrial base. This action, it was hoped, would lead to improving the indigenous technical skills and upgrading the country's technological base. Also, a manufacturing sector, using the raw material produced by the leading industrial projects, especially the petrochemical industries, was expected to develop as the base for future industry.

According to the Third Five-Year Development Plan, 1980-85, this industrialization process would

> add value directly to the Kingdom's natural resources, increase foreign exchange earnings without requiring crude oil production or price changes, introduce new technologies, establish industries which have low labor requirements and which provide Saudis with opportunities for well-paid and interesting jobs. In addition, opportunities for linked downstream industrial projects will be created which can be implemented both by the Saudi Arabian Basic Industries Corporation (SABIC) and private investors. (pp. 218-219)

The rationale for the preceding industrial strategy was the country's comparative advantage in oil and natural gas. (According to estimates for 1990, there were 257,900 million barrels of proved oil reserves and 180,500 billion cubic feet of proved natural gas liquid reserves [SAMA Annual Report, 1990].) This industrial strategy was also pursued because of the historically specific nature of the domestic economic structure, namely the limited nature of the Saudi workforce and the modern industrial structure. However, although these factors made it logical for the Saudi state to pursue this industrial policy approach, they indicated an interesting nature of the Saudi industrialization process. This aspect was an apparent reversal of the industrialization pattern experienced in other developing countries. This pattern is identified when the development of a heavily export-oriented industry emerges as a consequence of an already-built diversified economy through the establishment of light manufacturing industries.

For Saudi Arabia, this picture was reversed. In addition to the above-mentioned specific economic limitations, the Saudi government, enjoying capital capability and access to the world technological market, has developed the

country's heavy industry, primarily in the petrochemical sector and other hydrocarbon-based industries (Bedore, 1984; El-Mallakh, 1982; Johany et al., 1986; Looney, 1990; Masood, 1989; Soufi & Meyer, 1991). Table 4.1 is an illustration of how the petrochemical industry dominated the industrial sector's share of the total capital invested in industry. Hence, as a rationale for the government to undertake such an industrial-development approach, the physical and human limitations of the Saudi economy have been reinforced by the fact that the country's agriculture sector is insignificant to lead the diversification process.

Table 4.1: Capital composition of the industrial sector: Industry share of total invested capital.

Industry	Share (%)
Petrochemicals	55.2
Building Materials	21.2
Metal Products	12.0
Food and Drink	7.0
Other Industries	4.6

Source: Saudi Consulting House (1992), p. 36.

In general, the reverse nature of Saudi industrialization is not unusual, given the country's resource-based economy and industry. This was rationalized because, as Looney (1990) stated,

> the Saudi government hopes that the development of heavy industry in the petrochemical sector will spawn a wide range of manufacturing activities.

> There are two major reasons why the Kingdom can rationalize reversing the more typical experience of developing light manufacturing first, and heavy industry second. With 40 percent of world crude oil reserves, Saudi Arabia has the resource endowment to support an efficient petrochemical sector, and it is natural that petrochemical facilities be established to process this crude. . . . Second, with a relatively small labor force and relatively large amount of capital . . . , capital intensive operations are consistent with relative factor endowments in Saudi Arabia. (pp. 73-74)

To what extent has this industrial approach achieved the hope for building the country's industrial base and hence the leading national objectives? This question is the main theme of later chapters, with particular emphasis on industrial-related regional implications as the basic analytical indicator. In the remainder of this section, however, the writer will examine the pattern of government planning of the heavily export-oriented industrialization process and the institutional structures on which the industrial process has been constructed and carried out. In doing so, the national Five-Year Development Plans will be the basis on which the nature of government industrial planning has been established, as revealed in the allocation patterns for industrial development.

In general, to diversify the economic base, the Saudi government embarked on an extensive build-up of the physical infrastructure of the country's economy and social life. Over the span of a decade and a half, this transformed the country from a virtually underdeveloped economy to one with the greatest economic growth ever witnessed in modern history. This development process would not have been possible without the massive revenues derived from oil exports. The government's development process has been influenced by the fact oil revenues represent unstable source of income, which in turn has affected the pattern of planning for

the country's economic future. Thus, the government has taken two main structural approaches to economic development: (a) building the infrastructural base and (b) developing the basic industry. Both development approaches were subsequently directed to achieve the long-term economic goal--reduction of the country's dependence on a single-commodity export. It is this structural approach to economic development that most characterized the Saudi economic and industrial planning. Therefore, to establish the nature of this approach, an overview of the government's allocation of financial resources for economic development over the past two decades is provided.

With regard to the first structural approach to development, the Saudi government directed its investments to remove the existing bottleneck in the process of economic growth. Hence, the first three development plans were devoted to building the economic and social structures and to establishing the basis of the country's industrial development. As shown in Table 4.2, more than half of the total financial requirements during the First Plan were allocated for infra-structure. Both the Second and Third Plans continued the development of infrastructure at 35.5%. This was the result of a change in economic priorities to greater emphasis on human and resource development. This trend in expenditure allocation continued throughout the development plans (see Table 4.3). In comparing development plans, two main aspects of expenditure allocation can be distinguished. First, the financial requirements for infrastructure differed in share value as compared to the overall total of estimated expenditures assigned during

Table 4.2: Estimated expenditure allocations during the first three Development Plans, 1970-1985 (in SR billions).

Category	First Plan SR	%	Second Plan SR	%	Third Plan SR	%
Resource Dev.	2.6	10.8	92.1	28.9	261.8	37.3
Human Dev.	7.3	31.0	80.1	25.2	129.6	18.5
Health/Social Dev.	1.9	7.9	33.2	10.4	61.2	8.7
Physical Infras.	12.0	50.4	112.9	35.5	249.1	35.5
Total	23.8	100	318.3	100	701.7	100

Source: Masood (1989).

Note: Includes Transport & Communications, and Municipalities Housing.

Table 4.3: Estimated expenditure allocations during the Third, Fourth, and Fifth Development Plans, 1980-1995.

Category	Third Plan SR	%	Fourth Plan SR	%	Fifth Plan SR	%
Resource Development	261.8	37.3	103.7	26.1	73.0	18.5
Human Dev.	129.6	18.5	135.3	27.1	139.9	35.4
Health & Social Dev.	61.2	8.7	89.7	17.9	66.1	16.8
Physical Infras.	249.1	35.5	144.3	28.9[a]	115.8	29.3[a]
Total	701.7	100.0	500.0	100.0	394.8	100.0

Source: Masood (1989); Ministry of Planning, Fifth Development Plan (1990-95).

[a]Includes Transport & Communications, and Municipalities & Housing.

billion) compared to 12 SR billion in the First Plan and 112.9 SR billion in the

the First, Second, and Third Plans. For instance, the 35.5% share of physical infrastructure in the Third Plan was much greater than that allocated during the First and Second Plans combined. The Third Plan's total expenditure was the largest of all the Saudi development plans, within which the infrastructure share was estimated at 249.1 SR Billion ($66.4 billion) compared to SR 12 billion in the First Plan and SR 112.9 billion in the Second Plan. The second aspect was the inclusion of other development categories within the physical infrastructure during the Fourth and Fifth Plans. Both aspects of planning allocations experienced a progressive decline in expenditures from 50.4% during the First Plan to 28.9% during the Fourth Plan when comparisons are made on a single-plan basis, as Masood (1989) argued. In general, however, when all of the plans are compared, infrastructure seemed to be among the national priorities. Such development process was the major concern of the first three plans. The Fourth and Fifth plans were formulated to ensure the continuity of the basic planning strategy stressed in the previous plans; yet more concern was given to the development of the productive sectors, public or private, especially after the government declared completion of the required infrastructure base.

In general, the First Development Plan, 1970-75, stressed the provision of the basic economic, social, and security infrastructure the country urgently needed at that initial stage of development. In this respect, both the share for defense and that for physical infrastructure accounted for the greatest percentage of the estimated total expenditures. As Table 4.4 indicates, the physical infrastructure's

share of project expenditures was 31.1% and was closely followed by defense expenditure, with a 30% share of the plan's total projects. However, of the plan's total expenditures, the share for defense was higher than that for physical infrastructure (23.1% and 18.1%, respectively). Although the goal to diversify the economy based on industry was outlined in the Plan, the industrial sector accounted for only 4.2% of the Plan's total projects and 2.7% of total expenditures. This, however, was ascribed to the nationally established priorities at that initial stage of the development process. By the end of the First Plan, the sudden increase in oil revenues, due to the 1973-74 skyrocketing of oil prices, not only

Table 4.4: Shares of expenditures in the First Development Plan (1970-75).

Sector	% of Current Expenditures	% of Total Project Exp	% of Total Exp
Public Administration	29.6	5.0	18.6
Defense	17.4	30.0	23.1
Social services	33.9	8.4	22.5
Urban Dev.	5.4	18.1	11.1
Transport & Communic.	7.7	31.1	18.1
Industry	1.4	4.2	2.7
Agriculture	4.2	2.7	3.6
Trade & Services	0.4	0.2	0.3
TOTAL	**100.0**	**100.0**	**100.0**

Source: El-Mallakh (1982), Table 5.1, p. 146.

exceeded the Plan's projected expenditures, but also opened new horizons for development. This permitted the government to embark on the ambitious Second Development Plan, 1975-80.

During the Second Plan, emphasis continued on building the national economy's physical base. Therefore, "the largest fund committed to an individual sector in the Second Plan is allocated to the development of physical infrastructure, which is thought necessary to support a large diversified economy" (El-Mallakh, 1982, p. 189). This process, however, was mostly directed primarily toward building the industrial base and establishing a hydrocarbon-based industry. Both sectors were given top priority in the government's allocation of Plan expenditures. Tables 4.5 and 4.6 show a comparison of the First and Second Plans with regard to the government's allocations for all development in general and for economic resource development in particular. By examining both tables, two main observations can be made. First is the decline in the share of expenditures allocated for infrastructure in the Second Plan as compared to the First Plan. The second aspect is the increase in the share of total expenditures for economic resource development, from 10.7% in the First Plan to 18.5% in the Second Plan. In the context of resource development, as illustrated in Table 4.6, the share for economic development was higher in the Second Plan than in the First Plan (28.9% and 18.4%, respectively). Of the total project expenditures, the continuing infrastructural build-up still dominated the Second Plan, with a 42% share, followed by economic resource development with a 36.6% share. This comparative analysis

Table 4.5: Comparison of estimated financial requirements of the First and Second Plans (1970-80) (in SR millions).

Category	First Plan Value	%	Second Plan Value	%
Econ Res Dev.	6,033.3	10.7	92,135.0	18.5
Human Res. Development	10,198.7	18.1	80,123.9	16.1
Social Dev.	2,443.0	4.4	33,212.8	6.7
Infrast.	14,086.8	25.1	112,944.6	22.7
Subtotal: Development	**32,761.8**	**58.3**	**318,416.3**	**63.9**
Admin.	10,466.5	18.6	38,179.2	7.7
Defense	12,994.7	23.1	78,156.5	15.7
ExternalAssistance, Emergency Funds, Food Subsidies, & General Reserve	--	--	63,478.2	12.7
Subtotal: Other	**23,461.2**	**41.7**	**179,813.9**	**36.1**
TOTAL PLAN	**56,223.0**	**100.0**	**498,230.2**	**100.0**

Source: Ministry of Planning, Second Development Plan (1975-80), Table VIII-1, p. 529.

of the first two plans reinforces Masood's (1989) argument concerning the gradual change in the Saudi expenditure-allocation pattern. However, it must be realized that the availability of financial resources during the Second Plan, estimated to have reached nine times that of the First Plan, gave more weight to the Second

Table 4.6: Expenditure allocations during the First and Second Development Plans (1970-80) (in SR billions).

Development Category	First Plan Value	First Plan %	Second Plan 1975-80 Total Value	Second Plan 1975-80 Total %	Second Plan 1975-80 Project Value	Second Plan 1975-80 Project %
Econ Dev.[a]	6.1	18.4	92.1	28.9	87.6	36.6
Human Dev.	10.2	31.1	80.1	25.2	36.2	15.1
Social Dev.	2.4	7.5	33.2	10.4	15.1	6.3
Infras.	14.1	43.0	113.0	35.5	100.4	42.0
Total	**33.8**	**100**	**318.4**	**100**	**239.3**	**100**

Source: El-Mallakh (1982), p. 169.

[a]The Economic Development category includes various sectors, e.g., water, manufacturing, agriculture, electricity, and others. The manufacturing sector accounts for 48.1%. This includes the export-oriented, hydrocarbon-based industrial sector, which accounts for 96.6% of the total expenditures assigned to the manufacturing sector.

Plan's contribution to those sectors identified above. It was this ability to finance both infrastructural and industrial development that permitted the government not only to lessen the country's bottlenecks, but also to implement the proposed national industrial policy.

The preceding comparative analysis also provides the basis for explaining the shift in the country's allocation pattern toward a strategic economic concern, namely the introduction of an export-led industrialization process. This shift was introduced in the Second Plan's development strategy. The strategy, according to El-Mallakh (1982), comprised three substrategies. The first emphasized the role

of industry and agriculture as avenues for achieving economic diversification. The second was concerned with the development of manpower. The third was to give more attention to regional balance of growth. Industrial-based economic diversification was one of the broad goals the Second Plan considered to be a means of reducing the Saudi economy's overdependence on oil exports. "This is the kind of economic self-sufficiency which the planners hope to achieve, in the long run, through the expansion of investment in petrochemical and other mineral-based industries" (El-Mallakh, 1982, p. 170). During the period covered in this Plan, the national industrial policy, announced in 1974, was to enter into its initial phase of implementation, namely the establishment of the infrastructural layout and the institutional framework on which industrialization was to be achieved.

To accomplish this strategic objective, the Saudi government established two distinct industrial institutions. The first, established in 1976, is the Saudi Arabian Basic Industries Corporation (SABIC). In general, SABIC's role is "to provide capital and marketing of products in the basic industries using local hydrocarbon and mineral resources and other complementary and supporting industries" (Looney, 1990, p. 69). By using the country's comparative advantage in oil and gas resources, SABIC's industrialization programs aim to lead the Saudi economic diversification process by achieving the following objectives:

1. To add value to the Kingdom's natural resources;
2. To supplement the Kingdom's traditional source of income;
3. To introduce new technologies to the country together with the rearing of generations of technically oriented young men, to be

trained in the works of industry and capable of shouldering the responsibilities of management, operation, maintenance, and development;

4. To provide the basic linkages backward to the raw-material sector and forward to a wide variety of potential secondary industries. (Masood, 1989, pp. 19-20)

The preceding objectives were set for SABIC to undertake the national planned industrial development. Looney (1990) characterized SABIC's industrial operations as "the future industrial structure and industrial employment of Saudi Arabia" (p. 69). Although this has been the long-term industrial strategy objective, SABIC's industrialization process engendered industrial-related regional growth identified as the result of the locational pattern of basic industrial projects. This regionally related industrial growth emerged as the direct outcome of the Saudi model for industrialization. To develop this industrial structure, the second industrial institution, namely the Royal Commission for Jubail and Yanbu (RCJY), was established in 1975, one year before SABIC. The RCJY's main goal was to furnish the required infrastructure and the trained manpower for the operation and maintenance of the two industrial complexes (Masood, 1989). The two industrial cities were built to provide the operational requirements for the refining plants and for all SABIC projects. Albeit indirectly, the RCJY has, in addition to the national industrial strategy, a regionally oriented objective. This industrial-related regional process, according to Presley and Westaway (1989), is a by-product of the Royal Commission's commitment in both industrial cities. They stated,

> Since 1395 (1975) a Royal Commission has been responsible for developing two industrial complexes at Yanbu and Jubail where most of the

> projects of SABIC and Petromin are located. These complexes are the key to industrialization in the country and are indeed to promote some degree of self-sufficiency in industrial products as well as fostering closer economic ties between the Eastern and Western Regions. (p. 71)

Actually, SABIC and the RCJY have no direct regional objectives in their operational processes. Rather, the expected regional growth, emphasized in the country's development plans, has been seen as the result of economic spillover of the various industrial activities arising from the industrial cities' provision of manufacturing opportunities within and beyond their regions.

Having been established largely during the first two plans, the infrastructure experienced a decline in investment during the Third Plan, 1980-85. Here, a structural shift in Saudi development planning was introduced, namely the move toward the development of the productive sectors (El-Mallakh, 1982; Masood, 1989). The main rationale for this shift was to begin the national diversification programs. "Significant in the Third Plan is that there will be a reduction in the volume of investment in infrastructure relative to other sectors so that development can be accelerated in the productive sectors and thus induce structural changes in the economy" (El-Mallakh, 1982, p. 216).

This shift in economic planning, introduced during the Third Plan, 1980-85, was again reflected in the government's development expenditure allocation (see Table 4.7). By comparing the Second and Third Plans, the shift toward a productive economy can be identified through the increased share for resource development--from 25.1% during the Second Plan to 37.3% during the Third Plan. Such a change in the allocation pattern was at the expense of the share for

Table 4.7: Total government expenditures on development during the Third Development Plan, 1980-85.[a]

Development Categories	SR Billion Current Prices	2nd Plan[b] %	3rd Plan %
Economic Res. Development	261.8	25.1	37.3
Human Resource Development	129.6	15.9	18.5
Social Dev.	61.2	9.4	8.7
Physical Infrastructure	249.1	49.6	35.5
Subtotal	**701.7**	**100.0**	**100.0**
Administration[c]	31.4	6.7	4.5
Emergency Reserves and Subsidies	49.6	15.9	7.1
Total Expenditure	**782.7**	**122.6**	**111.6**

Source: Ministry of Planning, Third Development Plan (1980-85), Table 3-1.

[a]The total excludes (a) transfer payments (b) noncivilian sectors, and (c) foreign aid.

[b]Based on actual and estimated values converted into 1399/1400 prices.

[c]Administration includes (a) ministries and agencies with primarily administrative functions and (b) judicial and religious agencies.

infrastructure. Although the Third Plan continued to emphasize physical build-up, its share of expenditures for infrastructure was reduced from 49.6% during the previous plan to 35.5%. This reduction in infrastructure, El-Mallakh (1982) argued, was a result of the change in planning priorities. Therefore, he indicated that infrastructure would be provided insofar as it was "needed to support the productive sectors." This included areas designed to become potential centers for

growth in productive activities, especially locales developed to carry out the national goal of a diversified economy.

Emphasizing the overall national economic strategy, the Fourth and Fifth Plans continued the development of the productive sector within "an all-encompassing framework for structural change" (Ministry of Planning, 1985-90, p. 41). Both plans were introduced to contribute to this structural change by considering three main aspects of economic transition: (a) reducing the level of expenditures on infrastructure, (b) underscoring the need for private- sector involvement in the diversification process, and (c) developing human and social resources.

In this context, the Fourth Plan, while suggesting reductions in some budget-dependent sectors, e.g., infrastructure, supported the need for development of the productive and private sectors. Both sectors, it is assumed, were considered essential for the national development strategy. Hence, the Plan stated:

> The producing sectors, in particular manufacturing and agriculture, and the financial and business services sectors, will be helped to forge ahead and thus contribute to the economy's diversification. In pursuance of a policy of structural change, substantial financial support will be built into the expenditure program of the Fourth Development Plan to encourage the private sector to take the initiative, and mobilize its own resources. (pp. 41-42)

During the current Fifth Plan (1990-95), the Saudi development program reiterated the promise of progress toward the establishment of a diversified economy. The government, as before, continues to assume responsibility for guiding the national economy. The private sector, however, is expected to engage

in autonomous investment efforts, given the already developed economic infrastructure and the channels of financial support that the government continues to provide. According to the Plan, the private sector is expected to contribute by investing in the manufacturing sector, especially in hydrocarbon-based industries.

The producing sectors, the "forefront of the Government's strategy for diversification" (Ministry of Planning, 1985-90, p. 179), include agriculture, industry, electric power, and construction. Whereas the first two sectors are identified as representing the leading productive process, the industrial sector, particularly the EOI process, is perceived to bear the role of achieving the national strategic economic objective. This strategic role of the industrial sector was described in the Fifth Plan as being the

> key component of the economic development strategy of Saudi Arabia, contributing to the achievement of some of the most important of the strategy's objectives: higher GDP growth rates; the diversification and expansion of the production base; the development of non-oil sources of income; the achievement of an adequate level of self-sufficiency; the transfer of modern technology contributing to increased production efficiency; the generation of job opportunities beyond traditional occupations; and, finally, the development of a balanced economy that can weather world economic fluctuations.

Representing the second structural transformation of the Saudi economy, this economic significance of the industrial sector is parallel to that of infrastructure build-up during the early stages of development. As the government shifted its focus to the development of the producing sector, industrial development has been dominant in receiving government expenditures. Beginning with the Second Plan, the manufacturing sector's share accounted for almost one-half of the total

expenditures allocated to the producing sectors. In the Third Plan, industry continued to receive the lion's share of government expenditures proposed for productive development, which was estimated at 36.6% of the total (El-Mallakh, 1982). During both the Fourth and Fifth Plans, the producing sectors were still regarded as the main force behind the expansion of the economy. The industrial sector, compared to other avenues of development, accounted for most of the government's development expenditures during the Fourth and Fifth plans, 37.6% and 36%, respectively. The electricity sector's highest share is due to the combined share generated by the private sector (see Table 4.8). The agriculture sector, being the other important target in the government's pursuit of productive activities, has received an almost equal share. However, the strategic importance of the industrial sector seemed, during the Fourth Plan, to persist at the expense of other sectors, including agriculture. By examining Table 4.8, it can be seen that the decline in oil prices since the mid-1980s did not affect the commitment to industry. The agriculture sector's share, however, was reduced from 27.6% during the Third Plan to 12.8% during the Fourth Plan. Although there may be other reasons for the decline in agricultural expenditures, the apparently constant high share for the industrial sector supports such an argument.

Within the industrial sector, there is another important feature of the Saudi industrial strategy. This is to provide an understanding of the manufacturing components, their importance in the national industrialization process, and their significance within the government policy framework. In general, industrial

development in Saudi Arabia consists of four major components, as defined in the Fourth Plan: the SABIC enterprises, the Royal Commission for Jubail and Yanbu, the MIE "formal manufacturing sector," and the "informal manufacturing sector." The formal sector represents the country's light manufacturing industry; the MIE is the government agency directly responsible for monitoring its activities and development. The Saudi Industrial Development Fund (SIDF) is the leading government agency responsible for the financial support of the formal sector through the provision of industrial loans and other consultative activities to the private sector. The informal sector, on the other hand, consists mainly of "labor-intensive small workshops in repair and small-scale production activities" (Ministry of Planning, 1985-90, p. 196). Factories in this sector require a license from the municipal offices, and are registered with the Ministry of Commerce. These

Table 4.8: Comparison of the productive sectors' share of government expenditure during the Third, Fourth, and Fifth Plans (1980-95).

Sectors	Third Plan	Fourth Plan	Fifth Plan
Agriculture	27.6	12.8	32.4
Industry	36.6	37.6[a]	36.0
Electricity	--[b]	49.5	30.4
Construction	--[b]	0.1	1.2
Total	**100.0**	**100.0**	**100.0**

Source: El-Mallakh (1982), Table 7-6; Ministry of Planning, Third, Fourth, and Fifth Development Plans (1980-95).
[a]Including the RCJY.
[b]The shares for these sectors were not specified in the Third Plan.

informal factories are financed through the Saudi Credit Bank, but not by SIDF.

SABIC and the Royal Commission's industrial development are government-led processes. Their activities primarily involve development of the country's basic, export-oriented and downstream industrial projects. Both the Royal Commission and SABIC are largely involved in operating the basic industrial projects located in the two industrial cities of Jubail and Yanbu. The following chapter is focused on the role of these cities in the nation's basic industrialization and production process. Here, however, these industrial components are compared with regard to their share in the government's financial allocation, which is another aspect of the nature of the Saudi industrial policy.

Given the leading role of the Saudi EOI, Tables 4.9 and 4.10 illustrate the large gap between the general and basic industrial sectors in terms of financial commitment. It is the state's continuing support for basic industry that reflects its commitment to the achievement of the overall strategic objective, namely economic diversification through basic industrialization. Although the dominant feature in both tables is the large share provided to the basic sector, the decline in expenditures in the Fifth Plan as compared to previous plans indicates the overall shift in industrial development. This was evidenced by the proposed completion of the industrial infrastructure and the beginning of the second stage of the industrial process, namely the development of downstream manufacturing, especially by the private sector.

Table 4.9: Government financial allocations for industrial development: Comparison within the industrial sector (in SR millions).

Agency	Second Plan Value	%	Fourth Plan Value	%	Fifth Plan Value	%
MEI	1,605.6	3.4	1,879	5.9	1,270	20.1
EOI (SABIC/RCJY)	46,150.0	96.6	30,000	94.1	5,060	79.9
Total	**47,755.6**	**100**	**31,879**	**100**	**6,330**	**100**

Source: Ministry of Planning, Third, Fourth, and Fifth Development Plans (1980-95).

Note: The Third Development Plan's allocation for these two agencies was estimated at SR 95,601.8 million. The share for each agency, however, was not specified.

Table 4.10: Financial allocations to the industrial sector in the Fifth Development Plan.

Agency	SR Million	%
MIE	1,270	7.9
RCJY	5,060	31.5
Saudi Consulting House	223	1.4
Saudi Industrial Dev. Fund	4,500	28.0
Public Investment Fund	5,000	31.2
Total	**16,053**	**100.0**

Source: Ministry of Planning, Fifth Development Plan (1990-95), Table 10-4, p. 218.

As seen in Table 4.10, the Fifth Plan's financial allocation for the industrial sector gives industrial development funds a more equal share, whereas basic industry's share is designed primarily for operation and maintenance. In addition, the government's overall financial allocation during the Fifth Plan reflects the change that was made in the government's development priorities. More emphasis was placed on social and human resource development, which accounted for the largest share of financial allocation--57% of the expenditures allocated to the development sectors and 41% of the total civilian expenditures.

In sum, the Saudi industrial policy is represented mainly in the government's attempts to broaden the national sources of income by embarking on large-scale, hydrocarbon-based industrialization projects. Using the its ample oil and gas resources, the state found it viable to develop an industrial base that exploits the country's comparative advantage. This industrial process involves the development of capital- and energy-intensive projects that the Saudi government undertook to offset the shortage of manpower required for the development of labor-intensive industries. Accordingly, and since the Second Plan (1975-80), the Saudi government has undertaken ambitious industrial projects in Jubail and Yanbu. These projects represent the country's basic industry on which, it is hoped, the country's move toward a diversified industrial base can be established. Although these basic industries are mostly export-oriented, their effects on the domestic manufacturing process are expected to increase through the use of basic products

for the development of various downstream activities. This industrial philosophy can be viewed as the new approach to industrial development in developing countries, especially in oil-based economies. More important, however, are the issues of whether such an industrial process is proceeding in the envisioned direction and, on the domestic level, to what extent this industrial process seems to contribute to the goal of diversification. In this study, these questions were investigated, based on issues pertaining to the industrial-related regional growth process. The researcher believes this is the main ground on which the success of an industrialization strategy is to be evaluated, especially when industry is the leading sector in achieving a diversified economy.

Saudi Regional Planning

Saudi Arabia has never had a well-defined and nationally structured regional policy. Indeed, until the beginning of Third Development Plan (1980-85), the regional question was not identified as a potential development concern. Furthermore, until now, a systematically defined regional policy has not been developed as a distinct national process. Instead, regional-related planning and development has been considered, albeit progressively over the past three plans, to be a by-product of the state's strategic national development programs rather than a structurally constructed policy. This secondary nature of Saudi regional planning can be simply ascribed to the state's priorities in the economic development process. Hence, the main point of departure is the predominant nature of the national strategic objective and the subsequent regional policy goal.

It is simply a matter of strategic concerns versus the regional balance of economic growth. In this respect, the aim of this section is to establish the progressive pattern of Saudi regional planning within the context of the national economic development strategy. Having established that, specific attention will be given to the relationship between industrial-led development and its related regional process.

Although the Kingdom of Saudi Arabia is divided into five planning regions (Northern, Central, Eastern, Western, and Southwestern) (see Map 3.1 in Chapter III), the dominant sectoral-based development has been spatially concentrated in the main metropolitan areas. These areas include Riyadh, the country's capital and administrative center; Jeddah, the commercial capital; and the Eastern Province, the regional headquarters of oil-based production and industry. During the first two development plans (1970-1980), these urban centers were the primary targets of national economic and industrial investments, which led to the growing regional disparities. In this respect, Presley and Westaway (1989) stated,

> The first two Development Plans for Saudi Arabia did not have a pronounced regional dimension. The distribution of finance and capital projects by the government has not followed any obvious regional policy. Certainly government expenditure has not been distributed around the regions according to population distribution or economic activity. The Central, Eastern and Western regions have gained a much larger share, for example, than their populations would warrant. What the distribution of government expenditure does reflect, however, is the role of Riyadh as the center of government and administration and the Eastern province as the main oil-producing region and possible focus for industrial development. (p. 174)

During the first two plans, regional socioeconomic studies were conducted by both the Ministry of Planning (MOP) and the Ministry of Municipalities and Rural Affairs (MOMRA). This step was taken because of the need for regional planning engendered by the apparent rural-urban enclaves and massive rural-urban migration of people seeking a better standard of living. Indeed, it was the rapid, albeit uneven, growth that caused some regions to lag in development.

To "correct" these regional concerns, the above-mentioned studies were considered in defined regional planning during the Third Development Plan (1980-85). In general, what distinguished regional planning in this plan from that in the previous two plans was the stated regional objectives compared to the mere provision of essential services in each region. Hence, regional concerns "became more prevalent than they had been previously. . . . The third development plan was the first to propose a precise regional approach in order to achieve a balance in regional growth" (Alskait, 1988, pp. 55-56). According to the Third Plan, the regional question was introduced as a "more explicit and coordinated approach for dealing with the regional dimensions of national planning" (p. 107). This regional approach assumed that regional development shifted from being a product of sectoral-associated and nationally-led growth to an independently organized system of regional planning.

The Third Plan's approach to regional growth was basically an organized network of service distribution on the national, regional, and district levels. Therefore, a strategy was established to achieve regional balance of growth

through national-spatial planning coordination. As stated in the Third Plan, this regional strategy aimed

> at providing a spatial counterpart to the objectives pursued at the national level, and acts as a means for coordinating the regional activities of development agencies. . . . The regional strategy offers a mechanism for the application of national objectives in both rural and urban environments. Its distinct role, hence, is to integrate the applications of policy with a view to accelerating a more even geographical distribution of material and social progress. (Ministry of Planning, 1980-85, p. 107)

The objectives introduced to achieve regional growth were concerned primarily with two development aspects: regional assistance to "develop productive activities" dependent on each region's economic potential, and region-based provisions of services. Both regional development objectives were emphasized to "avoid overconcentration of resources in a few urban enclaves" and to enable the future rise of "growth poles" in targeted areas that had "proven their potential for creating and sustaining productive investment" (Ministry of Planning, 1980-85, p. 108).

To achieve the above-mentioned regional objectives, the Third Plan introduced a system of development centers

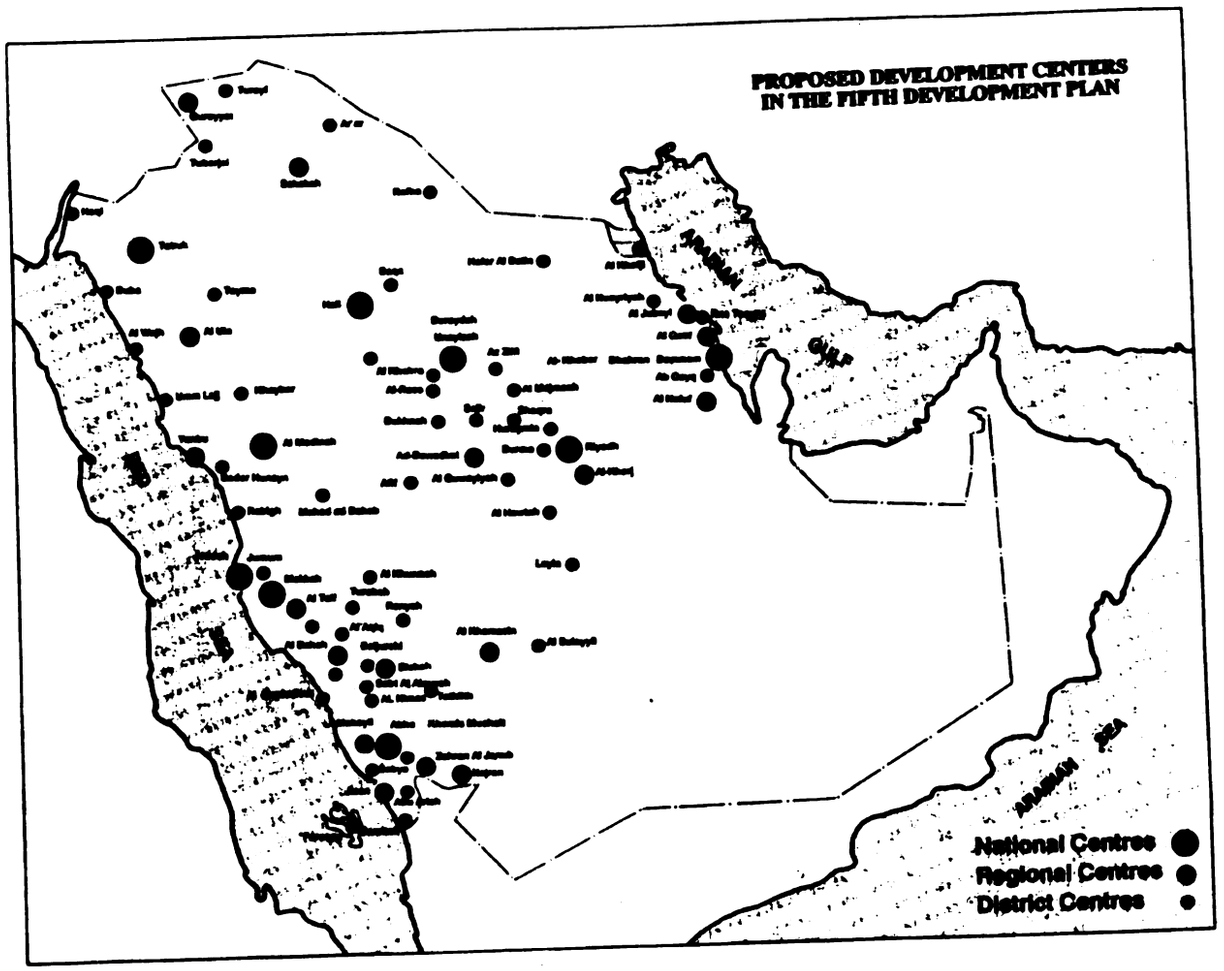
> spread throughout the Kingdom, for the provision and effective coordination of development services. This system of development service centers is deemed the best method of both stimulating development activities, and aiding the most deprived sections of the population. The development centers are arranged in a hierarchy according to whether they are judged to be of national, regional or local significance. (Ministry of Planning, 1980-85, p. 108)

This system of region-led growth, referred to as a Development Centers System (DCS), was not intended to provide basic infrastructure, a process that the

Third Plan claimed had already been undertaken in the previous plans. Rather, its main purpose was to remove noninfrastructural constraints, namely "institutional and administrative" services, especially at the regional and district levels. Although these development centers were oriented toward achieving regional balance of growth, their hierarchical framework represented a policy of spatial-based development, which seemingly was of significance for the national economy. In this respect, the role of a DCS is complementary as well as susceptible to the directions of the national economic strategy. The main objective of a DCS is to pinpoint an area with productive potential, be it human or natural resources, and then to provide such an area with the needed infrastructural base. According to the Fifth Development Plan, 9 national centers, 17 regional centers, and 51 local centers are proposed (see Map 4.1). This locational development process

> will help to avoid inefficient resource allocation; for example, if we have two towns, and one is larger in population than the other, but is poor in economic resources and has virtually no growth potential in the long run, and the other town, although small in population, has a great potential for productive growth. It could be more equitable to provide the first one with large infrastructure and service investments, but certainly it is inefficient and unproductive in the long run. Provision of more investment for the second one may not be equitable, but is certainly productive in the long run; and that is what the growth centers system is about. (Alskait, 1988, p. 59)

To develop this regional strategy, the DCS framework was intended to be executed in accordance with its spatial significance for the national economy. This raised two interrelated issues. The first is related to the fact that the population factor was not considered to be of significance for regional distribution of growth. Indeed, as discussed in the next chapter, this issue was irrelevant in the Third



Map 4.1: Proposed development centers in the Fifth Development Plan (1990-95).

Source: Ministry of Planning, Fifth Development Plan (1990-95), Figure 15.1.

Plan's regional distribution of expenditures. The second issue is related to the rise of regional-related planning obstacles brought about by the conflict between national strategic interests and regional development objectives. This conflict, although it represents the underlying question on which this research was established, is the main cause of regional concerns that have arisen. It is this national significance of the regional development strategy that characterizes the definition and function of the DCS.

Hence, there are interlinkages between the national economic strategy and regional and spatial development planning. These interlinkages appear in the overall national development policy and planning objectives. This is the nature of the hierarchical dimension of the centers' development objectives, especially with respect to the long-term and operational mechanism of the national and regional centers. In this context, although the national center's development functions represent the national strategy, it is directly linked to the sectoral-based national planning. The regional center, on the other hand, is linked to both national spatial and development planning strategy. Although the regional center provides long-term development in a given region, "the regional development strategy must be consistent with the National Spatial Strategy" in terms of being subjected to the policy guidelines structured within the national planning strategy. On the operational level of the regional spatial strategy, the regional as well as the national development centers must be consistent with the time frame of the five-year national development plans. With regard to the local (district) centers, the

proposed development process within a local area is guided by the long-term objectives of both the national spatial and regional development strategies. In addition, the local development process is to be executed according to the national planning process, (DMTP, 1990; Ministry of Planning, Third Development Plan, 1980-85).

The DCS was followed by two other regional-based development programs, namely the Amarah-based planning system and the Village Cluster Program (VCP). The Amarah planning system was surveyed by MOP and carried out by MOMRA, and the VCP was developed by MOMRA. Both were initiated during the Second Plan. Whereas the Amarah-based program was introduced to analyze the potential at each Amarah for productive activities, the VCP was adopted to provide municipal-type services to villages (a minimum of five) clustered within each Amarah. Within the DCS framework, both Amarah-based planning and the VCP are suggested ways to achieve regional balance of growth, (see Figure 4.1).

The above-mentioned regional policy instruments were further emphasized in the Fourth and Fifth Development Plans. Both plans continued to emphasize the importance of regional balance of growth through the DCS, the VCP, and the Amarah-based regional studies and development process. The Fourth Plan, 1985-90, recognized the historically existing regional imbalance, which is due mainly to the "scattered nature of population settlements" and the regional "concentration of natural endowments." These natural causes of regional disparities, the Plan argued, had been corrected to some extent through technological advances that

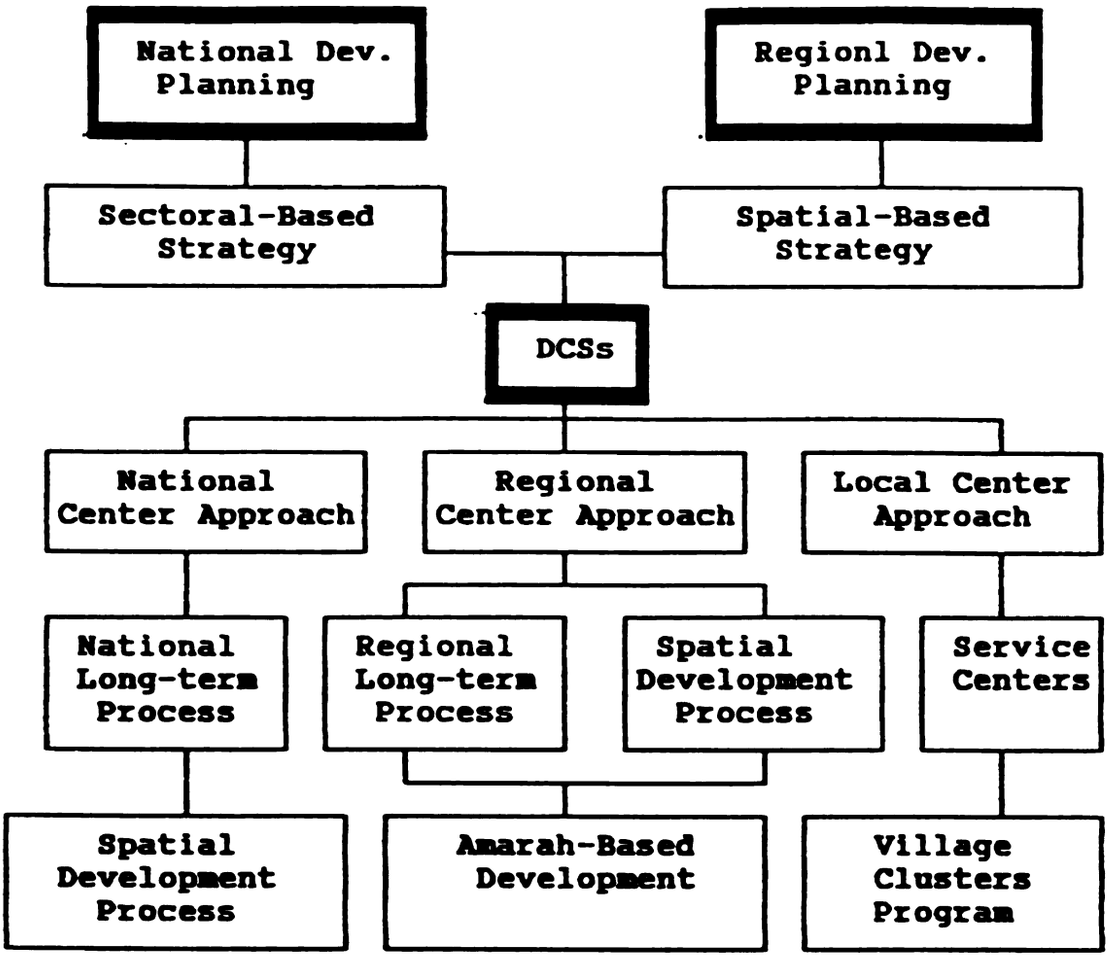


Figure 4.1: Interlinkages of national and regional development planning.

enabled services and other development facilities to reach remote rural areas. In addition, the past decade of infrastructural and industrial development had led to the strengthening of "regional diversification outside the traditional urban centers." However, the Plan indicated that regional disparities, in addition to the natural imbalance of resources, had also been causedby the "pace of development, the pattern of rural-urban migration flaws and by cost considerations" (Ministry of Planning, 1990-95, p. 420). Both the pace of development and rural-urban influx,

as factors contributing to regional imbalance, are causally related. In other words, it is the unequal pace of development between rural and urban areas that has led to rural-urban migration. The third factor causing regional imbalance, however, reveals an important aspect of regional problems in Saudi Arabia, namely the nonexistence of an independent agency responsible for regional policy and plan implementation. This, according to the Plan, creates a lack of coordination among the central development agencies responsible for the planning and implementation of the overall national development process. In this respect, the Fourth Plan stated,

> Implementation of regional strategy and realization of regional objectives do not constitute the responsibility of any single agency. Central agencies are the providers of diverse services and the instigators of policies and programs for the development of resources throughout the Kingdom; each agency has its own network of branch offices. Strengthening the coordination between agencies and their programs at the regional, Amirate and sub-Amirate level is crucial to the provision of cost-efficient services in both urban and rural areas. It is only by giving priorities to development at the regional and sub-regional level, and by offering facilities and services to match local requirements, that under-utilization of public assets can be avoided, their maintenance taken into account, and an efficient service delivery system created. (Ministry of Planning, 1990-95, p. 421)

This lack of coordination has arisen mainly because of the structural nature of Saudi development planning. The predominance of sectoral-based planning has made regional development a by-product process undertaken by several government agencies, each of which has its own network. Another significant aspect of the regional-related implementation problem is that "the aims of national and regional development policy are not always in unison" (Presley & Westaway, 1989, p. 175). This regional-national conflict arises from three main sources. The

Fourth Plan revealed the first as inherent in the lack of coordination among agencies to consider the importance of "inter-regional differences" in the provision of services. If this problem was corrected, it was claimed that coordinated efforts would help create efficiency in the use of existing or new facilities, thereby preventing excess capacity and the low level of productivity. Second is the conflict between national long-term structural trends and short-term demands within regions. In this respect, the Fourth Plan stressed the continuing unstabilized rural-urban migration versus the short-term regional demands. Third, and most important, is the concentrated nature of industrial activities and the consequent regional imbalance. Here, it is believed that such a locational pattern of industrial growth will enable "more efficient use of specialized infrastructure and support industries" (Presley & Westaway, 1989, p. 176). The Fourth Plan further emphasized this notion; however, it also argued that "concentration of industry necessarily contributes to regional imbalances" (Ministry of Planning, 1980-85, p. 422).

Whereas the Fourth Plan identified the main sources of regional imbalances, the Fifth Plan, 1990-95, followed suit in recognizing this problem and in developing a greater sense of regional aspects of planning in general. It considered regional planning as the source of coordination that reinforces the spatial linkages and functional interactions among sectors. As stated in the Fifth Plan,

> Although the Kingdom's development efforts in the past have maintained a predominantly sectoral orientation for reasons of centralized fiscal

> responsibilities and better utilization of technical know-how, the spatial dimension of planning is currently gaining in significance. (Ministry of Planning, 1990-95, p. 367)

In this context, the Plan addressed the specific needs that arise in some regions, such as those of the Northern and Southwestern regions. It acknowledged the uneven development that had taken place over the past two decades. This development, according to the Plan, not only created a concentration of the highest level of services in the three main regions of the country, namely the Central, Eastern, and Western regions, but also shifted the natural growth pattern from one region to another. This has been witnessed in the locational pattern of growth in the agriculture sector, traditionally the domain of the Southwest region; now, however, it is the Central region that "accounts for almost 63 per cent of the country's total crop area."

Further, the Fifth Plan distinguished between two structural aspects of nonsectoral planning. The already established five planning regions remain the basis for the "analytical and aggregative aspects of spatial planning." The second structural planning aspect is that the component of regional planning is the Amarah, which represents both the administrative and the regional planning unit. Accordingly, the regional planning approach initiated during the Third Plan is considered to be the means of achieving regional balance of growth. Of particular importance in the Fifth Plan, however, is the notion of public-private cooperation to promote regional distribution of growth. The Plan stated,

> these efforts to promote social and economic development in the regions could be reinforced through the establishment of more regional branches

> by public agencies, through locating some technical and other professional institutions in Development Centers, and through better coordination of sectoral development at the level of each administrative region (14 Amarahs). (Ministry of Planning, 1990-95, p. 370)

This public initiative as a regional policy approach is a preamble for future alleviation of regional disparities if it moves from the current abstract stage toward a more concrete process. Using this approach, this writer assumed that, although the state plays a crucial role in achieving the country's strategic objectives, the state should play an equal or approximate role in achieving balanced regional growth.

Although they were established for purely strategic purposes, the industrial-based growth centers of Jubail and Yanbu have been both models for industrialization in Saudi Arabia and development centers intended to promote regional balance of growth. Although these two cities as industrial models are discussed separately later in this study, it should be emphasized here that they were considered in the Third Plan to be on top of the development-center pyramid and the model growth center on the regional level. In addition to their strategic national goals, the industrial cities of Jubail and Yanbu were established to stimulate regional balance of growth. In this regard, Johany et al. (1986) indicated that these two cities, in addition to their economic profitability, are expected "to provide regional balance to the Kingdom's development. Each city is seen as a 'growth pole'" (p. 129).

This industrial-related regional growth, however, should not be established here as a distinct process that has taken place within the regional planning

framework or as a defined regional policy objective. Rather, it is a by-product of the national industrialization policy, within which some aspects of industrial development seem to result in an urban and regional-related industrial growth pattern. On the basis of this general assumption, in the remainder of this section the writer will examine the nature of the Saudi industrial-related regional process on the basis of its urban concentration in general and as a product of the national industrial strategy in particular.

According to most of the literature on the regional distribution of industrial growth in Saudi Arabia, the urban centers in the Central, Western, and Eastern regions are the location of most of the country's manufacturing activities. With the exception of the industrial cities of Jubail and Yanbu, the urban centers of Riyadh, Jeddah, and Dammam are the main recipients of the government's industrial projects and loans. This situation was the result of these cities' largest share of the economic and service infrastructure during the early stages of development. Whereas the Fifth Plan (1990-95) recently reiterated such an argument, other studies have added those factors related to the previous history of the industrialization process: the population pattern, resource-based growth, and, above all, the government's economic policy and planning (Al-Habib et al., 1989; Al-Hathloul, 1991; Al-Hathloul & Abdelrahman, 1992; Askari, 1990; El-Mallakh, 1982; Johany et al., 1986; Presley & Westaway, 1989). All of these factors have led to the concentration of Saudi industry in a few cities, namely Dammam and Al-Khobar in the Eastern Province; Riyadh in the Central region; and Jeddah, Makkah, and

Madinah in the Western region.

El-Mallakh (1982) pointed out other major factors that have influenced the concentration of industry in these urban centers. These factors include:

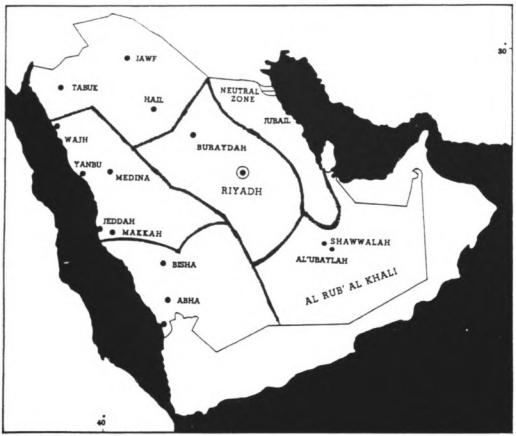
> (1) a relatively short history of industrialization in the nation; (2) the overwhelming physical size of Saudi Arabia and thus extremely long distances between cities; (3) lack of adequate transportation infrastructure; (4) the dependence of industry upon raw materials imports for non-oil manufacturing; and (5) a lack of water resources and extreme climate conditions. (p. 120)

Although the past two decades of development minimized these physical obstacles to some extent, both the Fourth and Fifth Plans acknowledged the persisting regional imbalance of growth. Indeed, this imbalance is further reinforced when one considers the regional distribution of industrial development. Emphasizing the industrial-related regional imbalance, Al-Hathloul and Abdulrahman (1992) considered the country's vast area as an influential factor in the "dispersion" of economic activities and population to be a reason for concentration within few urban centers. The concentration of industrial activities in few areas, they argued, could be "risky"; hence, the national economic policy in general and the industrialization policy in particular should pursue an integrated sectoral and spatial approach to achieving balanced regional growth. The establishment of the industrial cities of Jubail and Yanbu was a step in this direction. The foreseen spatial development was deemed to rise through the forward linkages and the spill-over effects generated by industrial projects located in these two cities. The National Spatial Development Strategy (NSDS)--developed by the MOMRA, Deputy Ministry of Town Planning (DMTP), as a long-

term framework for regional planning-- "revealed that the two industrial cities of Jubail and Yanbu provide the necessary ingredients for diversifying the activities of spatial development corridors" (Al-Hathloul & Abdulrahman, 1992, pp. 4-5). The extent to which this spatial process of the Saudi industrial-city model has contributed to regional-based diversification was the main issue of this study. Considering the nature of the Saudi industrialization process, regional concerns are the product of both state-led industrial development and private participation in national industrialization. To examine this industrial-related regional process, the following discussion introduces the regional share of industrial growth generated by the private sector. Governmental industrial development, however, is the primary focus of those chapters on the EOI process and the related regional structural development and implications. Before that, however, a brief background of the five main regions of Saudi Arabia is given.

The Regional Profile

Geographically, Saudi Arabia is divided into six regions (see Map 4.2), five of which are classified as planning regions. The sixth is referred to as Al-rub' Alkhali (the Empty Quarter), which extends from the Eastern Province to the Southwestern region. It is all desert and is uninhabited. Within the five planning regions, there are 14 Amarahs or administrative regions constituting the main planning units. In this study, the five regions were the basis for the comparative analysis regarding industrial and regional-related growth. The 14 regions, however, were the comparative indicators for the analysis of urban and regional



Map 4.2: The geographical division of The Kingdom of Saudi Arabia.

Source: Ministry of Planning, Fourth Development Plan (1985-90).

growth in both industrial and other related activities.

Each of the five planning regions has distinct features. This regional variation is attributed to the geography and climate, as well as the source of the economic base (Presley & Westaway, 1989). In addition to the nature of Saudi development planning, these differences contribute to the regional distribution of economic growth. The Western region contains three distinctive economic features. Within its boundaries are located the two Holy Cities (Makkah and Madinah) and the port city of Jeddah. Makkah and Madinah were the main source of income for the whole nation before the discovery of oil. They were the destination of Muslim pilgrims from around the world who visit the two Holy Cities each year, in addition to the continuing flow of visitors throughout the year. Jeddah is the second important economic source within this region. It is the national commercial center and the main port on the Red Sea. Recently, a third economic base has emerged within this region, with the rise of the industrial city of Yanbu. This regional-based industrial center will be dealt with in detail as part of the Saudi industrial development model.

The Western region occupies 20% of the country's total area and almost 33% of the total population. This region consists of two Amarahs, Makkah and Madinah; Jeddah is located in the Makkah Amarah, and Yanbu industrial city is located in Madinah.

The Central Region recently has become the most dynamic region because of its important role in Saudi historical, political, and administrative concerns. It is

the location of the country's capital city, Riyadh, and the center of the government and military offices. This region occupies 29% of the country's total area, and according to the 1985 Census, its population was estimated at 2.3 million, almost 20% of the total population. Riyadh City accounts for 53% of the region's population and 84% of its total area (Al-Hathloul, 1991). Riyadh Amarah is the largest urban and national center in the country. Within the region, Riyadh Amarah is followed in importance by Qaseem Amarah, within which the country's greatest agricultural development has taken place over the past two decades.

The Eastern Region (Province) is the site of the country's vital source of income, the world largest oil fields. This region occupies 11.3% of the country's total area and 11% of the total population (Al-Hathloul, 1991). Before the discovery of oil, the Eastern region's economy relied mainly on fishing and trade. The discovery of oil in the third decade of this century transformed the economy not only of this region but of the country as well. Of the five regions, the Eastern province has benefited the most from the oil industry. Recently, the building of Jubail industrial city, the largest of the two industrial complexes, has introduced a new source of industrial and economic development in this region.

The Northern Region occupies the largest area of the country, excluding the Empty Quarter, at 31.3%. However, it is the most sparsely populated region due to the large desert area. The main source of income in this region is agriculture, yet it is not significant enough to alleviate the rural nature of the region. There are five Amarahs in the Northern region, Ha'il, Tabouk, Jouf, Ar'ar, and Qurrayat. The last two Amarahs, however, have been combined into one Amarah, namely the

Northern Frontier, according to the Royal Decree of 1993. Two of these Amarahs, namely Tabouk and Ha'il, have some economic and urban leverage compared to the others. Whereas the latter has developed into an urban area flourishing around its agricultural activities, the former has benefited from being the site of a military base.

Finally, the Southwestern Region comprises four Amarahs, Asir, Jizan, Najran, and Baha. This region occupies the smallest area of the country, 8.2%. However, it is the third most populous region, after the Central and Wester regions, at 18.3% of the total (Al-Hathloul, 1991; Johany et al., 1986; Presley & Westaway, 1989). The most dominant settlement in this region is rural, whose involvement in agricultural production was the main source of income. Recently, however, agriculture has declined in importance because people are abandoning farming and taking jobs in the public sector. Also, the region's population declined during the oil boom, due to out-migration to the Central, Western, and Eastern regions.

Although these regional differences can be attributed mainly to the geographical nature of each region, the effect of the oil industry and the historical aspect of the concentration of population are significant factors contributing to the regional distribution of growth. At the beginning of the oil boom, the regional share in the Gross Domestic Product, for example, represented two basic features. First, the regional share reflected the above-mentioned differences in economic bases among regions. Second, the construction and service industries were concentrated mainly in the three major regions, whereas these industries had only

moderate representation in the North and South. This trend in regional share of national economic growth cannot be traced through the present, due to the lack of data.

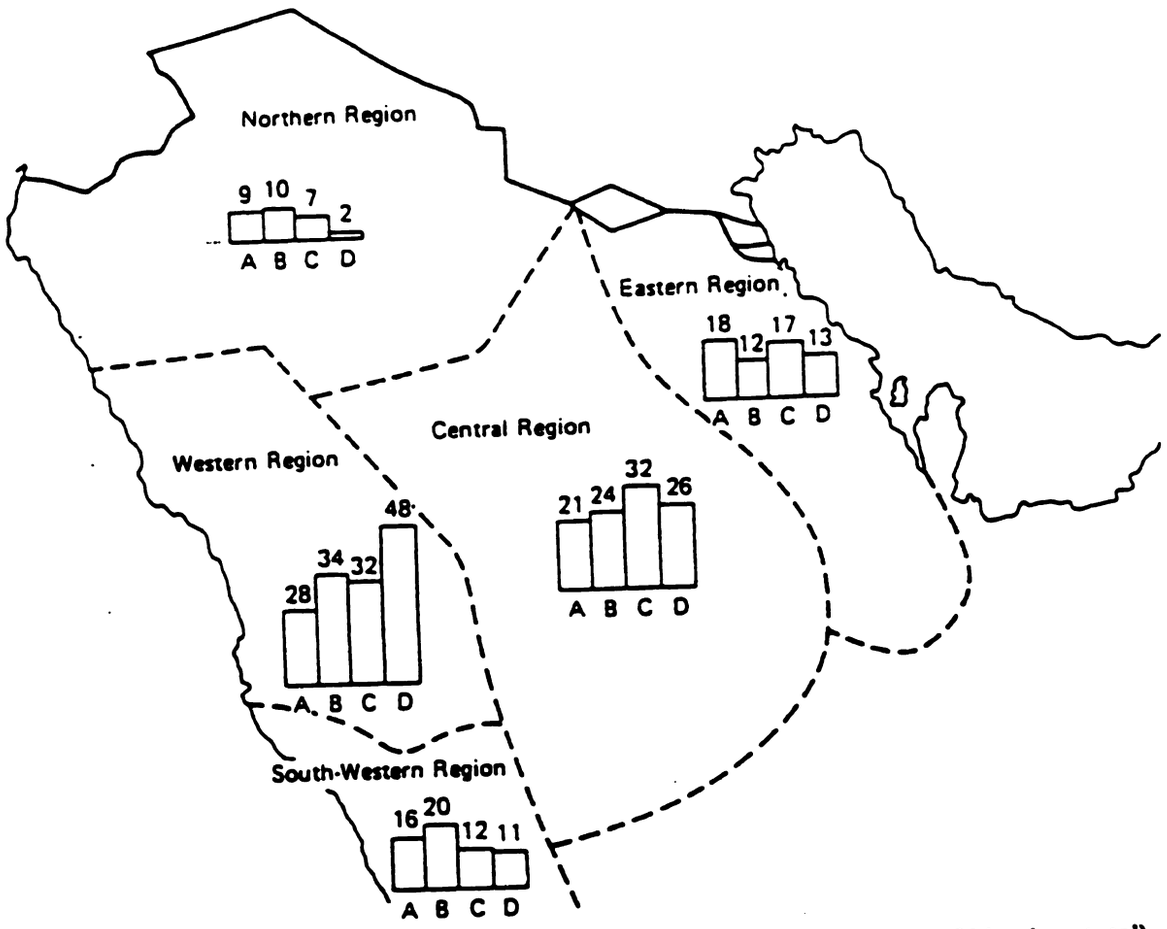
In the next section, a special focus on the regional distribution of industrial growth is intended to provide a clearer example of the regional and urban development process. Before that, however, the writer will examine how these regional differences in economic bases affect the population distribution among regions and the types of settlements on the national level. In this respect, it is important to indicate the unreliable nature of previous censuses because of their inaccuracy. This inaccuracy is assumed to have resulted from various factors, such as the difficulty of controlling Bedouins' movements, rural-urban migration, the large influx of foreigners, and other factors related to settlements--whether Bedouins' settlements are rural or whether they represent an independent category (Al-Hathloul, 1991). In general, it is difficult to pinpoint the actual causes of these limitations. However, the lack of a defined regional policy could be strongly suggested. With the recently defined regional tasks and development structure, the future constructed regional base should ease some of those problems.

It is hoped that the recent population census, conducted in 1992, will provide more accurate population statistics because most of the Bedouin population is now being settled in urban areas. Unfortunately, this latest census has not provided details on the regional or settlement distribution of the population.

Only the population size and the distribution of population according to ethnicity and gender are given.

According to the 1992 census, the total population of Saudi Arabia is almost 17 million; 27.3% of that total are non-Saudi residents. Of the Saudi population, males and females are almost equally distributed. However, the foreign population comprises 70.4% males (El-Ektesadia Newspaper, December 13, 1992). The large number of male foreigners can be explained the country's shortage of native workers, especially in low-paid jobs, which some Saudis still consider unsuitable or undesirable. Another factor affecting the shortage of workers is the very low participation by Saudi women in the workforce, due to religious and cultural beliefs. For foreign as well as Saudi women, jobs are limited to certain areas, such as hospitals, female schools, and other institutions where there is no interaction between the sexes.

Concerning the distribution of population, Presley and Westaway (1989) and Al-Hathloul (1991) used the percentage share as the best data available to establish the national distribution of settlement type and the regional share of population and employment. As shown in Map 4.3 and Figure 4.2, the regional distribution of population and employment, as well as that of nonoil economic growth, reinforced the previous factors on differences among regions. This is, in part, related to the nature of the economic base in each region and the urban-biased development planning. In the next chapter, the population distribution among regions is examined with regard to its relevance to regional shares of



Map 4.3: Percentage distribution of regional population, employment, nonoil sector and non-Saudi population.

Source: Presley and Westaway (1989), Map 7.3, p. 179.

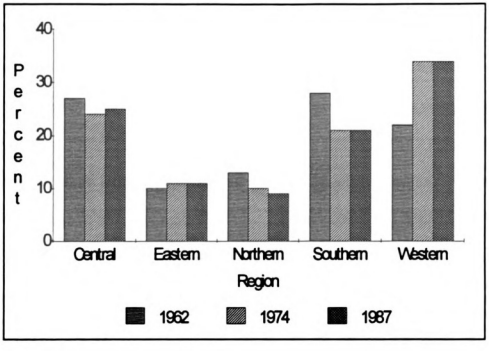


Figure 4.2: Regional shares of population.

Source: Al-Hathloul (1991), Figure 3.2, p. 40.

expenditures and the extent to which this has contributed to regional imbalance of industrial-related growth.

Regional Distribution of Industrial-Related Growth

Industrial-related regional growth in Saudi Arabia can be viewed as a product of several interrelated factors. Of particular importance in this study are those factors associated with urban-oriented and strategically-located industrial activities. Although the historical fact that there was no industrial base in Saudi Arabia before the discovery of oil has influenced the nature of the modern

industrial structure, the locational pattern of economic activities in the old and recent urban centers, and the regionally located strategic oil industry have shaped the current pattern of industrial growth. Another significant factor influencing the distribution of industrial growth on the regional level has been the government's sectoral-led planning. Recently, this last factor has been rendered disadvantageous to the regional balance of growth, and more coordination between sectoral and regional planning has been strongly suggested. Over the past two decades, however, industrial activities on the regional level have seemed to be a product of the regional potential for economic growth and the urban-led economies of scale.

In general, the regional distribution of industrial growth has been a product of both the government's and the private sector's industrial development processes. In this respect, the Saudi government has played a direct role in building the required infrastructure for industrial development and in developing the country's basic industry. The government also indirectly supports and finances the private sector's involvement in national industrial development. In this respect, the private sector is presumably the leading candidate for use of the government's development programs to expand the country's industrial base. And, because there has been no direct national analysis that identified the industrial-related regional dimensions, this writer attempted to establish the regional base of industrial growth through a review of the private sector's industrial activities over the past decade and a half.

As a result of the overall economic growth experienced by Saudi Arabia during the oil boom, the industrial sector has developed at an unprecedented rate. The extent of such growth has been nationally witnessed through the progressive increases in industrial establishments and employment. These industrial activities, however, have been spatially concentrated in major urban centers. The nature of this concentration has been ascribed to another form of concentration, namely population and services. In general, the relationship between industrialization and urbanization is not an uncommon phenomenon in many developing countries. Differences, however, may exist with regard to those forces leading to urban concentration. In the Saudi Arabian case, Al-Hathloul et al. (1992) attributed urban concentration to specific "historical trends and locational factors." These include "localization of natural resources, accessibilities to water ways, trade routes, and Holy places" (pp. 2-3). In turn, these factors have led to the concentration of most of the economic activities within those urban centers where adequate markets and services are available. In a 1981 general survey of private establishments and employed workforce, these urban forces appeared to be the basic determinants of regional shares in Saudi Arabia (see Table 4.11 and Figure 4.3).

In general, the above-specified historical, geographical, and strategic factors, while leading to the concentration of urban and economic growth, also have shaped the spatial pattern of industrial activities. According to estimates of operating factories reported by the Ministry of Industry and Electricity's industrial affairs, in 1970 only 199 factories were in operation, with a total of 13,865 workers. In 1990, however, these figures rose to 2,251 factories employing 147,584

Table 4.11: Regional distribution of private sector activities: Number and percentage share of establishments and employment, 1981.

Region	# of Ests.	% of Ests.	# of Employ.	% of Employ.
Central	41,329	29.6	305,827	30.7
Western	57,822	40.0	326,735	32.8
Eastern	24,164	16.7	302,533	30.4
Northern	8,936	6.2	26,336	2.6
Southwestern	12,185	8.5	33,700	3.5
Total	**144,436**	**100.0**	**995,131**	**100.0**

Source: Ministry of Finance and National Economy (1991).

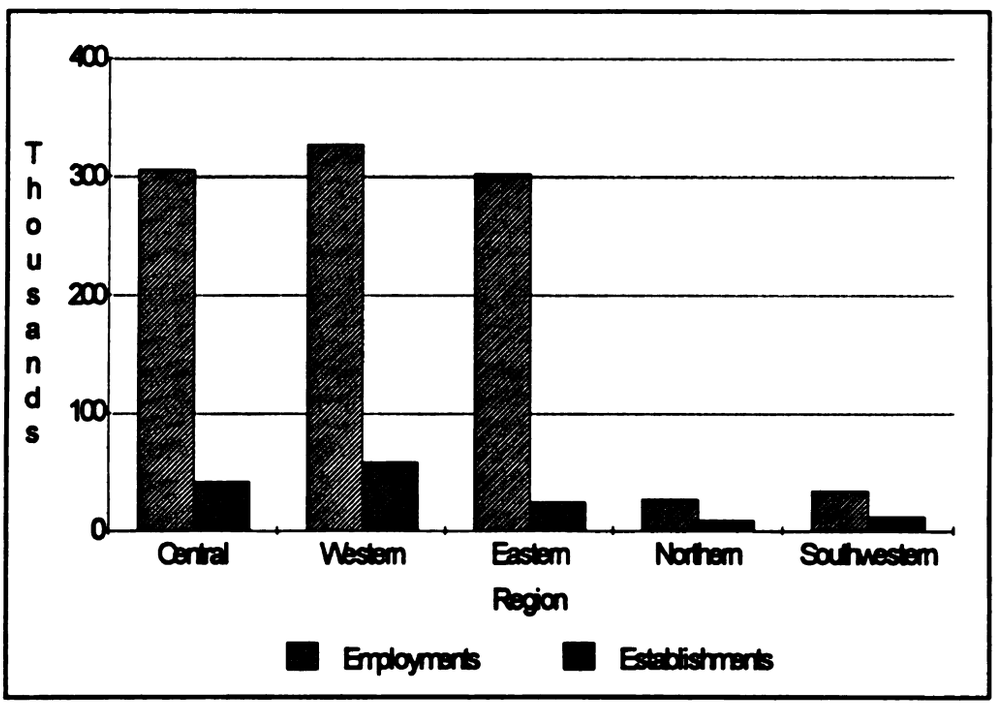


Figure 4.3: Regional distribution of private establishments and employment, 1981.

Source: Ministry of Finance and National Economy (1991).

The spatial nature of this national industrial development has been parallel to the regional distribution of economic growth. To establish a profile of the regional basis of industrial development in Saudi Arabia, some industrial indicators should be introduced and later considered for analysis.

Emphasizing the regional share of the private industrial establishments and employment, the progressive increase over the span of two decades reflected the same pattern experienced in overall economic growth. Table 4.12 indicates the share of industrial establishments and employment by each Amarah or administrative region. Among the 14 Amarahs, the leading three regions, Riyadh, Makkah, and the Eastern Province, accounted for more than 83% of the total establishments and more than 87% of the total employment.

This concentration of industrial establishments has been the outcome of these regions' dominant share of the state industrial investments. The Saudi state, with a primary focus on the productive sectors in industry and agriculture, has established a system of development funds provided to the private sector to expand the base of economic growth. For the industrial sector, the Saudi Industrial Development Fund (SIDF) is the leading government financial institution that is directly involved in encouraging the private sector through what is called "a form of soft term loans" (SIDF Annual Report, 1983). Since the SIDF was established through a Royal Decree in 1974, the value of SIDF industrial loans increased from SR 140 million ($US 40 million) in 1974 to SR 18,053 million ($US 4,814 million) in 1990 (using a dollar value of SR 3.75). The total number of

projects approved and receiving SIDF loans also has risen--from only 21 projects in 1974 to 1,112 in 1990.

Table 4.12: Productive licensed factories and total financing and employment up to the end of 1987 (by region).

Region (Amarah)[a]	Number of Factories	Number of Workers	Total Finance	% of Number of Factories[b]
Riyadh	686	42,442	12,231	33.3
Qasseem	91	4,416	1,785	4.4
Makkah	555	39,543	11,421	27.0
Madinah	87	7,405	20,849	4.2
Eastern	474	40,851	45,051	23.0
Asir	57	2,229	491	2.8
Baha	15	379	90	0.7
Jizan	23	1,524	2,456	1.1
Najran	13	366	69	0.6
Ha'il	25	704	140	1.2
Tabouk	23	494	152	1.1
Ar'ar	6	110	15	0.3
Jouf	5	139	37	0.2
Quarayat	1	18	16	0.1
Total	**2,061**	**140,620**	**94,805**	**100.0**

Source: Ministry of Finance and National Economy (1991), Table 4-18, p.78.

[a]An Amarah is an administrative region that includes a number of cities; e.g., Makkah Amarah includes Jeddah, the second largest city in the country after the capital of Riyadh.

[b]Percentages were calculated by the researcher.

Except in later years, SIDF loans have been reported according to both regional and sectoral distributions of industrial activities. Although these reports were not intended for regional or sectoral evaluation per se, the distribution of industrial loans shown in Table 4.13 can be seen as an indicator of industrial-related regional growth. Whereas the table indicates a progressive process of industrial loans since the SIDF was established, the regional distribution of projects and their values were based on an uneven pattern, which again represents the overall nature of the country's economic and urban-led structure for growth. This structural factor of uneven regional growth is, in turn, exacerbated by the private sector's leading role in this process. This combined public-private development process has been the product of the national sectoral-based planning and the continuing emphasis on strategic-led growth.

On the regional level, the nature of the economic base in each region is also an important factor shaping the size of industrial investments by both the public and private sectors. This is a direct result of the country's economy and the dominant sectoral approach of development planning. Emphasizing the sectoral base of SIDF industrial loans, both capital investments and the number of industrial projects are largely the consequence of the overall development strategy rather than an intentional policy by the SIDF.

By comparing Tables 4.12, 4.13, and 4.14, the main conclusion that can be reached is the fact that industrial-related regional outcomes are shaped by sectoral-led development in general and urban-dominated growth in particular. Both

Table 4.13: Cumulative number and value of industrial projects approved by the SIDF in 1975 and 1990, by major sectors (in SR millions).

Sector	1975 Number	Value	1990 Number	Value
Consumer Products	16	166	318	3,381
Chemical Products	14	66	205	4,057
Cement	1	360	10	3,459
Building Materials	17	174	241	2,829
Engineering Products	17	262	320	4,191
Other Products	0	0	18	136
Total	**65**	**1,028**	**1,112[a]**	**18,053**

Source: SIDF Annual Reports (1985, 1991), various tables.

[a]The total includes projects approved since 1987, but not reported according to regions.

strategy and spatial dimensions of industrial growth have influenced the locational aspects of industrial activities and the government's capital allocations. This can be established by comparing the number of projects and their values on the Amarah level.

For instance, the total numbers of industries in Riyadh, Makkah, and the Eastern Province, by the end of 1987, were 353, 268, and 262, respectively. The values of these projects were estimated at SR 4,338, SR 3,837, and SR 4,429 million, respectively. In the case of the Eastern Province, the projects' higher

Table 4.14: Cumulative number and value of industrial projects approved by the SIDF, by region (in SR millions).

Region	1974		1983		1987	
	No.	Value	No.	Value	No.	Value
Riyadh	10	30	296	3,757	353	4,338
Qaseem	0	0	22	356	27	572
Makkah	4	21	226	3,207	268	3,837
Madinah	0	0	19	642	28	1,094
Eastern	7	99	220	3,669	262	4,429
Asir	0	0	20	145	20	145
Baha	0	0	5	13	5	13
Jizan	0	0	12	445	13	494
Najran	0	0	4	20	4	20
Ha'il	0	0	8	12	9	15
Tabouk	0	0	4	17	4	17
Ar'ar	0	0	1	2	1	2
Jouf	0	0	1	6	2	7
Qurrayat	0	0	1	1	1	116
Total	**21**	**150**	**843**	**12,407**	**997**	**15,099**

Source: SIDF Annual Reports (1985, 1988), various tables.

value can be attributed to the location of basic industries in Jubail, where most of the related activities are capital-intensive. Although this conclusion was based on the SIDF industrial projects, which are limited to those loans received by the private sector, it should be perceived as the common representation of industrial activities on both the national and regional levels. Indeed, this is the apparent

policy regarding industrial growth in Saudi Arabia, where the private sector is considered the main vehicle for realizing the diversification of the industrial base, and hence the overall national diversification. On the regional level, the industrial sector has been developed with the hope of providing the base for balanced regional growth. Therefore, the following question should be asked: To what extent has this industrial-based regional balance been achieved? In the next chapter, this question will be tackled within the context of the Saudi state's development strategy and its urban-led economy.

CHAPTER V

SECTORAL-LED DEVELOPMENT AND ITS IMPLICATIONS FOR INDUSTRIAL-RELATED REGIONAL AND URBAN GROWTH

Introduction

Within the context of this study's emphasis on the interplay between the state's strategy and spatial development, in this chapter the researcher evaluates Saudi sectoral-led planning and its regional and urban implications. On the sectoral level, the extent to which the industrial sector has contributed to the national goal of diversification is analyzed by comparing the shares of the oil and nonoil sectors. This endeavor is not intended to provide a comprehensive economic analysis of the Saudi economic performance. Rather, it is designed to illustrate the extent to which the Saudi state's political economy of oil-based industrialization has been shaped by its development strategy, namely, reducing dependence on oil. On the regional level, industrial-related activities will be spatially examined, in order to establish the extent to which the development strategy has influenced the patterns of regional growth.

Sectoral-Led Growth

The Saudi quest for economic diversification is a justifiable endeavor, given the nature of the national economy, especially its heavy dependence on oil

exports. To reduce reliance on an unreliable source of income, the Saudi government has adopted an industrial approach that exploits the comparative advantage in oil and gas resources to upgrade their value and expand their production. Such an approach has been subjected to several challenges, however. These challenges revolve around the premise that an oil-based industry mainly changes the dependent nature rather than reducing it. In other words, critics believe that the leading sector in achieving the national long-term goal (petrochemical industry) may perpetuate dependence because of its strong link to the oil sector (Askari, 1990; Lackner, 1978; Presley & Westaway, 1989; Richards & Waterbury, 1990). Acknowledging the overall nature of the Saudi economy, however, the government's decision to build capital-intensive, hydrocarbon-based industries was rationalized as the most suitable option for achieving the long-term economic objectives (Masood, 1989).

Since the first national development plan, 1970-75, massive oil revenues have enabled the government to start on the path toward this long-term objective. This has been evidenced in the extensive undertaking of building the country's infrastructure, on which subsequent development can be established. The Second, Third, Fourth, and the current Fifth Development Plans have all been devoted to the national strategic goal, namely diversifying the economy to lessen the national dependence on oil. The extent to which these plans have proceeded toward this end is difficult determine because the economic transition is still taking place. However, the share of the oil sector in comparison to others in economic

development can be examined as a possible answer. The industrial sector, as the leading candidate to achieve diversification, is particularly emphasized to evaluate the extent to which it is contributing to the national development goal. Further, regional implications of industrial growth are an indication introduced in this study to examine the spatial dimensions of diversification.

Until now, the oil sector has been considered responsible for the major share of national economic development in Saudi Arabia. On a comparative basis, however, the current development plan (Fifth Plan, 1990-95) stated that the share of oil in government revenues dropped from an average of 85% during the first three plans (1970-85) to 64% during the Fourth Plan (1985-90). Concerning GDP, the Plan further indicated a decline of the oil sector's share from 58% in 1970, to 38% in 1985, to a little over 21% by the end of the Fourth Plan (see Table 5.1 and the illustrative Figure 5.1). Hence, the underlying question is whether the decreasing share of oil in GDP means less dependence on oil or/and that the current stage of economic diversification is a fair indication of a successful oil-based development approach.

The preceding indications of decreasing shares of oil in GDP, however, mean neither that the oil sector is decreasing in importance, nor that the approach to alleviating the nature of economic dependence is presently assuring. This can be simply ascribed to the integrated nature of nonoil economies with the oil sector, especially through the role of government spending for the private and public sectors.

Table 5.1: Gross domestic product: Oil and nonoil sectors.

Sector	Value Added (SR Billion) 1985 Value	%	1990 Value	%	1995[a] Value	%
Nonoil						
Government Services						
Other Non-oil Sectors	52.1		56.2		58.4	
Sub-Total	165.9		152.9		190.9	
	218.0	**61.9**	**209.1**	**59.9**	**249.3**	**60.9**
Oil Sector[b]	134.1	38.1	140.2	40.1	159.9	39.1
Total GDP	**352.1**	**100**	**349.3**	**100**	**409.2**	**100**

Source: Ministry of Planning, Fifth Development Plan (1990-95); drawn from Tables 2.3 and 5.1. Calculation of percentage was added.

[a]Expected growth by the end of the Fifth Plan.

[b]Including crude oil, natural gas, and refined products.

Note: The increase in the oil sector's share of the 1990 GDP was due primarily to the stabilizing of oil prices after the sharp decline during 1986.

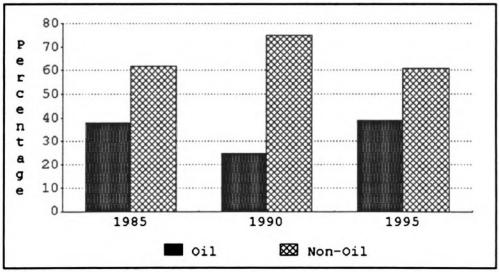


Figure 5.1: Gross domestic product: Oil and nonoil sectors.

Source: Ministry of Planning, Fifth Development Plan (1990-95), Table 2.3.

Emphasizing the general picture of the sectoral share of GDP, it was not until the end of Third Plan and the beginning of the Fourth Plan (1985-90) that the oil sector accounted for almost half of the nonoil sector's share of GDP (see Table 5.2). Before this period, the country's GDP was dominated by the oil sector. Taking the example of GDPs estimated for the periods covered in the Second and Third Plans, the oil sector provided the highest share--72.5% and 65.2%, respectively (Third and Fourth Plans, 1980-90). Since the beginning of the Fourth Plan in 1985, this pattern has progressively changed to a more dominant share for the nonoil sectors. Viewed on the basis of sectoral comparison, however, the oil sector still dominated the Saudi economic structure, followed by the service and government sectors.

The producing sectors, on the other hand, have shown gradual progress over the Third and the Fourth Plan periods. In general, the producing sectors have been dominated by agriculture, industry, and the construction sector. They contributed the highest share of total GDP as compared to other sectors. This is evidenced by the increase in their share from 24.2% in 1985, to 30.1% by the end of the Fourth Plan; the progress is expected to continue through the end of the Fifth Plan (1995) (Table 5.2).

Because of the country's ongoing build-up of industry and other physical infrastructure, the construction sector has been the source of most of the GDP share of the producing sectors throughout all of the development plans. As shown in Table 5.3, construction provided the highest share of nonoil GDP. It accounted

Table 5.2: Gross domestic product by sector.

Sector	Value Added (SR Billion) 1985 Value	1985 %[b]	1990 Value	1990 %	1995[a] Value	1995[a] %
Producing Sectors						
Agriculture	11.6	3.3	22.8	8.1	34.8	9.2
Other Mining	1.9	.5	1.8	.6	2.4	0.6
Manufacturing						
Petroleum Refining	13.8	3.9	9.9	3.5	16.5	4.4
Petrochemicals	0.5	.1	5.7	2.0	9.9	2.6
Other	13.1	3.7	9.4	3.4	15.0	4.0
Public Utilities	-0.6	-0.2	0.8	0.3	1.1	0.3
Construction	45.0	12.7	34.2	12.2	46.6	12.3
Sub-Total	**85.3**	**24.2**	**84.6**	**30.1**	**126.3**	33.4
Service Sectors	**94.4**	26.8	**78.6**	28.1	**102.9**	27.1
Trade	30.4		27.4			
Transport, Communications	23.8		21.4			
Real Estate	13.1		6.1			
Financial and Business Services	17.4		13.7			
Community and Personal Services	9.7		10.0			
Government Services	52.1	14.8	56.8	20.3	62.6	16.5
Sub-Total Nonoil	231.8	**65.8**	220	**78.5**	291.8	**77.0**
Oil Sector	120.3	34.2	60.2	21.5	87.1	23.0
Total GDP	**352.1**	**100**	**280.2**	**100**	**378.9**	**100**

Source: Ministry of Planning, Fifth Development Plan (1990-95), Tables 2.2 and 5.3.

Note: All of the added values were based on current prices of the years concerned.

[a]Expected growth by the end of the Fifth Plan.
[b]All percentage shares are of the total GDP.

Table 5.3: Producing sectors' share of nonoil GDP.

Sector	1985	1990	1995[a]
Agriculture	5.0	10.4	11.9
Mining	0.8	0.8	0.8
Manufacturing	**11.9**	**11.4**	**14.2**
Petroleum Refining	6.0	4.5	5.7
Petrochemicals	0.2	2.6	3.4
Other	5.7	4.3	5.1
Public Utilities	-0.3	0.4	0.4
Construction	19.4	15.5	16.0
Sub-Total	**36.8**	**38.5**	**43.3**
Service Sectors	40.7	35.7	35.2
Government Services	22.5	25.8	21.5
Total Nonoil GDP	**100.0**	**100.0**	**100.0**
Oil Sector[b]	34.2	21.5	23.0
Petrochemical Share of Producing Sectors	**0.6**	**6.7**	**7.8**
Petrochemical share of Manufacturing	**1.8**	**22.8**	**23.9**

Source: Ministry of Planning, Fifth Development Plan (1990-95), Table 5.3.
[a]Expected estimates.
[b]Including crude oil and natural gas.

for 19.4% by the end of the Third Plan (1985), 15.5% by the end of the Fourth Plan (1990), and is expected to reach 16% by 1995.

Agriculture and manufacturing, the leading sectors to achieve diversification, have also shown considerable progress. In the period specified above, these two

sectors achieved a steady increase in their share of the total and nonoil GDP. Emphasizing the nonoil GDP, agriculture, for example, had more than a 100% increase between 1985 and 1990, jumping from 5% to 10.4% in 1990. By the end of the Fifth Plan in 1995, agriculture's share is expected to reach 11.9%. According to the Fifth Plan, the expansion in the agriculture sector has been attributed to massive government support. Looney (1990) stated that the current as well as the future expansion in agriculture in Saudi Arabia is totally dependent on the "government's willingness to provide subsidized inputs, particularly agriculture credits" (p. 107). In fact, this trend is continuing through the current Fifth Plan, during which investments in the agriculture sector constituted 4.8% of the estimated sectoral share of investments, out of which the government is providing 2.1%.

The manufacturing sector, on the other hand, has been the dominant recipient of government investments. This is largely because of this sector's *lea*ding role in the economic transformation process and in compensating for the shortcomings of oil-dependent development. To establish the extent to which the manufacturing sector has contributed to this strategic end, a comparative analysis of industrial-led growth can be carried out on two levels of sectoral-based development. The first is concerned with the manufacturing sector's overall contribution to the nonoil sectors in comparison to other sectors. The second level of comparison is within the industrial sector, namely among the sector's main sources of industrial growth. This latter comparative approach is an attempt to

distinguish between the state's general and strategically-oriented, export-based industrial growth.

In general, the manufacturing sector has also shown a notable increase in its share of the nonoil economy. Its contribution to GDP has been growing but is "fairly limited" (Looney, 1990). Over the past two decades, the manufacturing sector has shown an average share of total GDP increasing from only 2% by the end of the Second Plan, to almost 9% by the end of the Fourth Plan in 1990 (Third Plan, 1980-85; Fifth Plan, 1990-95). During the Fifth Plan, the share of manufacturing is expected to grow to an estimated 11%.

Considering its share of the nonoil GDP, the manufacturing sector has shown the same progressive growth trend. In comparison, however, the share of manufacturing has been insignificant. As shown in Tables 5.2 and 5.3, the nonoil GDP has been dominated by service, government and construction sectors. The manufacturing sector, however, came in fourth, contributing 11.9% by the end of the Third Plan. This share declined to 11.4% in 1990. Therefore, it is important to emphasize the influential aspect of the oil-industrial sector relationship. This can be particularly established within the short-term effect of oil sector. Emanating through the declining capital inputs generated by oil, the effect on manufacturing was due mainly to declining government spending during the early years of the Fourth Plan. As can be seen in Table 5.3, the oil sector was the main source of decreasing GDP shares in most economic sectors. In this regard, the Fifth Plan (1990-95), stated that

> Fluctuations in crude oil prices and export volumes have had a considerable impact on government revenues and expenditure during the Fourth Plan period, which, in turn, affected the structure and demand components of Gross Domestic Product. (p. 29)

Therefore, because oil is so important to the continuing progress of industry, manufacturing is susceptible to declining support by the oil sector.

The petrochemical industry, on the other hand, is the exception. Its considerable progress over the Third and Fourth Plan periods was the result of vast investments and strategic commitment by the Saudi government over the past two decades. Because of the long period of building the industry's infrastructure, the first real effect of the petrochemical sector was not seen until the end of the Third Plan. Although it is still insignificant compared to other nonoil sectors, the petrochemical sector's shares of GDP had an average annual growth of more than 50% during the Fourth Plan (Ministry of Planning, Fifth Development Plan, 1990-95). Its share of nonoil GDP grew from 0.2% in 1985 to 2.6% by the end of the Fourth Plan. During the Fifth Plan, the petrochemical sector's share is expected to continue this trend, with an estimated share of 3.4% (Table 5.3).

Although the above-indicated aspects of industrial progress reflect the positive implications of more than two decades of economic transformation, they also indicate the reality of persistent dependency. This can be identified by acknowledging the continuing domination of the oil sector in GDP, especially when comparisons are made on a single-sector basis. In fact, even those sectors that seemed to contribute more of the GDP could maintain or increase their shares can

only through oil-derived government subsidies. Using the example of agriculture, Looney (1990) argued that

> The disturbing fact, however, remains that the sector [agriculture] does not appear to be capable of achieving self-sustained growth without government assistance. Clearly, the government's agriculture subsidy programs must be continued if the sector is to maintain the gains made to date. Given the increasing opportunity cost involved in allocating funds to this sector, and their declining productivity, the continuation of public supports can only be justified on political grounds, and not on their economic rationality. (p. 109)

In this case, as in other cases, the increase or decline of oil revenues automatically affects government expenditures, and, in turn, shapes the outcome of the economic development process (Soufi & Mayer, 1991) (see Figures 5.2 and 5.3).

Although government-subsidized growth in Saudi Arabia is imperative in an economy with limited resources, it has been considered an apparent "weakness" in the national attempts to diversify. In this regard, Looney (1990) discussed the current implications of Saudi oil-based planning in the following passage:

> Clearly, despite Saudi Arabia's attempts at diversification, there is a relative weakness of the other materially productive sectors of agriculture and manufacturing. Moreover, a large proportion of the GDP value of agriculture and manufacturing represents no more than a recycling of oil revenues under a different name-this through governmental direct and indirect subsidies. The relatively large proportion of the GDP represented by government, community, and personal services is, of course, mainly a function of direct public sector expenditure, which in turn, is controlled by government revenue, predominantly oil based. (p. 143)

With regard to Saudi industry, oil-based development has had a twofold effect on its ongoing and future prospects for self-sustained growth. Generated through oil and gas resources, energy and capital are the two vital components

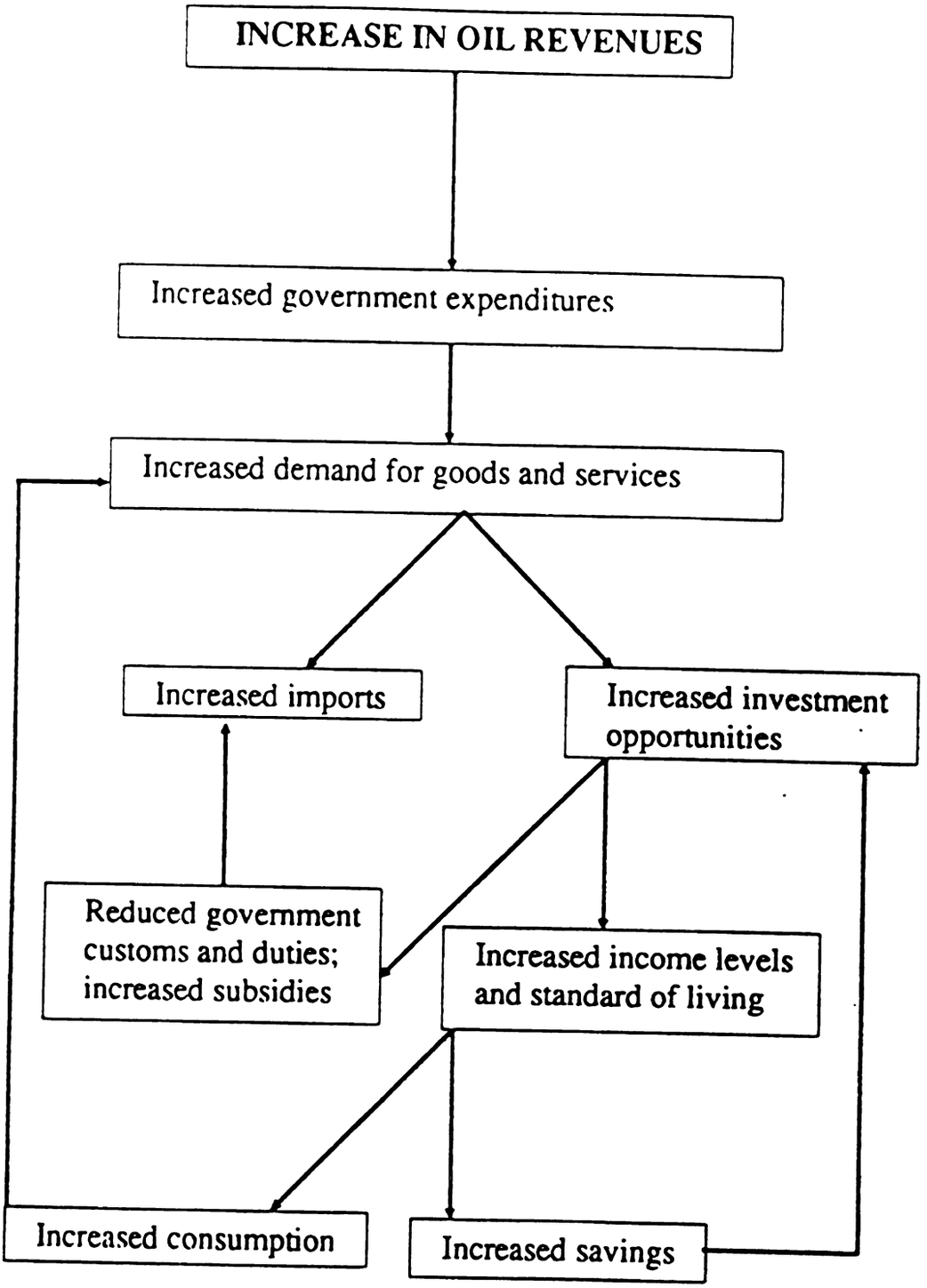


Figure 5.2: The state of the economy during increased oil revenues.

Source: Soufi and Mayer (1991), Exhibit 7.2.

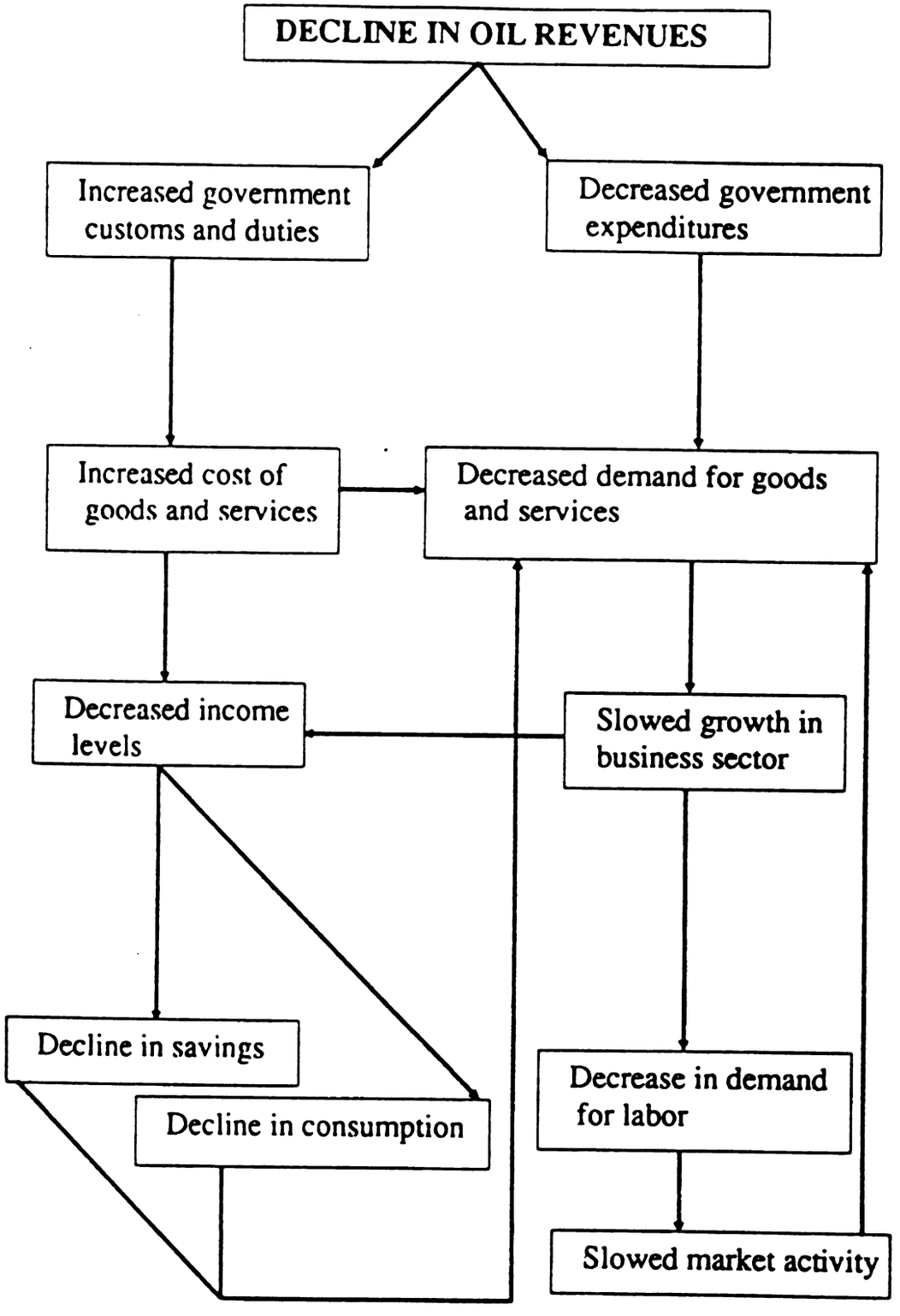


Figure 5.3: The state of the economy during decreased oil revenues.

Source: Soufi and Mayer (1991), Exhibit 7.3.

required for the primarily survival of the national industrialization process. Especially in the case of basic industry, a decline in the quality or quantity of these two resources will greatly hinder its reliability as the base for reducing dependence. Although the energy factor is not as crucial, at least in the short run, oil-generated capital is rather decisive. This was seen in the preceding sectoral-based comparisons, where the fact remains that oil is still the dominant sector in generating most of the foreign exchange earnings. In terms of both short- and long-term prospects of Saudi oil-based development, this reality will continue to shape the outcome of the economy and industry. Currently, no other economic option, including the industrial sector, is capable of replacing the oil sector. Although this can be an important lesson to learn (Looney, 1990) at this stage of industrialization, an equally essential aspect remains to be established, namely, the effect of oil-based industrialization on related growth distribution. Influenced by the strategic objectives for national development, the Saudi government recently has realized the negative effects of previous sectoral-led planning on regional balance of growth.

In the next chapter, the regional implications of industrial-led growth are examined within the context of the state's development strategy. In succeeding chapters, this general analysis is supported by introducing and evaluating the effect of the Saudi industrial-based model on urban and regional development.

Urban-Led Growth and Its Regional Implications

In Saudi Arabia, the spatial distribution of economic activities is the product of two influential factors: the location of the oil industry and state urban-led growth. Because the location of the oil industry was the direct cause of rising urban centers in the Eastern Province, state-led urbanization was mainly the outcome of rapid growth in the past two decades. It was during this period that most of the country's economic and social transformations took place and the regional modern economic bases were developed. However, because of the quest to urbanize the national population, the regional outcome has been dominated by three urban centers within which most of services and industrial activities are concentrated. These urban centers are located on what can be referred to as the "East-West axis," which extends from Jeddah in the West to Dammam in the East, and Riyadh in the center (Al-Habib et al., 1989).

During the oil-boom years of the 1970s and early 1980s, these urban centers received much of the national build-up of physical and service infrastructures. The result was the rise of a regional structural imbalance, mainly in the form of a rural-urban enclave on both interregional and intraregional levels. During the economic building period and beyond, this regional imbalance has been further reinforced by sectoral-based planning and the absence of coordination between spatial and sectoral development agencies.

The regional dimensions of sectoral-based and urban-led development were shaped by the regional-based historical, political, demographic, and economic

factors. Historically as well as politically, regional centers, namely Riyadh, Jeddah, Makkah, and Madinah, have shared the significance of being the national sources of political, economic, and religious power. After the discovery of oil, these regions continued their importance, with an even more powerful grip on the national economy and society. Because of the location of oil resources in the Eastern Province, however, the oil-based activities gave rise to the urban poles that make up the "Dammam conurbation" (Al-Hathloul et al., 1990).

The Northern and Southwestern regions, in contrast, were marginal in their role in the national political and economic makeup during the early years of state formation and beyond. The exception, however, was in their contribution to domestic income before the discovery of oil and for most of the 1970s through their agricultural outputs. As shown in Table 5.4, the agriculture sector accounted for the largest share of the total nonoil GDP. On the regional level, however, the Northern and Southwestern regions provided the largest shares of this sector, 32.2% and 33.2%, respectively, compared to the now-leading regions.

Recently, this picture has changed. As a result of the previous biased development planning, coupled with the stressed notion of a labor shortage, the shift toward capital-intensive farming projects has moved crop production from its traditional regions to new areas, located primarily in the Central region. As shown in Table 5.4, the Central region's share of agriculture in the mid-1970s was only 5.6%, almost one-sixth of, for example, the Southwestern region's share. According to the current Fifth Plan, however, the Central region now accounts for

almost 63% of the country's total crop area. The regional shares of agriculture can be compared further by examining government's support provided to the private sector. Through the Saudi Agricultural Bank, the agriculture sector, in general, has received massive financial aid over the past two decades. By the end of the Fourth Development Plan, 1985-90, the effect of agriculture on the national economy, although still comparatively small, was noticeable, especially with regard

Table 5.4: Percentage distribution of regional nonoil GDP and employment 1976/77).

Activity	Western	Eastern	Central	South-Western	Northern
Agriculture	3.1	4.9	5.6	33.2	32.2
Manufact., Mining, and Utilities	6.7	6.5	6.2	3.1	2.6
Construction	25.9	26.5	25.1	16.3	16.7
Distribution	26.6	21.7	21.7	11.8	8.0
Transport and Communics.	4.9	8.8	4.3	4.3	8.3
Other Services	22.7	21.7	24.5	15.5	16.5
Government Services	10.7	9.8	12.6	16.0	15.8
Total Non-oil GDP	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Regional Distribution of Labor Force	34.6	11.9	23.1	20.0	10.4

Source: Ministry of Planning, Third Development Plan (1980-85), Tables 2-21 and 2-22.

to its share of the GDP.

On the regional level, however, it is important to stress that GDP-based analyses of the agriculture sector, as well as others, are not available beyond the Second Plan (1975-80) to establish a progressive comparison of regional productivity. Therefore, the best was to investigate regional-based distribution of growth is by comparing regions on the basis of the number and capital value of projects supported by the government and carried out by the private sector. Emphasizing the development in the agriculture sector over the past decade, the substantial investments undertaken by the private sector can be seen as empirical evidence reinforcing the above argument concerning the shift in regional distribution of agriculture production. In this regard, the figures in Table 5.5 represent two aspects of comparison. By furnishing the number and capital value of agricultural projects, the first aspect is to establish empirical support for the shift toward capital-intensive production. The second aspect is a specific comparison between the Central and Southwestern regions, whose current statuses represent contrasting examples of spatial shifts of production, primarily as a result of state-led planning and the urban political economy of growth.

Concerning the shift in agricultural production, Table 5.5 reflects the Saudi government's policies, which encouraged a capitalist agriculture sector with a less labor-dependent production process. The favoring of a capital-intensive development process has been rationalized mainly due to the national manpower shortage. This was also reinforced by the national preference toward urbanization,

Table 5.5: Regional share of number and value of loans granted by the Saudi Agricultural Bank (in percentage).

Region	1983		1985		1990	
	No.	Value	No.	Value	No.	Value
Western Jeddah Madinah Taif	31.9	12.9	18.9	5.9	13.5	5.0
Eastern	3.4	4.9	4.0	4.2	5.9	5.6
Central Riyadh Qasseem Kharj	29.8	59.0	31.3	53.7	31.4	36.1
Southwestern Asir Jizan Najran	22.2	9.2	22.5	7.3	15.6	3.5
Northern Ha'il Jouf Tabouk	12.7	14.0	23.3	28.9[a]	33.6	49.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total Projects	**23,844**		**9,209**		**4,123**	
Total Capital	**3,495,764**		**1,551,226**		**1,016,646**	

Source: Saudi Arabian Monetary Agency, Annual Report (1986, 1988); Statistical Summary (1991).

[a]The higher value share in the Northern region is due to the prominent position of Ha'il Amarah in the agriculture sector, which alone received more than half of the region's total projects and almost 64% of the total capital investments in 1985. This also continued in 1990, when Ha'il Amarah received almost 72% of the region's total capital value of loans by the Bank.

hence the encouragement of the rural population to join the urban labor force (Lackner, 1978). In agriculture, the combination of these two factors has led to the abandonment of traditional employment by the rural workforce, who migrated to urban areas for better jobs and services. The result was a rapid expansion in urban areas, especially Riyadh, Jeddah, Makkah, Madinah, and Dammam, and the shrinking of the rural population. Therefore, traditional agriculture was replaced by a new class of entrepreneurs who were located mainly in these urban centers (Lackner, 1978).

The representative cities that have experienced rapid urban growth over the past two decades have also been dominant as recipients of agriculture projects and capital loans. As regional centers, cities such as Riyadh, Qasseem, and Kharj in the Central region and Ha'il in the Northern region were the locations of most of the national agricultural projects and loans during the periods specified in Table 5.5. For instance, during the 1985 fiscal year, these regional centers received almost 44% of the total agricultural projects and more than 70% of the total loans disbursed by the agriculture bank. Other regions, such as the Southwestern region, although they may have acquired more projects, received little in comparison, especially in the share of capital.

Specific to the regional base of agriculture production has been the shift in the spatial process from a traditional to a modern production system. The Fifth Plan's testimony to the Central region's takeover of agricultural production, which had been the traditional domain of the Southwestern region, can be observed in

how these two regions have evolved within the state's new agriculture development approach. Until the mid-1970s, the Southwestern and the Northern regions produced the bulk of the country's agriculture sector. During the oil boom, the state planning and development process rendered these two regions disadvantaged on two accounts. The first was the concentration of infrastructure build-up and service development outside their boundaries. The second, albeit a consequent aspect of regional imbalance, was the government's diminished concern with developing these regions' traditional productive system, namely agriculture. The result was a massive outflow of the local workforce to urban areas.

The shift from a traditional to a modern agricultural production system is most noticeable in a comparison of the Southwestern and Central regions. As indicated in Table 5.5, the two regions' shares in agricultural production recently has been influenced by the structural shift in agribusiness versus resource-based productive activities. In other words, the agribusiness class developed during the peak of economic growth has dominated the sector's share in government investments. This can be identified by comparing the Central and Southwestern regions' share in the number of projects and capital investments during the past decade. Whereas the share of the number of bank loans seemed to be higher in the Southwestern region, the value of these loans was a clear indication of the shift in regional importance. In 1983, for instance, the Southwest's share of loans was 22.2%, compared to 29.8% obtained by farmers in the Central region.

Although considered a higher share for the Southwestern region, its value was less than 10% of total capital. The Central region, on the other hand, received 59% for its share of total capital disbursed by the bank. This trend continued in succeeding years.

In general, Cole (1981) attributed this regional development outcome to the state's overall economic policy, which was in favor of modernizing both the human and economic bases of the country. In Cole's view, this was done through the unprecedented quest to modernize. In the short run, this was the result of state efforts to distribute the oil wealth among its citizens. In the long run, however, this approach gave rise to an unproductive welfare system and a large unskilled national workforce. On the regional level, efforts toward modernization were linked to an uneven approach to spatial distribution of growth and consequently pressing regional disparities. doo

The reality of regional imbalance has been the most obvious for the Northern and Southwestern regions. This situation was acknowledged by the current Fifth Plan, whose critical view of regional problems was underscored by the fact that these two regions still lack basic necessities.

> The Northern region, and particularly the densely populated Amarahs in the Southwest, still have basic needs to be met. At the same time, these regions possess substantial natural and human resources which can be developed towards full self-sufficiency and can contribute to overall growth in the national economy. Additional infrastructure needs in the Southwestern Amarahs arise mainly from over-utilization of existing capacities. By contrast, large portions of the population in the Northern provinces are still without services, even though existing facilities and networks are far from being utilized to their designed capacity, mainly as a result of the

> extremely scattered population in these areas. (Ministry of Planning, Fifth Development Plan, 1990-95, p. 370)

In general, the Plan attributed these regional problems to the biased planning and development-implementation process that has taken place over the past two decades.

The preceding example of agriculture was an attempt to indicate some of the regional implications that have been the direct outcome of past national planning and development. By emphasizing the effect on the Northern and Southwestern regions, the analysis of agriculture-based regional growth imbalance was presented to examine the ramifications of the Saudi state's policies, which have shaped the current regional structures. In this case, the effect on these two regions has been evidenced by the reduction of their significance in the national economic as well as political life. This reality appeared in the decline of the main source of income in these regions, namely agriculture, after its former significance for the regional as well as the national economy. The state's principal rationale was exemplified in its concern with the short-term approach toward modernization and improvement of the society's standard of living. This approach was implemented mainly through emphasis on urban-led growth, with consequential policy measures to replace the traditional economies. Throughout the years, these policies have resulted in particular characteristics of regional and urban imbalances in both economic and political weight in national development.

Politically, each of the 14 Amarahs in Saudi regional and national affairs can be judged according to its role in the historical and economic formation of the

current state. The three Amarahs of Riyadh, Makkah (Jeddah is the dominant city in this Amarah), and the Eastern Province have been in the lead in this formation process. Riyadh Amarah, where the capital city is located, has been the center of political and government leadership since the initial phase of unification of the modern Saudi state in 1902. At that time, Riyadh City was the main target of Abdul Aziz Ibn Saud's first step toward building modern Saudi Arabia. After the city was recaptured, it was also the center for ruling and military commands for Ibn Saud throughout his subsequent battles for unification. This eventually ended with the rise of the Saudi state and the "culminating in the proclamation in 1934 of Abdel Aziz al Saud as King of Saudi Arabia" (Lackner, 1978, pp. 14-15). Since that time, Riyadh City has continued its role as the center of national political power. It is now the location of all high-level government agencies, and is the headquarters of military and financial institutions in the country.

Jeddah and Makkah, on the other hand, were the primary sources of the nation's economic well being before the discovery of oil. As the destination of all Muslims during the Hajj (pilgrimage) season, Makkah City had national economic importance through its role as a main source of foreign exchange earnings. When oil began to take over as the main source of national income, Makkah's national economic role decreased. For the city's economy, however, the importance of the Hajj season has continued, along with the modern construction and service sectors.

Jeddah, on the other hand, is the economic capital of the Western region

and, until recently, was the diplomatic capital of the country. Because of its location on the Red Sea, Jeddah has been the main access to international markets since long before modern Saudi Arabia was established. During the Hajj season, Jeddah Seaport is the disembarkation and departure for most pilgrims coming from India, Pakistan, and Africa. Currently, Jeddah continues to accommodate pilgrims' travels through its international seaport and airport. Jeddah now is second, after Riyadh, in population size and has the leading diversified economy in the country (Al-Hathloul, 1991; Johany et al., 1986).

Finally, the Eastern Province, especially the Dammam urban centers, houses the most strategic source of the supply of the world's oil. Before oil was discovered, the Province relied primarily on its fishing, farming, and commercial activities, located outside the urban centers that recently have emerged. The discovery of oil, however, changed both the political and economic geography of the region by giving rise to the urban centers surrounding the port city of Dammam.

With the exception of the political role of Riyadh, Saudi Arabian cities' political role in the past was mostly played through their economic and population size. In fact, the latter factor was less important than it was in cities in other countries in the Middle East. In their comparative view of Iranian and Saudi Arabian cities, Islami and Kavoussi (1984) considered population size differentials as the factor determining a city's role in national politics. In contrast to Iran's major cities, they believed that the distribution of population among Saudi Arabia's major

cities as "fairly equal." In Iran in 1976, they argued, the population of the largest city, Tehran, was almost "seven times greater than that of the second largest city of Isfahan." In Saudi Arabia, however, the population of the largest city, Riyadh, was not even twice that of the third largest city, Makkah. Hence, they concluded, "it is unlikely that any of the major Saudi cities play as dominant a role in the national politics as Tehran has played in the political life of Iran" (p. 45). Although it is risky to generalize on the basis of one factor, this conclusion may partially true, given the fact that none of the major Saudi cities is known to exert apparent influence as a result of its population size. Other factors, such as the city's historical significance, strategic location, and/or economic importance, can also be crucial determinants. In Saudi Arabia, it is mainly these factors that have led to the current urban structure. In fact, one could argue that the concentration of recent development in the major urban areas has been the result of both their national strategic importance, and their more powerful local economic and social groups.

All of the above-mentioned factors are essential characteristics of Saudi Arabia's major cities of Riyadh, Jeddah, and Dammam. The political and financial power of Riyadh, the strategic and industrial importance of the Eastern Province, the strategically located and economic power of Jeddah, and the religious significance of Makkah have constituted the required ingredients for their role in local, regional, and national politics. The mix of these influential factors may have been a prerequisite to these cities' population size and their greater leverage over

others for development, and hence the subsequent growth in their agriculture and industrial sectors. As a result of this urban-dominated growth, Saudi planners, especially since the Fourth Plan, 1985-90, have recognized the apparent imbalance among regions. Therefore, attention has been given to correcting the economic and social disparity of Amarahs located mostly in the Northern and Southwestern regions.

Economically, the rising regional concerns in Saudi Arabia have been addressed through two development approaches. The first is a direct provision of basic services distributed through two systems of growth centers, known as the Development Centers System (DCS) and the Village Cluster Program (VCP). The VCP was adopted to establish access to services needed by villages and small towns at the Amarah level. The DCS, on the other hand, was introduced to reflect a spatial strategy aimed at the coordination of development agencies to provide socioeconomic opportunities through an integrated system of national, regional, and district growth centers (DMTP, 1992; Fourth and Fifth Development Plans, 1985-95). The second approach in attempting to rectify regional imbalances was to construct a National Spatial Strategy (NSS) designed to countervail the biased sectoral and urban-based planning and development. The NSS, developed in a joint effort between Saudi planners and the United Nations Development Projects, was introduced as an integrative measure designed to establish links between the sectoral and spatial processes of national planning (DMTP, 1990; Mashabi, 1988). To implement the NSS, Regional Comprehensive Plans were

designed in 1982 by the Deputy Ministry of Town Planning (DMTP) of the Ministry of Municipal and Rural Affairs (MOMRA), using the 14 Amarahs as planning units. The main goal of these plans, Mashabi (1988) stated,

> is to facilitate achievement of the national development goals of integrating sectoral and spatial development, make maximum utilization of all the resources of the Kingdom and the elimination, or at least amelioration of, regional disparities. (p. 132)

Five comprehensive studies were conducted, covering the Ha'il, Qasseem, Baha, Tabouk, and Makkah Amarahs. Given that studies of other regions will follow, these five cases were established at the planning stage with the hope that implementation would take place within the national context of the NSS. Although there is no documented evidence on the extent to which the NSS has been reflected in national development planning, it is known that no similar regional survey has been done, nor is there any indication that previous plans have been implemented. Since the introduction of NSS, the national development strategy has only indirectly incorporated these plans within the planning process.

The current Fifth Plan, for example, acknowledged the importance of continuing efforts by DMTP in identifying regional concerns and potentials for growth. However, on the implementation level, the national strategy is still dealing with providing services to disadvantaged regions, leaving the long-term regional process to possible improvement in coordination between sectoral and spatial planning, on one hand, and to public-private cooperation in the commitment to regional development. The extent of the present level of coordination between sectoral and regional development agencies has been measured, according to the

Fifth Plan, only by progressive improvements in the provision of basic services. On the issue of incorporating a defined regional-based strategy in national plans, current efforts, undertaken mostly by the DMTP in addressing this issue, are believed to be still in the planning stage.

Concerning the public-private sectors' efforts to alleviate regional disparity, one of the main development aspects linking national strategy and regional growth dimensions is examined in the remainder of this chapter. This aspect is the emphasis Saudi planners have placed on the relationship between the level of infrastructure and the private sector's expected role in the domestic economy. Nationally, the Saudi government stressed that the private sector's commitments to participate in development are now more pressing because the economic and physical infrastructure is already in place (Askari, 1990; Ministry of Planning, Fourth Development Plan, 1985-90). On the regional level, however, industrial investments by the private sector have been the dominant approach in achieving a relationship between the sectoral and spatial dimensions of growth.

Industrial-Related Regional Implications

Askari (1990) discussed the issue of what is considered "an adequate level of infrastructure" and whether "past and present infrastructural undertakings affected Saudi Arabia's economic development" (p. 77). In his analysis of the Saudi economy, Askari touched on several issues related to the implications of infrastructural development during the first development plans. He stressed his views on regional concerns within the context of the way the infrastructure was

geographically distributed. Urban-dominant planning and development, he argued, has led to the concentration of infrastructure in large urban centers, leaving the rural areas with less opportunity for growth. In turn, industrial investments followed this spatial pattern by being concentrated in the well-established urban infrastructure. It is this uneven locational distribution of infrastructure and its subsequent effect on industrial investments that largely have led to the regional structural imbalances in Saudi Arabia.

Hence, this researcher believes that the regional share of industrial growth is shaped primarily by how past infrastructural investments were geographically distributed. This leads first to an examination of the regional distribution of infrastructural projects and then how that distribution has influenced subsequent industrial-related regional growth.

Using the regional distribution of the Ministry of Municipalities and Rural Affairs' (MOMRA) development projects during the Third Development Plan, Askari (1990) found that three regions dominated both the share of projects and the average cost of expenditures (see Table 5.6). The data in Table 5.6 reveal three main contrasting aspects of regional-based infrastructural growth. The first concerns the share of projects among the leading Central, Western, and Eastern regions. Of the total 1,067 projects undertaken by MOMRA during the Third Plan, the Central region received the highest share, 419, followed by the Western region, 208, and the Eastern region, 181. On the basis of average cost per project, however, the second contrasting aspect seems to reverse the above picture; that

is, the Western region leads the Central region, with 42.71% and 19.79% of projects, respectively. Although its share is much lower than that of the first two regions, the Eastern region, with an average cost per project of 19.37%, ranked among the three leading regions because of the large gap between its share and those of the Northern and Southwestern regions.

Table 5.6: Regional distribution of expenditures during the Third Development Plan, 1980-85 (MOMRA).

Region	Number of Projects	Total Cost (US$ Bil.)	Share of Costs (%)	Average Cost/Proj ($US Mil)
Central	419	8.29	36.6	19.79
Western	208	8.88	39.2	42.71
Eastern	181	3.51	15.5	19.37
Southwestern	142	0.86	3.8	6.08
Northern	117	1.11	4.9	9.50
Subtotal: Regional Expenditures[a]	**1,067**	**22.65**	**100.0**	

Source: Askari (1990), Table 5.10, p. 78.

[a]MOMRA total expenditures include other service and municipal agencies.

The final contrasting aspect concerns the Northern and Southwestern regions' share of MOMRA infrastructural projects in contrast to the previous regions and between these two regions as well. Out of the total expenditure made in the five regions, these two regions received less than 10%. Whereas the

average-cost-per-project indicator also supported the large gap between the two categories of regional comparison, the lesser two regions evidenced yet another kind of uneven expenditure allocation. On the basis of the number of projects, the Northern region came last with 117 of the total projects, whereas the Southwestern region received 142 projects. Comparing the two regions according to the average cost per project, the picture again was reversed, with the Northern region receiving more money for each of its projects. Of the total expenditure, the Northern region received 4.9%; on average, it received US$ 9.50 million for each project, compared to US$ 6.08 million per project spent in the Southwestern region.

The main reason for the Northern region's higher share is the importance of Ha'il Amarah. Although there are few data to support such reasoning, the fact that this Amarah accounted for most of the region's agriculture-based growth can be deemed a likely indication. In addition, Ha'il Amarah is connected to the major urban centers in the Central and Western regions through a national highway system, rather than to other centers in the Northern region (Mashabi, 1988).

In terms of strategic, political, and economic significance, the Northern and Southwestern regions' unequal shares are somewhat justifiable. However, when introducing the population factor, the above-mentioned regional distribution of basic investments could be a relevant contributor to the structural imbalance among regions. Using 1987 population estimates, the dominant position of the leading Central and Western regions are evident in both population and expenditure shares, almost 60% and 75%, respectively (see Table 5.7).

Considering the interregional comparison, there are two indications of regional concern. The first exists between the Western and Central regions. When considering the population factor, it can be seen that the Central region's share of expenditures is higher than that of the Western region. This can be identified when applying the ratio of regional shares in population and expenditures. Hence, for every 1% of the Western region's population (34%), there is an estimated 1.2% of regional share investments (39.2%). For the Central region, however, the ratio between population (24%) and expenditures (36.6%) was .3% higher than in the Western region.

Table 5.7: Population-based comparison of expenditure distribution among regions (based on 1987 population estimates).

Region	Expenditure[a]	Population	Ratio
Central	36.6	24	1.5
Western	39.2	34	1.2
Eastern	15.5	12	1.3
Southwestern	3.8	21	.2
Northern	4.9	9	.5
Total	**100.0**	**100**	

Source: Al-Hathloul (1991), Figure 3.2, p. 40; Presley and Westaway (1989), Map 7.3, p. 179.

[a]Based on Table 5.6 and Askari (1990).

The second aspect in the population-based regional comparison of basic expenditures can be established between the Central and Southwestern regions.

As a percentage of national population, the Central region was estimated to be only 3% higher than that of the Southwestern region. However, when comparing these regions on the basis of their share of expenditures, the Southwestern region received only 3.8%. In comparison to its population (21%), this region's share of investments was the lowest, at .2%. In fact, it is the lowest of all the regions, even the sparely populated Northern region.

Further, there is the case of the Eastern Province, especially in comparison to the Northern region. Although the regions' shares of the population are similar, the Eastern region's higher share of expenditures has been, and still is, the result of the location of oil industry. This situation, according to Al-Hathloul (1991), is reinforced by the fact that most of this region's population is composed of individuals, not households.

The preceding population-based comparison of regional distribution of expenditures revealed two distinct conclusions. On the interregional level, the first is related to the apparent disadvantageous economic position of the Southwestern region. Specifically, this region's share of basic investments was the lowest, even though its share of the national population ranked third after the Western and Central regions. This leads to the second conclusion, which is that population factor was never seriously considered as a basis of regional distribution of expenditures in Saudi Arabia. Other factors, such as the traditional and economic significance of the Western region and the administrative role of the Central region, have been the main determinants of regional distribution of expenditures.

The importance of the preceding factors in shaping the regional structural imbalances in Saudi Arabia can be seen in examining the regional distribution of industrial establishments, estates, and the SIDF loans. The main argument here revolves around the notion that industrial investments in Saudi Arabia have directly followed the infrastructure and population distribution created by the historical, geographic, and strategic importance of urban centers and have been further fostered by the state's planning. In this respect, regional concentration of infrastructure has led to a comparable trend in industrial investments by both the government and the private sectors in the three leading regions.

As late as 1976, industrial activities in the Kingdom were concentrated in the Western and Central regions, and to a lesser extent in the Eastern Province. Estimates in that period ranked the Western region first, with more than 40%, followed by the Central region at almost 30% and approximately 17% in the Eastern province. On the other hand, the Southwestern and Northern regions received the remainder of the total industrial establishments--8% and 5%, respectively (Presley & Westaway, 1989). Almost a decade later, the inequality among regions continued with the persistent concentration of industrial activities in the three leading regions. According to the MIE's 1987 Statistical Report, the number of productive and licensed firms rose from the 1976 estimate of 626 to 2,061 in 1987.

On the regional level, however, this progress has not changed much of the old picture. The Central, Western, and Eastern regions continued to dominate the

distribution of industrial activities at 37.7%, 31.1% and 23%, respectively. The remaining 8.2% is shared by the Southwestern and Northern regions, with the former receiving 5.3% of the total industrial establishments.

The above-cited regional shares of industrial growth confirm the relationship between the distribution of infrastructure and industrial investments. This is evidenced in the Southwestern and Northern regions' continuing small share in industrial growth. Another industrial-related regional aspect is the slight decline in the share of industrial activities by the Western region and the increase in such activities by both Central and Eastern regions. Presley and Westaway (1989) attributed both aspects of change to the locational distribution of industrial estates. They believed that, in Saudi Arabia, "it does provide obvious clues on regional industrial development; for example it pinpoints where the government, through the Ministry of Industry and Electricity, is encouraging the location of firms" (p. 165).

In addition, this writer contends that the establishment of industrial cities in Saudi Arabia has been the main thrust leading to, and the actual basis of, the regional concentration of most of the national industrialization process. As shown in Table 5.8, there are eight developed industrial cities (excluding the industrial cities at Jubail and Yanbu and those established by Petromin). These industrial estates are located in six cities in the Central, Western, and Eastern regions. The MIE has completed the design of three cities to be located in Madinah, Asir, and Ha'il; four other industrial sites, to be located in Jouf, Tabouk, Ar'ar, and Jizan, are still at the planning stage (Masood, 1989; Ministry of Planning, Fourth Development

Table 5.8: Regional distribution of industrial estates.

Region	Total Area (Mil.Sq.M)	% of Total	Factory Plots	Remarks
Central	**13.6**	**40.4**	**612**	**Developed**
Riyadh	12.5		556	
Qasseem	1.1		56	
Western	**9.7**	**28.8**	**373**	**Developed**
Jeddah	8.9		338	
Makkah	0.8		35	
Madinah	(0.6)		--	Design Completed
Eastern	**10.4**	**30.8**	**309**	**Developed**
Dammam	9.4		275	
Al-Hasa	1.0		34	
Total Area Developed	**33.7**	**100.0**	**1,294**	
Northern	**11.3**		--	**Not developed**
Ha'il	2.3			
Tabouk	4.0			Designed
Ar'ar	2.0			Planned
Jouf	3.0			- - -
				- - -
Southwestern	**7.0**		--	**Not Developed**
Asir	3.0			
Jizan	4.0			Designed Planned

Source: SAMA Annual Report (1990); Saudi Consulting House (1992).

Plan, 1985-90; SAMA Annual Reports, 1988, 1989, 1990; Saudi Consulting House, 1990).

According to 1990 estimates, the total area of existing industrial cities stood at 33.7 million square meters. Two of these cities are located in Riyadh (Central region), two in Dammam (Eastern Province), and the other four in the Qasseem Amarah (Central), Jeddah, Makkah (Western), and Al-Hasa (Eastern). Most of the designed and planned industrial cities are expected to be located in the Northern and Southwestern regions. However, as of fiscal year 1990, none of these industrial cities had been completely developed (SAMA Annual Report, 1990). Had these industrial estates been developed, the regional gap would still persist, especially when considering the planned expansion in the present areas. With this expansion, which is planned to increase the present total area to 47.8 million square meters, the future developed estates for all regions will constitute a total area of 66 million square meters, of which the Central region holds 26.8%, followed by the Eastern Province at 25.8% and the Western region at 19.7%. The Northern and Southwestern regions will hold 17.1% and 10.6%, respectively (SAMA Annual Report, 1990).

In 1994, a new industrial site (ranking the largest among the Saudi industrial cities, after Jubail and Yanbu) was approved. This city is located about 100 kilometers north of Riyadh and has a total area of 400 square kilometers. Under the MIE's supervision, this project is expected to house those industries involved in food production and light manufacturing. The stated development goal for establishing this new city, while a part of the national industrialization process, is derived from the recent concern by Saudi planners with urban concentration

and the ongoing process of rural development (Khamees, 1994).

Although Saudi planners have realized the persistent regional imbalances, the new industrial estate indicates how they have approached rectifying regional problems, especially in the Northern and Southwestern regions. By locating this new development center in the Central region, planners seem to be continuing their emphasis on service-oriented and potential-based regional growth in the deprived regions. Although it is still too early for it to materialize, the new industrial city's effect will be a potential boost for the Central region, especially in relieving the pressure on the Riyadh metropolitan area.

In general, the concentration of industrial infrastructure in the three leading urban centers of Riyadh, Jeddah, and Dammam has set the stage for locating most private industrial activities. Here, MIE industrial licenses and SIDF loans are the main sources of establishing regional distribution of private industrial activities. Industries supported by these two government agencies can be considered the substantiating elements reflecting the regional patterns of industrial location. With regard to MIE-licensed firms, it should be pointed out that not every licensed project is necessarily operational. Hence, only operational firms were considered in this analysis, in order to provide a reasonable argument.

In general, the number of factories in operation in Saudi Arabia has substantially increased, with an average annual growth rate of 14% during the past two decades. The steady increase in manufacturing has been the result of improvements in the country's infrastructure and the economic wealth generated

by the oil sector.

Because of the dominant national base for growth evaluation, regional-based consideration of manufacturing achievements has never been an issue. This has been apparent in the national five-year development plans, whose regional analyses, while acknowledging the pressing regional concerns, have focused primarily on the service-based imbalances as an indicator of regional disparity. Although this approach to evaluating regional problems has continued in the Saudi national planning, recent writers have considered regional distribution of industrial growth to be an essential factor in shaping the regional structure (Al-Habib et al., 1989; Al-Hathloul, 1991; Al-Hathloul et al., 1992; Askari, 1990; Presley & Westaway, 1989). These writers agree that the spatial distribution of industrial projects is one of the main indications of regional disparity. In actuality, this assertion is largely supported when one examines the regional distribution of operating firms established in Saudi Arabia up until 1990 (see Table 5.9).

Comparing regional shares of industrial activities, the figures in Table 5.9 reinforce the previous patterns of regional structural imbalance. The three Amarahs of Riyadh, Makkah, and the Eastern Province are still the dominant recipients of the MIE's licensed and operating factories. Not surprisingly, the Amarahs in the Northern and Southwestern regions (there are five Amarahs in the North and four Amarahs in the South) have continued to receive a very small share of the total industrial projects (Al-Habib et al., 1989; Presley & Westaway, 1989). By the end of each specified period, the greatest proportion of accumu-

lated shares of industrial projects was concentrated within the three dominant Central, Western, and Eastern regions. By the end of 1980, 1985, and 1990, these regions received more than 90% of the total regional shares. Considering the distribution of these shares among the leading five Amarahs, Riyadh, Makkah (mostly in Jeddah City), Eastern Province, Qasseem, and Madinah, the first three were the location of 84% of the productive factories by the end of 1980, and 83.3% by the end of 1985.

Table 5.9: Regional concentration of MIE-licensed and operating firms.

Region/Amarah	1980		1985		1990	
	Firms	%	Firms	%	Firms	%
Central	**525**	**37.8**	**704**	**37.8**	**759**	**33.3**
Riyadh	458	33.0	615	32.9		
Qasseem	67	4.8	89	4.9		
Western	**460**	**33.2**	**583**	**31.3**	**606**	**33.4**
Makkah	395	28.4	499	26.8		
Madinah	65	4.8	84	4.5		
Eastern	**314**	**22.6**	**440**	**23.6**	**508**	**29.0**
Sub-Total	**1299**	**93.6**	**1727**	**92.7**	**1873**	**94,0**
Northern	26	1.8	48	2.6	40	2.0
Southwestern	64	4.6	89	4.7	80	4.0
Total	**1389**	**100.0**	**1864**	**100.0**	**1993**	**100.0**

Source: MIE, Industrial Statistical Reports (1985, 1987, 1990); SIDF (1989).

In the Northern and Southwestern regions, a slight increase was witnessed by the end of 1985. Although this increase was not considerable enough to permit a comparable argument, such an increase can be seen as somewhat progressive. By the end of 1990, however, the two regions lost some of their share, which the MIE attributed to the exclusion of firms that were believed to have failed to maintain their operational status.

Finally, further confirmation of the industrial-based regional imbalance can be established through the regional distribution of SIDF loans. As one of the leading channels of the Saudi government's financial support for industrial growth, allocations of SIDF loans by region can be seen as merely an extension of the locational patterns already installed in the distribution of infrastructure, industrial estates, and MIE-licensed firms. In fact, firms that are eligible to obtain SIDF loans are mostly, if not only, those with industrial licenses (SIDF, 1989).

In 1984, SIDF was granted total funds of $US 4.1 billion. The Riyadh Amarah was expected to receive about 50% of this total (Askari, 1990). By the end of 1987, SIDF loans reached a total of SR 15.1 billion (almost $US 4 billion), which were allocated to almost half of the MIE-licensed firms that same year. Of these loans, the Riyadh Amarah received only 28.7% of the total financed projects, followed by Makkah Amarah with 25.4% (see Table 5.10). The Eastern Province appropriated the highest share of SIDF loans, receiving 29.3% of the total disbursements.

On the regional level, the Central, Western, and Eastern regions exceeded

Table 5.10: Regional distribution of the number and value of SIDF-approved projects up to the end of 1987[a] (in SR millions).

Region/Amarah	Number	%	Value	%
Central	**380**	**38.1**	**4910**	**32.5**
Riyadh	353	35.4	4338	28.7
Qasseem	27	2.7	572	3.8
Western	**296**	**29.7**	**4931**	**32.6**
Makkah	268	26.9	3837	25.4
Madinah	28	2.8	1094	7.2
Eastern	**262**	**26.3**	**4429**	**29.3**
Sub-Total	**938**	**94.1**	**14270**	**94.4**
Northern	17	1.7	157	1.1
Southwestern	42	4.2	672	4.5
Total	**997**	**100.0**	**15099**	**100.0**

Source: SIDF Report for the Period 1406-1408 (1987).

[a]The year 1987 was the last year of the SIDF's regional-based reports on loan allocations. Subsequent reports have been sectoral-based.

90% in their shares of the SIDF's approved projects and loan values. Again, the nine Amarahs in the Northern and Southwestern regions received only 5.6% of the SIDF-allocated finances and 5.9% of the total number of projects. Of these shares, the Southwestern region received 4.5% and 4.2%, respectively. Although these allocations further differentiated these two regions from the three leading regions, there is also an interesting difference between the Southwestern and Northern regions. Reemphasizing the population factor established earlier, the Southwestern region seems to have benefited from its higher share of the national

population. This region's higher share of both MIE general estimates of operating firms and SIDF-subsidized projects can be directly attributed to its large share of the population, especially in comparison to the Northern region.

The preceding indications of regional patterns of industrial location have been established within the context of the state's development strategy and the private sector's subsequent initiatives in the industrialization process. In other words, the concentrating nature of the state-planned infrastructure has spawned the same pattern of growth generated by the leading economic sectors. Hence, it is conceivable to stress that the nature of the national development process, especially in the area of infrastructure, has led to the current regional structural imbalances. The private sector's role, however, has been only one of perpetuating the existing regional imbalance. This means private investments are apparently dependent on the state's provision of both reliable infrastructure and financial support. The private sector's dependence on government support in Saudi Arabia continues, yet with the hope that it has been greatly lessened by the completion of the national infrastructure. In this regard, the Fifth Development Plan, 1990-95, stated that the role of the private sector should change as the

> stage of infrastructural development in the Kingdom has largely ended, and with the emergence of a new phase both the government and the private sector are adopting new roles. The need for economic diversification and greater mobilization of private capital will require the private sector to assume a more leading role in future economic development. The principal driving sectors of the economy in the Fifth Plan--manufacturing, finance, construction and agriculture--are all firmly in the private domain. To facilitate a stronger and more diversified private sector, the government will create a positive environment for private sector activity, implement a wide range of policies and incentives to support the private sector, and

> establish a new institutions to further private sector interests. (Ministry of Planning, 1990-95, pp. 139-140)

The regional process in this national strategy, the Plan later emphasized, "is the interface between socio-economic development for the whole Kingdom and physical planning" (p. 367). In retrospect, both the national strategy and the regional development process have been inconsistent, particularly when considering how physical infrastructures and services are distributed within regions or among Amarahs. As seen in the industrial-related regional analysis, they have been anything but equally distributed. Even within those advantaged regions, only the leading urban centers are seem to account for most of the industrial growth. The private sector, on the other hand, has followed this spatial pattern of growth by locating most of its industrial activities within these centers.

Some government officials argued that the regional differences in private investments are based on initiatives coming from each region. Although this is true for private establishments, initiatives cannot be motivated without the required base of economic and service availability in each region. This is again the result of uneven regional distribution of basic economic development, which took place mainly during the past decade and a half (1970-85) of the infrastructural process.

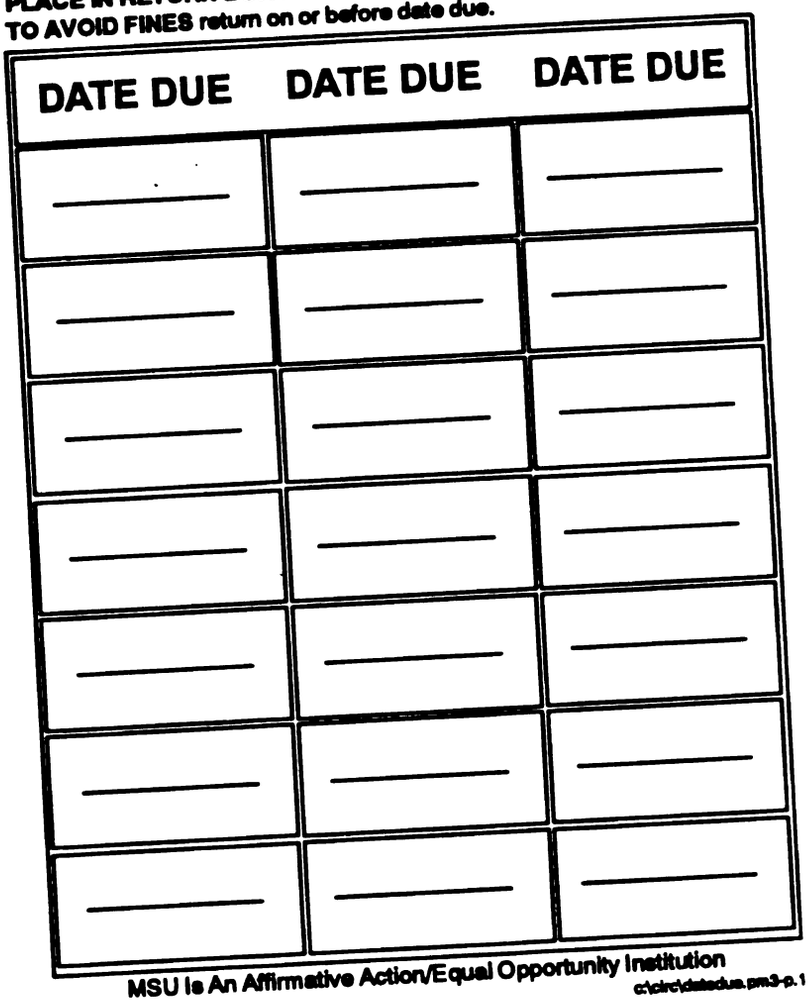
By favoring some geographical areas, the Saudi state has contributed to the strengthening of the old social structure in urban centers and also has created a new class of entrepreneurs concentrated in these centers. This has not only perpetuated the regional disparities that existed before the modern economic sectors, but also has relinquished the traditional growth activities in some regions,

leaving them with little sustainable economic potential. Hence, these regions will not be the target of private investments, primarily because they have no well-founded economic and service sectors.

The Saudi government is concerned about the existing regional disparity. Measures have been identified to rectify certain regional problems, but they are still in the designing or planning stages because of the continuing dominance of sectoral-oriented development. This dominance can be rationalized by the ongoing process of diversification, which will be realized mainly through the industrial sector, as the most conceivable option for promising viable returns. The spatial dimension of industrialization, however, have not been considered a possible candidate toward achieving such an end. Industrial-related regional implications can only be viewed in each region's potential to attract investments, especially by the private sector.

To talk of regional potential, it is important to provide these regions with the infrastructural and service bases on which future manufacturing investments will take place. This approach, however, is largely constrained by the nature of the political economy of state industrialization, where the strategic and spatial process of growth is still uncoupled due to the ongoing economic transition. Nevertheless, recent attempts by the Saudi government to incorporate the spatial dimensions of industrialization can be seen as an indication of their awareness of regional-based development. As a part of its EOI strategy, the Saudi government has developed an industrial-city model with the expected potential for reducing

regional imbalance. Considering the nature of industry and its production system, the implications of this industrial-related spatial model for growth are examined in the following chapters.



CHAPTER VI

THE SAUDI INDUSTRIAL CITIES: A MODEL FOR INDUSTRIAL AND REGIONAL GROWTH

Introduction

Beyond the quest to build the country's industrial base to diversify the national economy, the Saudi government's promotion of large-scale industrial projects has been developed to reflect a regional pattern of industrial-related growth. This industrial-related regional goal, however, is a secondary approach to the predominantly strategic objectives of the locational pattern of the EOI industrialization process. Housing all of the country's basic industries, the two industrial cities of Jubail and Yanbu were established to reflect three main development objectives. The first is derived from the national development strategy, which emphasizes the diversification of the Saudi economic base. This objective was to be established "through the introduction of capital and energy intensive broad based petrochemical industries, thus reducing reliance on the exportation of crude oil" (Al-Hathloul et al., 1992, p. 10). Second, the locations of the two industrial cities were selected to reflect a strategically based, export-oriented industrial process. In this respect, the location of the two cities was mainly influenced, besides the nature of resource-based industrial development,

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by certain geopolitical factors that might constrain their export-orientation process. In this respect, Al-Hatloul et al. (1992) argued that the two industrial cities are located in a pattern conceivably to "lessen the Kingdom's vulnerability to hostile elements by decentralizing oil refineries, shipment and port facilities" (p. 10). Finally, the two industrial cities' location has a regionally-related objectives, namely to stimulate balanced regional growth and to attract both business and workforce outside the three major urban centers of Riyadh, Jeddah, and Dammam.

Strategically, both Jubail and Yanbu are located on international waterpaths to ensure the exports of oil and processed industrial products. Located in the center of the country's oilfields in the Eastern Province, Jubail industrial city was established on the Arabian Gulf coast, with access to Asian markets. Yanbu, on the other hand, is located on the Red Sea, with close access to the Suez Canal and to European markets. Because it is located in the Western Region, Yanbu industrial city receives its crude oil and gas through two pipelines extending from the Eastern Province and almost 1,000 miles long. This spatial pattern of the Saudi EOI, in brief, represents the strategic safeguard of exporting both oil and industrial products, especially in case of any rising of interregional tensions (Al-Hathloul et al., 1992; Johany et al., 1986).

The preceding aspects of the industrial cities' interrelated strategic and regional objectives are mainly the result of the resource-based industrialization process. As illustrated in Figure 6.1, the national interest in achieving economic diversification through industrialization was influenced by the location of oil

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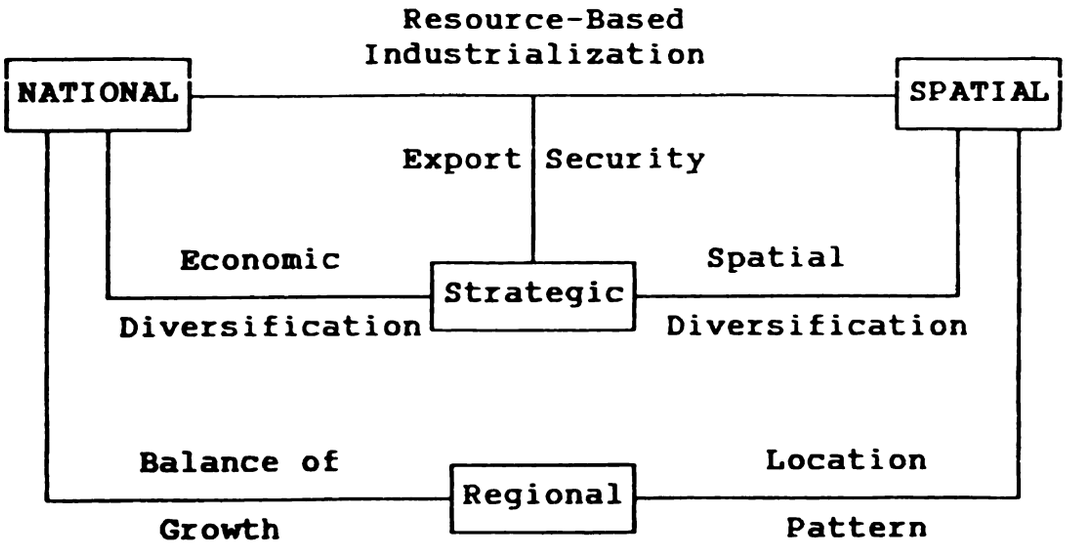

Figure 6.1: The interrelated policy process of the Saudi industrial-city model.

resources and the exporting of their products. Therefore, the two industrial cities' location represents a spatial process that was perceived to ensure access to the world market, as well as to lead the country's diversification process.

In addition to these industrial-related strategic goals, the two industrial complexes spawned certain industrial-related regional objectives. In this regard, the two industrial cities were viewed as providing a regional balance of growth. This regional prospect, however, has not been considered a direct policy of the industrialization process. Rather, it is a by-product of industrial development and, more important, the result of the nature of the Saudi model for oil-based industrialization. Further, industrial-related regional balance of growth is basically the product of the implementation of the industrial cities (McMinn et al., 1983).

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The Industrial-City Model

The two industrial cities of Jubail and Yanbu represent an industrial approach that was developed to provide Saudi Arabia with the means for achieving national economic diversification and related regional and urban development potentials. Nationally, the two complexes reflect the Saudi government's planned industrial development to build the country's industrial base through the use of abundant oil and gas resources. Emphasizing this industrial philosophy, Akhdar (1982) considered the Saudi model for industrialization as the cornerstone of the Saudi government's commitment to building the country's industrial base. Therefore, he stated:

> The urban-industrial complexes at Jubail and Yanbu constitute the enterprises of the Kingdom's heavy industrialization program. They reflect the government's commitment to develop large-scale, hydrocarbon-based and energy-intensive industries such as petrochemicals, fertilizers, and iron and steel that can effectively utilize the country's abundant, reliable supply of crude oil and associated natural gas as industrial fuel and raw materials. The Jubail and Yanbu basic industry programs envisage the construction of as many as two dozen major new refineries, petrochemical, fertilizer, iron and steel and other resource-based industries, as well as secondary manufacturing and fabricating facilities that use the output of the basic industries as raw materials, by the end of the century. (pp. 17-18)

To develop this urban-industrial model, several government agencies were given the responsibility for both the infrastructure and the subsequent operational process. Established in 1975, the Royal Commission for Jubail and Yanbu (RCJY) has been directly responsible for the development of the twin cities. At the initial stage of development, the RCJY was granted the role of building the industrial and community infrastructure. This role was later extended to include the operation

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and maintenance of the already-built and future infrastructure related to industry and residential areas. Although such a role is limited to these industrial complexes, the RCJY's role reflects the implementation of the national industrial development policy (RCJY, 1991).

In general, the rise of the RCJY has been a product of the overall national economic planning. As a government institution, the RCJY was created to build the base of the national industrialization programs. As such, its role is closely related to that of the five-year increments of the national development plans (see Appendix A.1). In its industrial as well as urban development process, the RCJY reflects the nature of the oil-based national economy and the traditional and cultural aspects of the Saudi society. Some of those national economic goals pertaining to the RCJY are:

* The reduction of dependence on the production of crude oil as the primary source of national income;

* Diversification of the national economy by encouraging expansion in industry, agriculture and mining;

* Geographical diversification of the national economy by stimulating regional potentials through a system of national, regional and district development systems;

* The development of human resources. (RCJY, 1987, 1983)

Since the Second Development Plan (1975-80), the role of the Royal Commission has changed, however. Whereas the initial goal was to build the infrastructure needed to transform the two regions of Jubail and Yanbu into industrial area, during the Fourth Plan, 1985-90, the Royal Commission's role

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began to "shift from construction to administrative and training functions, as the completed infrastructure is turned over to the private sector for operation and maintenance" (p. 229).

This shift represents the second stage, hence a turning point in the RCJY's role in the national industrialization process. After completing the basic infrastructure for the two cities' industrial and community facilities, the RCJY has become, according to many of its officials, a municipality-like institution, although it is still considered among those agencies within the country's industrial sector. The difference between the two periods can best be identified by examining the government's financial allocations before and after this shift in responsibility.

Emphasizing the last two plans, the end of the Fourth Development Plan (1985-90) marked the beginning of the second stage in the Royal Commission's role. During this plan, the total share of expenditures allocated to the Commission's programs was estimated at SR 30 billion. This share was reduced to SR 5,060 billion during the Fifth Plan (1990-95). However, in comparing RCJY's reduced share with that of other industrial agencies, the RCJY's share accounted for almost 32% of the industrial sector's total expenditures. Although completion of the industrial cities's build-up as well as some other national factors may have contributed to such a shift, the government's economic strategy to move toward a productive process and more private-sector investments have been the predominant factors that led to the RCJY's current role.

Taking the private sector's role, for instance, the government financial

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allocations for the industrial sector during the Fifth Plan gave similar shares to those agencies involved in industrial loans. Closely following the Commission's share, the Public Investment Fund and SIDF received estimated expenditures of 31% and 28%, respectively.

During the construction phase, the RCJY was responsible for building the industrial and the urban community infrastructure. Whereas the community infrastructure consisted of building a new urban environment (i.e., housing, services, and various other system facilities to accommodate workers and their families), the industrial infrastructure included the building of primary, secondary, and support and light industries. By the end of the Third Plan (1980-85), 15 primary industries were in operation in both cities. Secondary industries during this period were not operational but were in the planning and designing stages. One year later, the first two secondary industries were in operation, one in each city. Both support and light manufacturing industries, as well as the two cities' populations, also developed as the infrastructural process approached its schedule of completion (see Tables 6.1 and Table 6.2). The progressive increase in the number of the latter two industrial categories, as well as that of the secondary industries, is considered one of the leading objectives to be accomplished in building the two industrial cities.

Playing an integral role in the country's attempt to achieve a successful drive toward greater industrialization, the Royal Commission is the agency responsible for promoting downstream activities within the two cities. Although

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Table 6.1: Number of operational industries at Jubail and Yanbu by industrial category (1980-1990).

Industrial Categories	1980	1985	1990
Jubail			
Primary	0	10	16
Secondary	0	0	46
Support & Light	9	70	100
Yanbu			
Primary	0	5	5
Secondary	0	0	25
Support & Light	7	19	75

Source: Ministry of Planning, Fourth Development Plan (1985-90), Table 9-17.

Table 6.2: Population and employment at Jubail and Yanbu (1980-1990) (in thousands).

Year / City and Type of Employment	1980		1985		1990	
	Pop.	Emp.	Pop.	Emp.	Pop.	Emp.
Jubail Total	16	17	35	45	55	52
Industry		1		13		22
Service		2		4		14
Construction		14		28		16
Yanbu Total	18	17	36	27	62	35
Industry		1		10		9
Service		2		7		15
Construction		14		10		11

Source: Ministry of Planning, Fourth Development Plan (1985-90), Table 9-16.

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such development is carried out by the private sector, the RCJY, during the latter phase, is responsible for promoting private- sector investments. This is to be achieved by "(1) developing industrial sites for secondary industries; (2) preparing serviced sites for private sector housing construction; and (3) providing incentives to Saudi firms to locate in the industrial cities" (Ministry of Planning, Fourth Development Plan, 1985-90, p. 229).

Whereas the primary industrial process that was developed within the two industrial cities is the basis for the country's industrial development, the secondary or downstream industries, as well as the light and support industries, are those intended to achieve diversification. Within, as well as outside, the industrial cities, downstream and light manufacturing activities are the responsibility of the private sector, whose investments are both encouraged and financially supported by the government.

After the basic industrial infrastructure is completed, private-sector investments within the two cities are encouraged in industrial, community, and commercial areas. Because of "ever-expanding needs" and rising opportunities, according to the RCJY, the private sector is encouraged to invest in second-generation downstream industrial activities. These activities are the primary target for producing value-added products ranging from petrochemical-derived plastic products to metal and agrochemical products. Although this role of the private sector is supported by national government loans, the RC's Department of Industrial Investments has developed several incentives to attract private investments. In addition to the already-developed infrastructure, the Royal

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Commission provides economical rental rates, access to world markets, available feedstocks, a trained workforce, and modern urban and business facilities. Opportunities for the private sector, it is believed, will continue to increase as the flow of new residents continues to meet the expected population target of 280,000 in Jubail and 100,000 in Yanbu by the year 2010 (El-Mallakh, 1982; RCJY Annual Report, 1987; Ministry of Planning, Third, Fourth, and Fifth Development Plans, 1980-95).

Although the role of the RCJY has been characterized by municipal-like activities, its involvement in the national industrialization process is far more significant for the regional balance of growth. This can be illustrated in its development effects through the forward and backward linkages of the industrial and urban process in Jubail and Yanbu. In turn, this is hoped to contribute to the national long-term objectives of industrial-based economic diversification.

This regional and national role of the RCJY can be seen in its organizational network. Albeit an "independent corporate entity," the RCJY's board of directors represent both national and regional government agencies. As illustrated in Figure 6.2, the RCJY organization consists of the headquarters located in the Capital City, Riyadh, and two General Directorates in Jubail and Yanbu. Headed by the Commission's chairman, the Riyadh headquarters office is in charge of the overall planning and policy process of the two industrial projects. The Board of Directors consists of seven members representing various industrial, financial, and regional government agencies and two members representing the private sector. As

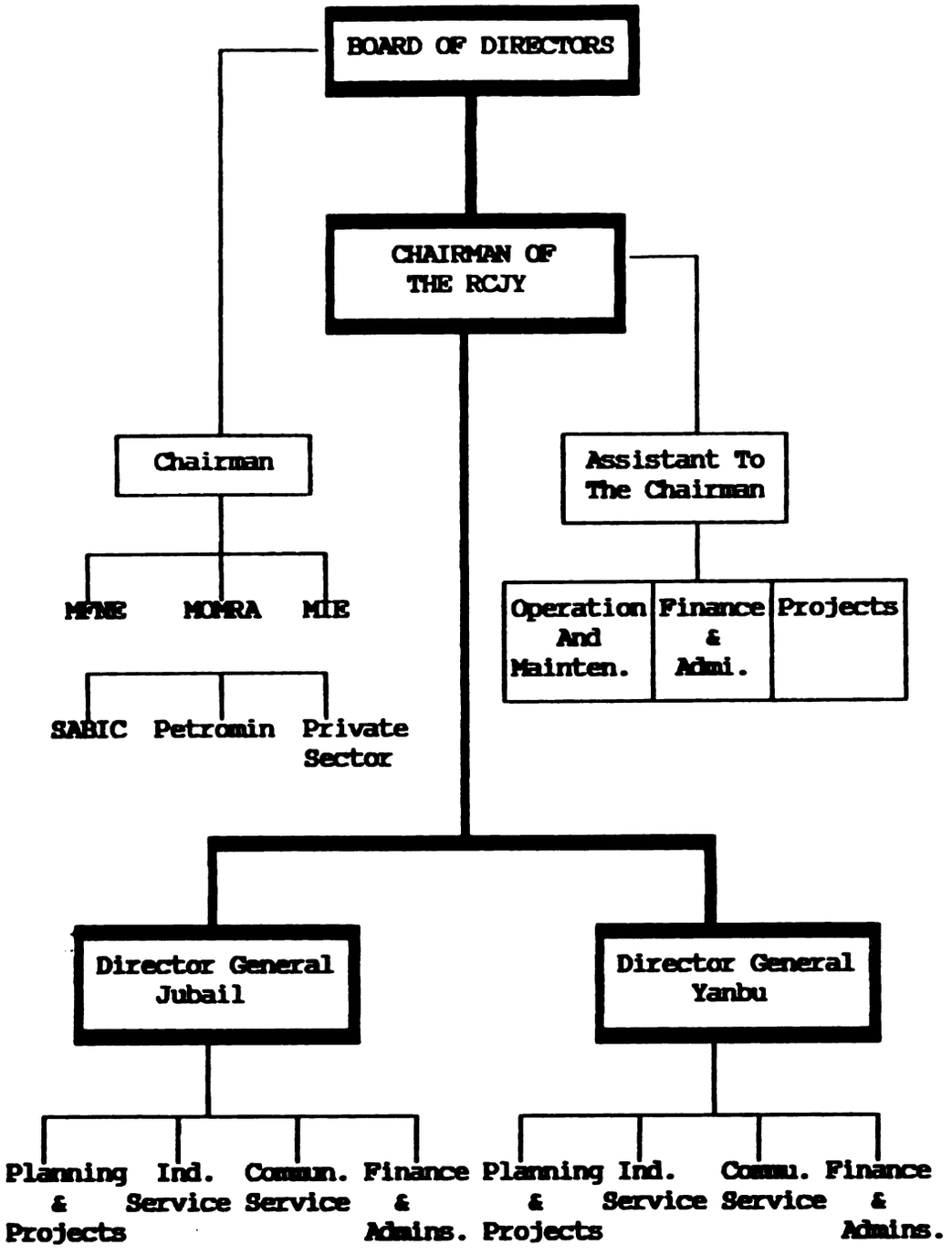

Figure 6.2: The Royal Commission for Jubail And Yanbu: National and regional organization.

Source: The Royal Commission for Jubail and Yanbu, 1991.

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assistants to the chairman, three administrative, technical, and financial officers work as an advisory body to both the chairman and the board. The two directorates, however, are responsible for the "day-to-day development and operation" of the two cities (RCJY, 1991). Thus, the claim of its municipal-like task may be true, especially during the second phase of its activities; the strategic and the spatial dimensions of its development process, however, represent the long-term industrial and regional objectives.

Concerning the regional and urban-related growth process, the two industrial cities are considered to be an integral component for achieving regional balance of growth and as new urban centers that, it is hoped, will grow into industrial growth poles. As new urban centers, they are expected to pave the way for reducing the concentration of industrial activities in the country's major urban centers. In fact, one of the main aspects of the expected economic successes of the two industrial centers is to provide regional balance in the country's development (Johany et al., 1986).

The Third Development Plan, 1980-85, considered Jubail and Yanbu industrial cities a model for those regional development centers established by MOMRA. The Fourth and Fifth Development Plans further emphasized the importance of the two cities in achieving an industrial-related regional balance of growth. Recognizing the imbalance of growth generated by sectoral-based planning, the Fourth Plan gave the industrial cities more weight in achieving a balanced distribution of both regional and urban growth. In this respect, the Plan

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> The completion of basic infrastructure and industrial facilities by SABIC and the Royal Commission at Jubail and Yanbu, and the inauguration of downstream hydrocarbon industries, have further strengthened regional diversification outside the traditional urban centers. (p. 420)

This nature of regional diversification, which is examined in succeeding chapters, has become one of the main features of the Saudi industrialization process, as represented by the Saudi model of industrial development. Although this has been echoed in development plans as the case, the industrial- cities-related regional growth is an expected outcome of the strategic and spatial pattern of industrial locations. Such a locational process was a direct product of external-based economies more than interregional orientation. Emphasizing the overall oil-based development, the backward linkages of Jubail and Yanbu cannot be established without considering the long-established political and market forces in the leading urban centers and the regional bases of industrial production. These basic determinants are specifically reinforced by the nature of the industrial and urban structure in the two industrial cities.

In the remainder of this chapter, both urban and industrial organizations will be established. In the next chapter, this is followed by introducing and examining the social and spatial dimensions of the petrochemical production system developed within these two cities.

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Jubail Industrial City

As introduced in previous sections, Jubail industrial city is located on the coast of the Arabian Gulf in the center of the country's oilfields in the Eastern Province. Within the boundaries of the Eastern Province, Jubail is located in the Central Coastal Region. This region, as shown in Figure 6.3, is among five planning regions of the province. In addition to the province's strategic importance, the location of the largest oil reserves in the world, Jubail is in the mostly populated region in the province. The Central Coastal Region, as shown in Figure 6.4, includes the Dammam/Al-Khobar metropolitan area, which contains almost 60% of the Eastern Province's total population (RCJY, MAJAS: Master Plan Update, 1984). For this region and for the province as a whole, Jubail industrial city has added a new dimension to their industrial and urban growth. However, this growth, according to the city's Master Plan, "is dependent upon world demand for oil, gas, and petrochemicals; national success in producing and marketing these products; and national policies and programs for regional growth" (RCJY, MAJAS: Master Plan, Vol. I, 1984, p. 2-2).

Through a Master Plan, completed and approved in 1975, Jubail industrial city was constructed within a span of 13 years. While the Plan concentrated mainly on building an industrial and urban infrastructure, it also reflected the national planning and industrialization policy goals and objectives. This, according to the Plan, could be accomplished through the industrial city's combined roles of industrialization and urbanization. Concerning the role in industrial development,

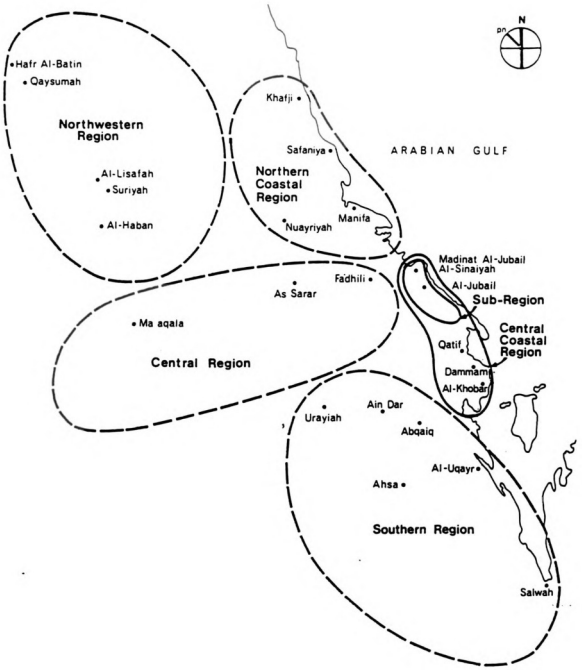
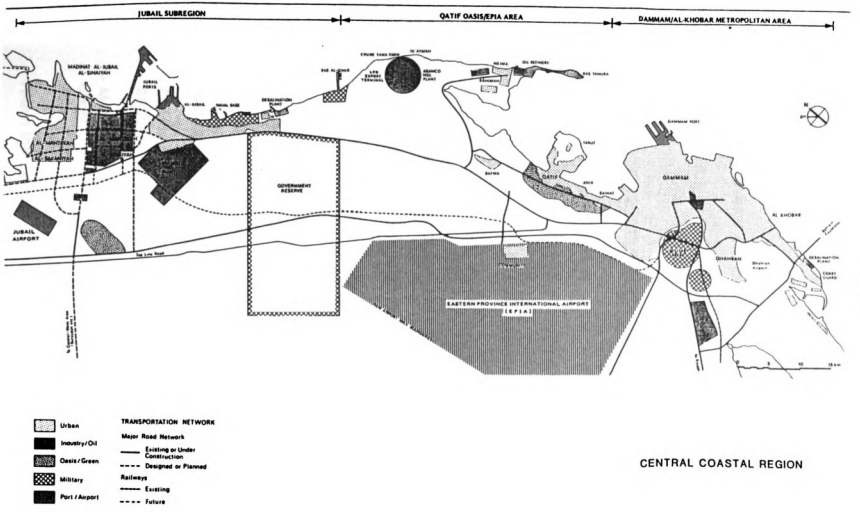


Figure 6.3: Eastern Province: Planning regions.

Source: RCJY, MAJAS: Master Plan Update (1984), Vol.I, Figure 2.1.



CENTRAL COASTAL REGION

Figure 6.4 The Central Coastal Region.

Source: RCJY, MAJAS: Master Plan Update, 1984, Vol. I, Figure 2.2.

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Jubail, where most of the country's basic industries are located, should contribute to the expansion of the industrial process by providing national exports with value-added and finished products. By its nature, Jubail industrial city is an urban setting expected to develop as the result of its location within a populated region and through its effects of pulling employment and businesses from national and foreign sources.

In this regard, both industrial and urban development of Jubail are dependent on industrial investments by the private sector. This role by the private sector, assuming that it will use the basic industries' processed products and become involved in community and commercial development, is an integral component of the country's attempts to build an industrial base. Within the city, for instance, the Royal Commission has undertaken various development actions that will encourage the private sector to invest. These actions are as follows:

- Encourage formation of construction contract packages small enough to give Saudi firms a competitive opportunity.

- Comply with the Kingdom's overall policy to require both prime and subcontractors to purchase products from in-Kingdom suppliers.

- Permanent community housing is to be a private sector opportunity. Private citizens are permitted to buy/lease building sites to construct houses for their use, resale or rent.

- Commercial facilities already constructed by the Royal Commission may be taken over by the private sector.

- Management of most city services is to be handled by the private sector under operations and maintenance concessionary arrangements. (Master Plan Summary, 1984, pp. 1-5, 1-6)

Within the Central Costal Region, Jubail industrial city is located in the

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Jubail subregion, which includes the old town of Jubail and the surrounding settlements. As shown in Figure 6.4, this subregion occupies almost one-third of the Central Costal Region. The industrial city comprises two main areas, namely the industrial and residential area, a buffer zone, support facilities, and the Seaportand Airport areas. This city division is shown in Figure 6.5 as it was presented in the city's Master Plan.

Besides the two main areas, the most important feature in Jubail is King Fahad Seaport, which was built to accommodate the exporting of oil and industrial products processed in the city's industrial plants, as well as the importing of needed raw materials. The buffer zone is located between the industrial and community areas. It is the site for the administrative, technical, and training centers, which include the Royal Commission office building and the Jubail Industrial College (a technical institution for manpower training). The two main areas of Jubail, the industrial and the residential complexes, are the most "intensively developed" area, occupying about 27% of the total land used for the entire city project (RCJY, MAJAS: Master Plan Update, 1983).

The Urban Community

Developed as the site of the national basic industrialization process, Jubail industrial city is also an urban setting planned and designed as a modern twentieth-century city. The Jubail community's urban structure includes residential, administrative, and service facilities. These areas were designed in a form that represents an urban model that is foreseen to be the basis for future Saudi Arabian cities. Indeed, the Jubail industrial city as a whole is viewed as a model

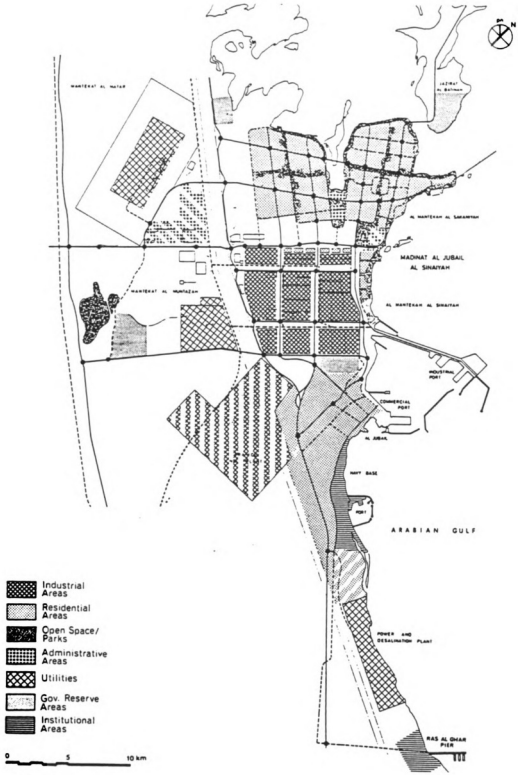

Figure 6.5: Jubail subregion: Land use.

Source: RCJY, MAJAS: Master Plan Update (1984), Vol. 1, Figure 2.3.

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The Jubail industrial city's community can be divided into three main areas: the residential, administrative, and service industry areas. The residential area is divided into districts, sectors, and neighborhoods. This community hierarchy, according to the Master Plan, was designed to reflect the distribution of services and facilities needed daily, weekly or/and occasionally. This urban structure was summarized in the city's Master Plan as follows:

> Within Al-Mantekah Al-Sakaniyah [The Residential Area] the planning area has been divided into a number of parts or geographic entities in order to provide physically distinct units and a recognizable system of subunits. These divisions are designed to take into account the congruence of community-wide services and facilities such as government uses, corporate offices, and major cultural facilities. Subunits are areas of homogeneous land use with facilities and services harmoniously designed and conveniently located to serve the population in various parts of the community. (RCJY, MAJAS: Master Plan Update, 1983, p. 71)

The residential area houses the industrial, administrative, and private establishments' employees and their dependents. The city's Plan forecasted a target population of 280,000 by the year 2010 living within the industrial city (RCJY, 1991). To achieve this goal, the Plan introduced patterns of change in the city's population according to the progress of the city's development over time.

Table 6.3 shows three expected major patterns of change in the employment structure. These patterns are related to the industrial, service, and construction sectors. The industrial sector was projected to experience a progressive increase as soon as the construction required for operation was in place. As a result, industrial employment was also expected to increase from 8,000 in 1984 to

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53,000 in the year 2010. The service sector, which develops as the result of the rise in industrial employment, was projected to exceed the industrial sector by reaching 54,000 in 2010. Finally, the Plan predicted, after the completion of the basic infrastructure, a sharp decline in the construction workforce from 31,000 during the peak period to only 2,000 by the year 2010.

Table 6.3: Employment forecast by sector in Jubail industrial city (in thousands)

Employment Components	1984	1985	1990	1995	2000	2005	2010
Operations							
Industry[a]	8	12	21	35	48	50	53
Coastline Development[b]	-	-	-	1	3	3	3
Infrastructure[c]	3	3	4	5	6	6	6
Service[d]	7	11	15	22	34	42	54
Construction[e]	31	28	21	16	4	4	2
Total	**49**	**54**	**61**	**79**	**95**	**105**	**118**

Source: RCJY, MAJAS: Master Plan Update (1984), Vol. I, Table 2-12, pp. 2-45.

[a]Includes primary, secondary and support industries.

[b]Consists of potential off-shore drilling operations located along the coastline between the commercial and industrial ports.

[c]Includes transportation, utilities, communication and port.

[d]Includes all services excluding infrastructure.

[e]Includes industrial and nonindustrial construction.

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The industrial city's population is also expected to increase gradually, coinciding with the progress in industrial and service employment. It has been projected that the city's population will increase from 43,000 in 1985, 79,000 by 1990, 180,000 in the year 2000, to the targeted 280,000 by the year 2010.

Whether the above-projected employment and population estimates will be met depends on the future industrial growth in the Jubail subregion, the Eastern Province, and the country as a whole. Up until 1992, the Royal Commission's reports indicated continuing population and employment growth. In the same year, the city's daytime total population was estimated at 67,000, of whom 48,000 were on-site population and the remaining 19,000 were off-site employees. The on-site population represents both employees and their dependents; the former account for 43% of the total.

With regard to employment, the same trend of a expected gradual increase has been witnessed. According to the RCJY (1992), the decline in employment after the completion of the city's structure was recovered as industrial and service employment increased. In 1992, the number of Jubail industrial city's employees was estimated at 40,000, almost half of whom lived outside the industrial city. About 35% of both the on- and off-site employees are Saudi nationals. Further, the composition of employment by sectors was almost as predicted concerning the increase and decline in certain sectors.

The preceding employment estimate is broken down by industrial and nonindustrial categories in Table 6.4. As shown in the table, the expected

employment after the construction peak will be dominated by the industrial and service sectors. Within the industrial sector, the primary industries, including both SABIC and Petromin projects, accounted for almost 40% of total employment. They were followed by support and light industry at 17.5%. The service sector, on the other hand, came in second after the primary industry if the government and the Royal Commission sectors are considered within the service category.

Table 6.4: On-site total employment by sector in Jubail industrial city (1992).

Sector Category	On-Site Total	% of Saudis
Royal Commission	2,016	74.4
Service	4,090	10.5
Government	7,811	72.6
Primary Industry	15,683	32.2
Secondary Industry	204	1.5
Support & Light Industry	6,971	7.3
Others[a]	2,994	16.1
Total	**39,769**	**34.3**

Source: RCJY (1992).

[a]Includes college students, construction workers, concession workers, engineers, and other contractors.

The Industrial Area

Jubail city's industrial area consists primarily of three industrial parks: primary, secondary, and support and light industry. These industrial parks

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represent the city's interrelated model of the industrial process. The organization of industrial production in the Jubail industrial city and its interlinked process are the focus of the next part of this chapter. Here, however, the industrial area, as a part of the city's urban structure, is introduced in the light of the spatial division of industries within the city and its role as a strategic national vehicle toward industrialization.

As an integral part of the national industrialization process, there are three government agencies responsible for the operation and maintenance of the three industrial parks. These agencies are the Royal Commission, SABIC, and Petromin. In Jubail industrial city, as well as Yanbu, the Royal Commission plays the role of both urban and industrial development organization. Being an urban setting, the industrial city is managed by the Commission in providing the municipal services and industrial facilities required by all industrial parks. This role is most obvious within primary and secondary industry. The Royal Commission is directly involved in the industrial development of the support and light industry park. The RCJY is responsible for encouraging industrial investments in this park, mostly by local and foreign private investors. Emphasizing the nature of this park manufacturing process, the RCJY's role represents a mixture of both industrial and urban development. Being a part of the industrial structure within the city, the light and support industries are mainly involved in the maintenance and service process. Therefore, the need for these industries is a product of the city's increasing demands for services. Accordingly, the city's Master Plan outlined the

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Royal Commission's involvement in the light and support industry park as follows:

> It is recommended that the Royal Commission, continue to monitor and promote all business development activities, make lot selections and allocations, and is the major contact for all prospective leases until signing the lease. The Royal Commission should continue to establish criteria, standards, and policies for the operation of the park as well as regulations for such items as architectural control, environmental consideration and building construction. The Royal Commission should continue to develop lease terms and conditions for support industries and concessionaires. (RCJY, MAJAS: Master Plan Update, Vol. I, 1984, p. 3-14)

The above industrial and urban role of the RCJY revealed an integral factor in the development of the industrial city and the expansion of the manufacturing base, in which the primary industry is considered the source of this process. Indeed, it represents one of the main goals of the Saudi industrialization model, namely the industrial city as a growth pole for achieving regional balance of growth. These urban and regional dimensions of the Saudi industrial-city model are expected to be established as the product of the structural and operational nature of the three industrial parks.

The Primary Industry

According to the Secondary Industries Technical Committee (SITC),

> Primary industries are those which will provide the initial steps to convert the Kingdom's natural resources, such as oil, natural gas, natural gas liquids and minerals, together with certain required import, to basic products. These products will be utilized by Secondary Industries for further in-Kingdom conversion to products for domestic consumption and/or for export. Generally the Primary Industries will be characterized by their relatively large demands for land and infrastructure. (RCJY, MAJAS: Master Plan Update, Vol. III, 1984, p. 1-1)

Jubail industrial city's primary park consists of basic oil-refining and

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hydrocarbon-based industries, such as petrochemicals and fertilizers, and other mineral projects. Throughout the building of the city's infrastructure, the primary industry park has been developed in three progressive phases. The first was in 1983, when only three industries were operational. In 1987, the second phase was completed, and the number of industries rose to 13. During the current phase, there are 16 primary industries representing the country's basic industrial development. Although there are no known plans for new industries in this park, most of these primary projects are expected to expand their operations to include new products and/or to increase production capacity. In fact, some of these industries have started expanding their operations since 1991.

Being strategically oriented industrial processes, primary industrial operations are the responsibility of two state-owned corporations, namely SABIC and Petromin. The latter, Petromin, has been a state oil company in charge of most of oil- and mineral-related commercial and industrial activities since its establishment in 1962 (Johany et al., 1986). SABIC, on the other hand, was established in 1976 to be entirely responsible for operating and marketing the basic industries within the two industrial cities. Whereas Petromin is responsible for oil-refining operations, SABIC is charged with operating and managing the remaining primary industries, mainly the petrochemical, fertilizer, and metallurgical industries. As shown in Table 6.5, SABIC handles the operation of 13 primary industries, within which there are six petrochemical plants, three fertilizer and two methanol facilities, a steel mill, and industrial gas facilities.

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BPD : Barrels
TPY : Tons Pe

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Table 6.5: Jubail industrial city: Primary industries.

COMPANY	PRESENT AND SCHEDULED CAPACITY	MAJOR PRODUCTS
SABIC		
SAUDI IRON AND STEEL CO. (HADEED)	1,400,000 TPY 2,000,000*	Steel billets, sponge iron, reinforcing rods, wire coils (future: cold rolled sheet)
SAUDI METHANOL CO. (AR RAZI)	640,000 TPY 1,200,000*	Methanol (chemical grade)
AL-JUBAIL FERTILIZER CO. (SAMAD)	600,000 TPY	Ammonia, urea
SAUDI PETROCHEMICAL CO. (SADAF)	2,430,000 TPY	Caustic soda, industrial grade ethanol, ethylene dichloride. styrene, ethylene
AL-JUBAIL PETROCHEMICAL CO. (KEMYA)	390,000 TPY	Linear low and high-density polyethelene
NATIONAL METHANOL CO. (IBN SINA)	700,000 TPY 1,470,000*	Methanol (future: vinyl acetate, acetic acid, MTBE)
NATIONAL INDUSTRIAL GASES CO. (GAS)	657,000 TPY 1,314,000*	Oxygen and nitrogen
ARABIAN PETROCHEMICAL CO. (PETROKEMYA)	800,000 TPY 1,770,000*	Ethylene, polystyrene, butene-l (future: propylene, butadiene, benzene)
EASTERN PETROCHEMICAL CO. (SHARQ)	636,600 TPY 945,000*	Ethylene glycol, linear low-density polyethylene
NATIONAL PLASTIC CC). (IBN HAYYAN)	500,000 TPY 600,000*	Vinyl chloride monomer (VCM), polyvinyl chloride (PVC)
National CHEMICAL FERTILIZER CO. (IBN AL BAYTAR)	1,810,000 TPY	Anhydrous ammonia, granulated urea, compound fertilizers
SAUDI EUROPEAN PETROCHEMICAL CO. (IBN ZAHR)	500,000 TPY 1,400,000*	Methyl tertiary butyl ether (MTBE) (future: polypropylene)
SAUDI ARABIAN FERTILIZER CO. (SAFCO)**	1,100,000 TPY	Ammonia, granular urea
PETROMIN/SAMAREC		
SULFUR PRILLING AND EXPORT Aramco built and operated for Petromin	1,500,000 TPY	Prilled sulfur
PETROMIN SHELL REFINERY CO. (PSRC/SAMAREC)	250,000 BPD	Fuel oil, naphtha, kerosene, gas oil, diesel, liquefied petroleum gas (LPG), benzene
PETROMIN LUBRICATING OIL COMPANY (PETROLUBE)	1,000 BPD	Range of lube oils, transformer oils, greases

ABBREVIATIONS:
BPD - Barrels Per Day
TPY - Tons Per Day

*Figures are planned expansions
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Source: RCJY (1991).

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Two other secondary agencies involved in the primary industries' operations are Saudi Aramco and again the Royal Commission. Implementing the gas-gathering and gas-treating programs in the Eastern Province, Aramco is responsible for facilitating the flow of feedstocks to the industrial plants. The RCJY, according to the city's Master Plan, "will not own, construct or operate any industries" (RCJY, MAJAS: Master Plan Update, Vol. III, p. 2-1). However, it is involved in the training programs that were considered an integral part of the industrialization process. This consists of ensuring that all industrial projects are supplied with workers with the necessary technical and managerial skills. Also, the RCJY "is working closely with both [SABIC and Petromin] to ensure an integrated infrastructure development" (RCJY, 1986).

The Secondary Industry

Using the primary industrial products, the secondary industrial process represents the main approach toward building the horizontal structure of the country's industry (see Figure 6.6). According to the SITC,

> The Secondary [or Downstream] Industries to be considered for location at Jubail and Yanbu shall be those which will utilize as their principal feedstocks, the outputs of existing or future Primary Industries, or Kingdom hydrocarbon and mineral resources to produce intermediate or finished products. (RCJY, MAJAS: Master Plan Update, 1984, Vol. I, p. 3-10)

As the national industrial strategy hinged on the primary industry's providing the basic structure for the country's industrial development, the secondary industries represent the actual diversifying process intended to achieve the

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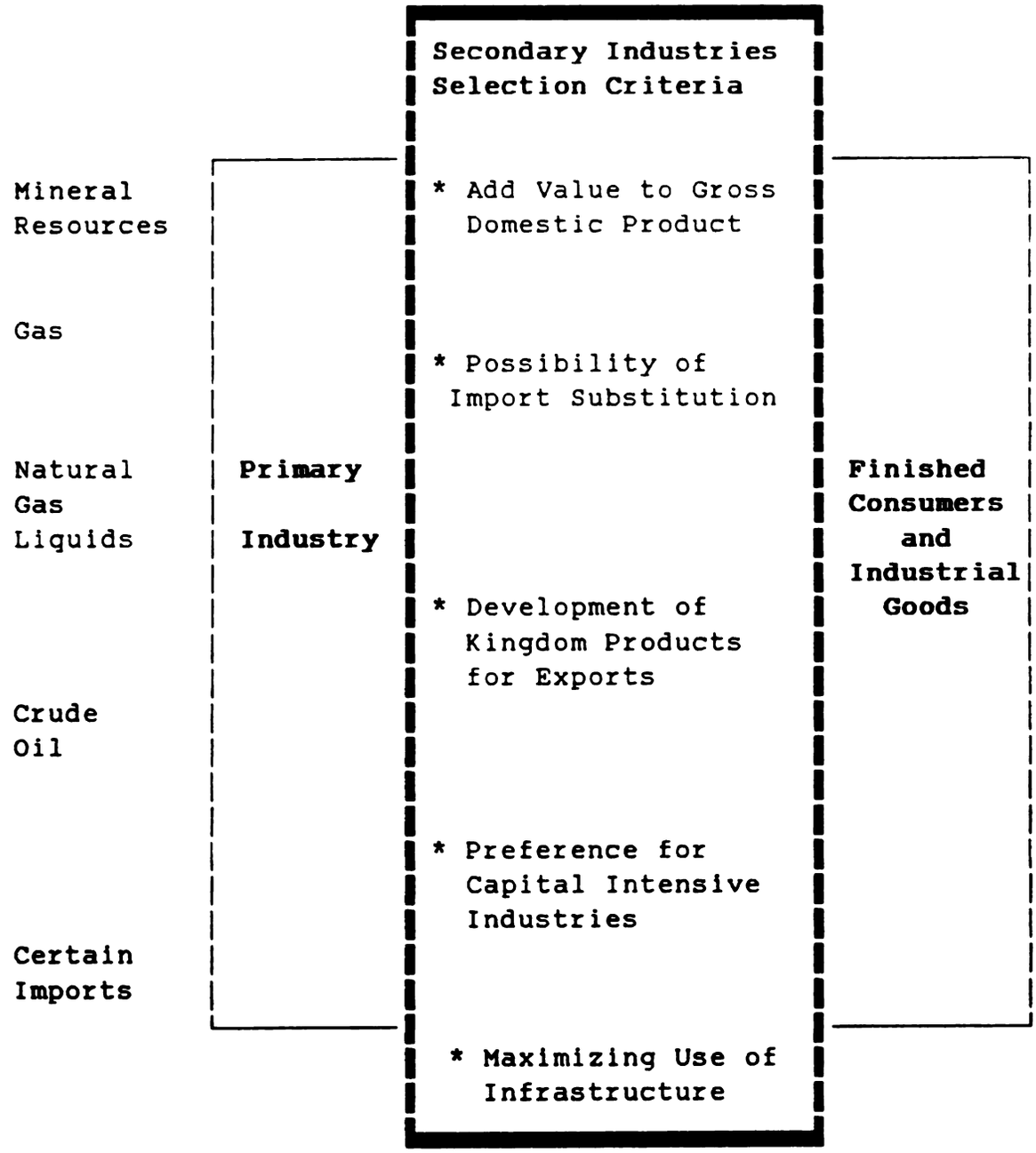

Figure 6.6: The secondary industries definition.

Source: RCJY, MAJAS: Master Plan Update (1984), Vol. IV, Figure 3-1.

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economic objectives laid down in the previous four development plans. In this respect, the nature of the secondary industries, proposed to be established in Jubail and Yanbu industrial cities, must be consistent with the national basic industrialization process. This policy was emphasized in the two cities' secondary industries criteria. These secondary-related national objectives are:

1. Support for free enterprise, subject to the interest of the community as a whole.

2. Continuing and balanced economic growth by development of the country's resources, increasing the income from oil over the long term and by conserving depletable resources.

3. Reduction of dependence on production and sale of crude oil as the primary source of national income.

4. Completion of the basic infrastructure essential for the attainment of these goals. (RCJY, MAJAS: Master Plan Update, 1984, Vol. IV, p. 3-1)

Whereas the fourth objective pertains to the Royal Commission's building of the industrial cities, the preceding three are national in nature, reflecting the diversification process hoped to be established in these industries. This process was drawn on the secondary industry's basic criteria, which emphasize that these industries should:

1. Use available Kingdom resources.

2. Provide import substitution.

3. Develop Kingdom products for exports.

4. Expand Kingdom industrial base.

5. Be capital intensive rather than labor intensive.

6. Have feedstock relationship with primary industries.

7. Efficiently utilize industrial land.

8. Maximize use of infrastructure. (RCJY, MAJAS: Master Plan Update, Vol. I, pp. 2-21)

As can be seen from the preceding figure and the industry's basic features, secondary industry is considered an intermediate sector linking basic industry with the rise of the import-substitution sector. According to the Jubail Master Plan, the secondary-industry criteria also reflect a selection of industries falling within the national oil-based industrialization strategy, especially when candidates for secondary industries are encouraged to be energy- and capital-intensive projects. The Jubail Master Plan Update (1984) included among those industries steel, copper, aluminum, petrochemical, plastic, agriculture, and miscellaneous products.

Further, secondary industries, unlike primary industries, are the direct responsibility of the private sector, with assistance and guidance from some related government agencies. These agencies include the Royal Commission, SABIC, the Ministry of Industry and Electricity (MIE), and the Saudi Industrial Development Fund (SIDF). Whereas the latter two agencies provide both licenses and loans to the private sector, the former government organizations are in charge of infrastructure, maintenance, and raw materials. Although there was no indication of the expected number of secondary industries in Jubail city, there are only four existing operational industries in the city, according to the RCJY's 1992 report. A number of downstream industries that are under design or in the planning process are expected to be operational by 1993 and beyond. According

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to the RCJY's Investment Promotion Department's 1992 Report, four secondary industrial projects are being designed and seven others are in the planning stages.

The expected development and expansion of this industry is, as stated in the national basic industrial policy, is the direct role of the private sector through the RCJY's promotional programs. This task has two, although conflicting, elements. The first is strategic, in the sense that the secondary industrial process is perceived to use the basic products and convert them into value-added products used by the domestic manufacturing sector to produce final products. Such production linkages, on which the building of the national industrial base is highly dependent, are the primary goal of the Saudi industrial policy. The other element of secondary development is its capital-intensive nature, which the private sector alone may be reluctant to carry out due to the risks surrounding the nature of its market on both the domestic and world levels.

Regardless, the Saudi government, throughout its development plans, continues to encourage more involvement by the private sector in all nonbasic industries in the two cities by providing various financial and technical incentives. Because of its strategic implications, such a policy will give priorities in government subsidies to investments in secondary chemicals and other related manufacturing sectors. Some writers have argued that this approach will have interregional ramifications and lead to spatial concentration of industrial growth within the growth-pole areas (Al-Hathloul, 1991). Hence, the expected regional and urban role of the two industrial cities will be questioned, especially if one also considers

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Support and Light Industry

The third industrial park within Jubail industrial city consists of two industries, namely the support and light manufacturing industries. The initial stage of the support industry accompanied the construction of the industrial city, especially that of the primary industry. The support industries are privately owned and mainly "provide construction materials and repair, maintenance, sales and other services in support of the Primary and Secondary industries and Al-Mantaekah Al-Sakaniyah [The Community Area] during both construction and operating phases" (RCJY, MAJAS: Master Plan Summary, 1984, p. 5-1). According to the RCJY, by the end of 1992, 67 Support and Light industries were in operation, 16 others were under construction, 8 industries were in the planning and design stage, and 7 industrial projects were proposed to be planned in the future (RCJY, 1992, p. 9).

The light industries located in Jubail industrial city, as well as in Yanbu, as defined by the SITC,

> shall be those which will utilize, as their principal feedstocks, the products of existing or future Kingdom Primary and/or Secondary Industries, to produce finished goods for use in construction of industrial plants, community requirements and/or export. They are usually characterized as having relatively low demands for land and utilities. (RCJY, MAJAS: Master Plan Update, 1984, Vol. I, p. 3-13)

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The nature of light industries is similar to that of support industrial projects in the sense of taking into consideration the national industrial-related objectives. These objectives are related to adding value to the country's basic products, capital-intensive preferability, and involvement in the import-substituting industrial process. Although private investors, licensed through the MIE, are the prime participants in the manufacturing process, the Royal Commission, in addition to assigning industrial lots and providing services and utilities, is actively involved in the promotion of investments in support and light manufacturing.

This role adopted by the Commission is actually the beginning of the gradual withdrawal of its commitment within both industrial cities and the takeover by the private sector. It is in accordance with the overall national industrial policy and the state commitment to free market enterprise. Because this takeover by the private sector has not yet been achieved, the Commission, as part of its continuing management of the twin cities, is still the prime participant in determining the guidelines for the nature of private-sector investments to be located within the cities' boundaries. According to the Royal Commission's Secretary General, Prince Abdullah (quoted in Kelly, 1986), private investments in the two industrial cities include "anything the private sector wants and is feasible. We prefer it if an industry can use the existing raw materials available. We do not want industries relying entirely on imported materials."

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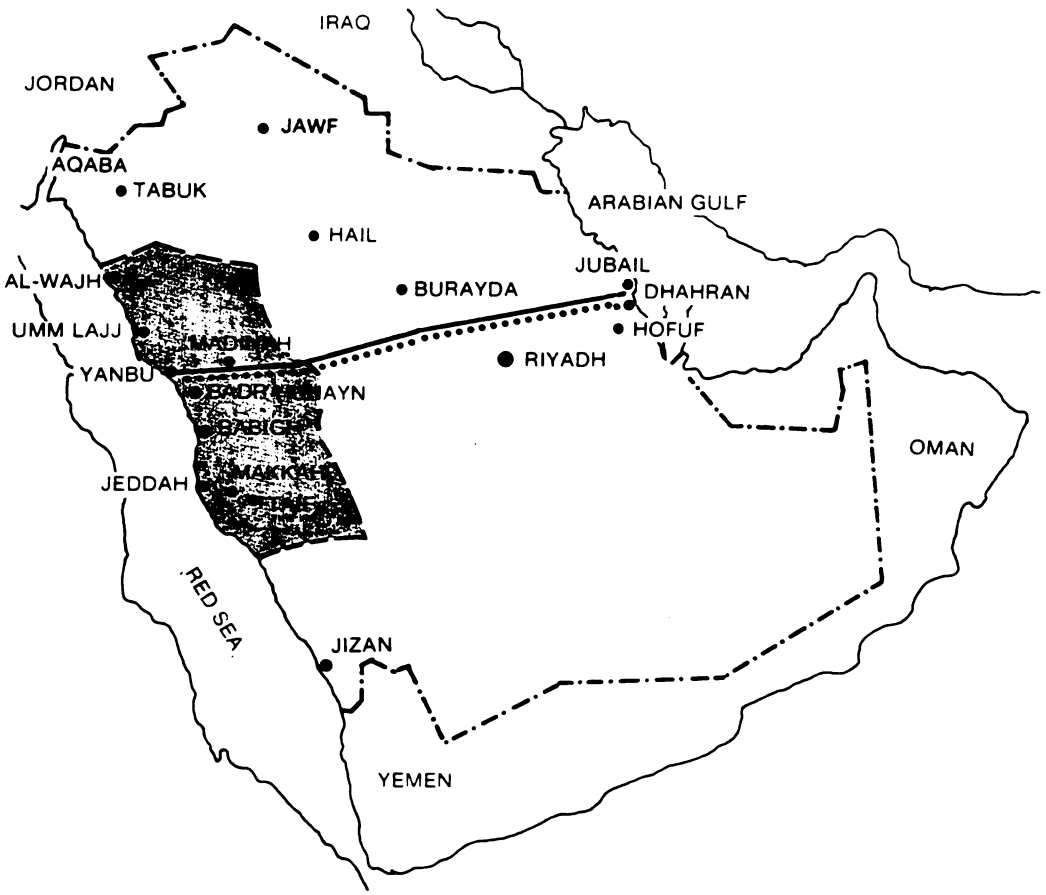
Yanbu Industrial City

In 1977, two years after the initial stage of building Jubail city, Yanbu industrial city's Master Plan was approved, and the development of the second largest industrial city in Saudi Arabia was begun. Yanbu is located in the Western Region of Saudi Arabia, on the coast of the Red Sea. Because it is located far from the required basic raw materials, Yanbu industrial city was linked with the oilfields in the Eastern Province through two pipelines transferring both natural gas and crude oil (see Map 6.2). Such a decision was based on two distinct locational factors. The first is that the new industrial city at Yanbu, being located on the Red Sea, would provide new access to the world market for both oil and industrial exports. The new city port, according to Humble (1990), "would provide the Kingdom with a new strategic outlet on the Red Sea shipping lanes through which could be funnelled much of the Kingdom's seaborne trade with the world" (p. 12). Second, this new city's location in the Western Region of the country is a regionally based industrial and urban center, stimulating growth in the city's subregion and in the Western region as a whole.

McMinn et al. (1983) acknowledged both the strategic goals and regional-related growth of Yanbu industrial city's location. Therefore, they stated:

> Oil-related growth has long been concentrated around the east coast oilfields. However, the construction, in the late 1970s, of parallel crude oil and natural gas pipelines from the eastern oilfields to the Red Sea coast marked a decision to widen the range of oil exporting locations. This was aimed at exploiting the transportation advantages of the west coast's relative nearness to European markets, at providing alternative oil exporting facilities to the Arabian Gulf ports and to channel oil-related growth so as to reduce regional economic disparities. (p. 313)



Map 6.1 The Eastern-Western crude oil and gas pipelines.

Source: RCJY, MYAS: Master Plan (1987), Vol. I, Figure 1.

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Particular to Yanbu industrial city, the national and regional goals had been stressed throughout the previous four development plans. As evidenced in Jubail's related national objectives, the planning and development of Yanbu reflect the national strategy to diversify the economy through a basic industrialization process. Although this strategic goal was the predetermined factor in building both cities, there are specific regional and urban implications pertaining to Yanbu industrial city. These regional effects were to be expected as the result of industrial-related processes during the construction and operational phases. During the construction development phase, Yanbu industrial city induced a short-term growth described as significant, especially through the effects of the rising service and support industries on the immediate areas in the city's subregion (McMinn et al., 1983). The long-term effect of Yanbu industrial city, however, will dependent mostly on the forward and backward linkages of the industrialization taking place within the city. This, in turn, will lead to expansion of the city's urbanization process as future industrial investments within and around the Yanbu area materialize. For Yanbu, these long-term effects can be evaluated by examining the general trends and process of the city's industrial and community development over the past decade and a half. This should provide the basic aspects for evaluating Yanbu's interregional implications in later chapters, particularly in terms of its spatial organization of production and possible interlinkages with the western regional industrial sector.

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boundaries, namely the Yanbu subregion, the Amarah boundary, and the Western region level. As shown in Map 6.3, Yanbu subregion is located in the Northern part of the Western region, which includes Madinat Yanbu Al-Sinaiyah (The Industrial City of Yanbu-MYAS), the two old towns of Yanbu Al-Bahr (the port city of Yanbu), and Yanbu Al-Nakhl (an old city adjacent to MYAS) and the surrounding villages. It covers an area of 7,500 square kilometers. The MYAS subregion is located within the Amarah boundaries of Madinah (the second holy city and the second Amarah in the Western region after Makkah). The Madinah Amarah occupies the northern half of the Western Region, whereas the southern part is the location of the Makkah Amarah, where Jeddah is located. MYAS is located 350 kilometers northwest of Jeddah.

As a new city, MYAS is expected to have immediate social and economic effects on its subregion (McMinn et al., 1983; MYAS Master Plan, 1987). In the MYAS Master Plan: Planning Framework, Vol. 1 (1987), the subregion of MYAS and the expected effects were defined as follows:

> A "Subregion" is defined as a geographical area within which activities undertaken within one part will have an impact upon other parts. "Region" is further defined as an area with short and long term common interests. The construction program in MYAS will have an impact on Yanbu Al-Bahr, for example: diversion of a highway in Yanbu Al-Bahr will have an impact on MYAS; both would have impact upon areas in proximity. Impacts may be physical, economic, social or more likely, some combination of the above. (p. 7)

The preceding geographical implications are the expected outcome of the new industrial and urban structures established within the Yanbu industrial city. Like Jubail industrial city, MYAS is divided into two areas, namely the industrial

Map 6.2: Th

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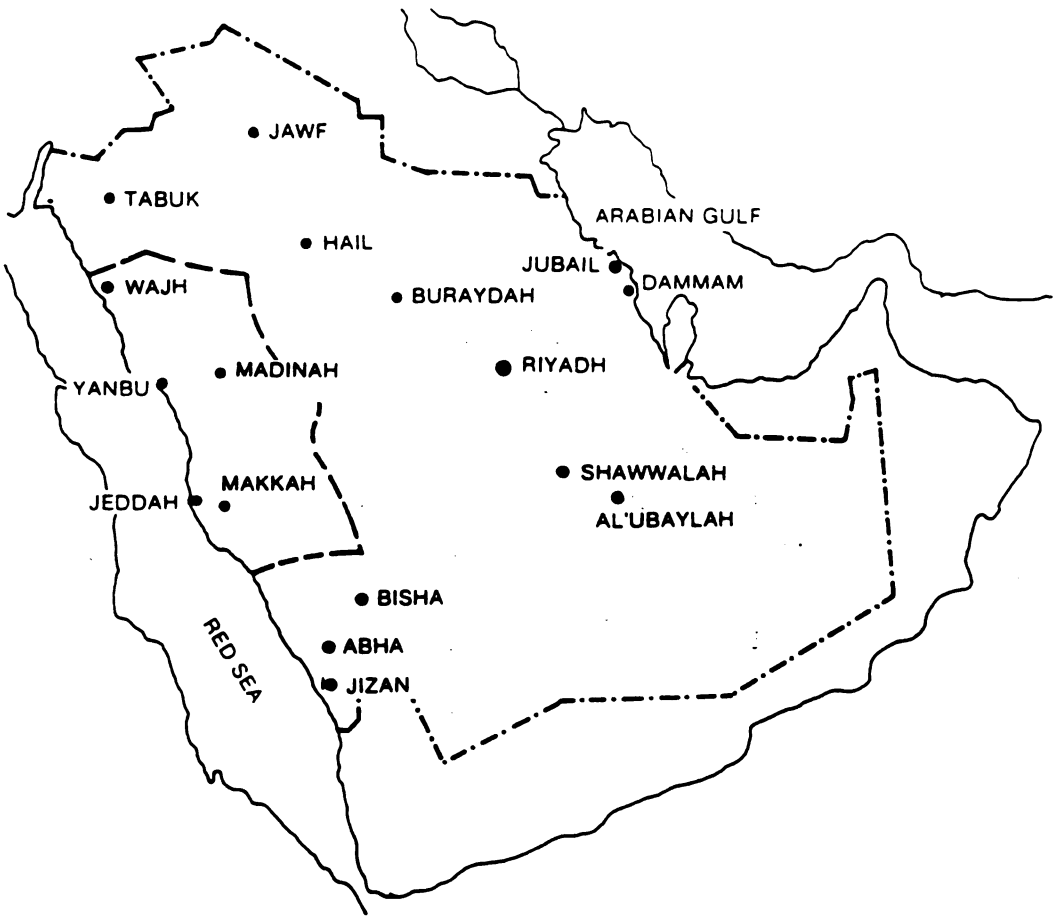

Map 6.2: The MYAS subregion, Amarah and regional boundaries.

Source: RCJY, MYAS: Master Plan, Executive Summary (1987), Figure 3.

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and residential areas. Two main differences between the two industrial cities can be identified within the structures of the urban and industrial areas. With regard to the urban structure of both cities, Yanbu city's community is developed around a city center and built in a "linear configuration" along the Red Sea coast. Jubail, on the other hand, is built in a "nucleated" form, which, according to Al-Hathloul et al. (1992), can "avoid congestion and high land values since [the] anticipated population is expected to reach 280,000 by the year 2010" (p. 18). For MYAS, the linear form was chosen to use the "vast coastal plains." Also, the expected population of MYAS is only 100,000, which will be reached by the year 2006 (RCJY, MYAS: Master Plan, Executive Summary, 1987).

The second difference between the two cities is related to the structure of industrial park. Because MYAS has become the country's other oil-exporting route, within its industrial complex are located ***Marine Terminals***, which are used for exporting oil, natural gas, and industrial products. This industrial feature is intended to give Yanbu's regions advantages similar to those of the oil-related development that took place in the Eastern Province after the discovery of oil.

Although the above differences are merely structural components of the overall oil-based industrial process, the industrial-city models represented in these twin cities are virtually the same. In the case of MYAS, the urban structure was designed as a hierarchy of districts, centers, and neighborhoods. Commercial and service facilities are distributed in the same hierarchical fashion; each is designed to meet daily, weekly, and occasional needs. A City Center also was designed to

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serve the whole MYAS area. This center is "the location of the community's most important religious, civic, cultural and commercial facilities" (RCJY, MYAS: Master Plan, Executive Summary, 1987, p. 42). Further, the community includes a buffer zone between the industrial and residential areas; the private sector's development area (designed for the private sector's residential and commercial development); government agencies and security facilities; the Royal Commission's Institute for Human Resources Development; and other community-related facilities and services.

According to the MYAS Master Plan (1977), the number of workers employed within the city and their dependents is expected to reach 151,000 by the year 2006. This estimate was changed to 100,000 in the 1987 amended version of the Master Plan. Such revisions were made as a result of changes in the city's progressive and development trends. With regard to the current employment and population size, the MYAS 1991 Census estimated a total population of almost 40,000. This total includes both the within- and outside-MYAS population; the latter accounts for 28.1% of the total. Also, workers comprise 45.5% of the total; the remainder are mainly employees' dependents.

In Tables 6.6, 6.7, and 6.8, the MYAS population composition is introduced according to ethnicity (Saudis versus non-Saudis), economic sector, and location. Although numerous aspects are considered in these tables, two of them are relatively important. The first, similar to what occurred in Jubail, is the decline in population after the peak construction period. As shown in Table 6.6 (see also

Table 6.6: Population size by ethnicity and location.

Population Composition	1982	1986	1991
Total	38,828	22,856	39,808
Saudis	8.3%	41.6%	60.8%
Non-Saudis	91.7%	58.4%	39.2%
On-Site	80.1%	71.9%	66.5%
Off-Site	19.9%	28.1%	33.5%

Source: MYAS (1992).

Table 6.7: Employment size and ethnicity.

Year	1982	1986	1991
Total	35,047	14,854	18,296
Saudis	5.3%	24.2%	36.3%
Non-Saudis	94.7%	75.8%	63.7%

Source: MYAS (1992).

Table 6.8: Employment by economic sector and their ethnic composition: 1991.

Economic Sectors	No. of Employ.	Share %	Share of Saudis	Share of Non-Saudis
Industry	7,586	41.5	44.0	56.0
Service	7,242	39.5	44.0	56.0
Construction & Maintenance	3,468	19.0	3.8	96.2
Total	18,296	100.0		

Source: MYAS (1992).

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Appendix A.2-a), the MYAS population decreased from 38,828 in 1982 to 22,856 in 1986. In 1991, however, the city's population returned to its original size. Such changes in population also indicate other trends related to the increase in the Saudi residents. During the construction phase, which involved mostly foreign expatriates, the Saudi population accounted for only 8.3% in 1982. In 1991, this figure jumped to 60.8%. However, the above increase in the Saudi population is supported by the large size of Saudi dependents. This can be seen by examining Table 6.7, which shows that Saudis comprised only 36.3% of the workforce in 1991. With regard to the share of Saudi employment, a progressive increase is apparent when comparing the figures for 1991 to those for previous years.

The second aspect concerns MYAS employment when distributed according to economic sector. In Table 6.8, economic categories are divided into three main sectors, namely industry, service, and maintenance and construction. The low share of the last sector's employment can be attributed to the declining construction requirements as the city's infrastructure was already in place. The first two sectors, however, were dominant in the sense that they formed the nature of the industrial city's postconstruction operational and service industries. Within those two sectors, two employment-related elements can be identified. Within the industrial sector, the primary and secondary industries accounted for the highest share of MYAS total employment, 28.4%, followed by municipal services provided mainly by the Royal Commission at 17.7% (see Appendix A.3-b,c,d). The other element is related to the composition of the Saudi workforce. Although Saudi

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workers still constitute a very small share of the construction and maintenance sector, 3.8%, they are mostly concentrated in the industrial and service industries. In fact, they constitute 44% of the total workforce in each of these two sectors.

The above comparison of the Saudi and non-Saudi workforce within MYAS pertains to a long-emphasized goal in the national economic planning, referred to as "Saudization." Again, it is a part of the national political economy of industrialization. In the case of the twin industrial cities, however, Saudization is an integral objective in the Saudi state joint-venture approach where Saudi nationals are to be trained in technical and professional areas as a part of the localization of industrial production (Masood, 1989). For the MYAS industrial complex, the population and employment size and their development trends over the past 15 years are part of this nature of the localization of industrial process.

The industrial area in MYAS, which is similar to that of Jubail except that it has fewer industries, is structured in a three-layer form that reflects an interrelated production process among layers and within each layer. The nature of these layers of industrial production is discussed in the next chapter. Here, however, the size and planning of these industries within MYAS are introduced as part of the nature of the Saudi industrial-city model.

According to the MYAS Industrial Master Plan (IMP), the National Industrial Development Plan defined four scenarios of industrial development that will take place within Yanbu industrial city. Referred to as "layers of development" because they reflect both industrial and employment development, "each layer adds

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secondary industries and manpower to the preceding layer" (RCJY, MYAS: Master Plan, Executive Summary, 1987, p. 10). The first layer that exists in MYAS constitutes five operational primary industries and five operational and other planned secondary industries. Of the five primary industries only one is a petrochemical industry. The second, albeit future, layer comprises petrochemical-related production and refineries expansion. With regard to petrochemical development, a future development will be to introduce liquified feedstock instead of the existing natural gases, namely methane and ethane. The third layer of development consists of expansion of the previous layer through the development of liquid feedstocks to be used in the downstream industrial process and the light manufacturing industries. Finally, the fourth layer will consist of a new form of industrial process within MYAS. It will include "mineral and metal industries" such as aluminum, steel, copper, and other related industries. The last three layers of industrial development are expected to be operational by the middle of the next decade.

Currently, the existing layer of industrial development in MYAS includes a primary and secondary industries park, a light and support industries park, the marine terminals, and King Fahd Port. Although the port and terminals are part of the city's overall infrastructure, both operate as support facilities to the industrial area. The first and the existing layer in the MYAS industrial complex contains 5 primary and 5 secondary industries, 6 operational terminals, and 30 light and support industries (see Table 6.9). One of the terminals, the Crude Oil Terminal,

Table 6.9: MY

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Source: RCJY,

Table 6.9: MYAS industrial projects.

Industrial Categories	Joint-Venture	Status
Primary		
Crude Oil Terminal	Saudi Aramco	Operational 1981
NGL Fractionaration Plant	" "	" 1982
Yanbu SAMAREC Refinery	SAMAREC	" 1983
Export Refinery (PEMREF)	SAMAREC/Mobil USA	" 1982
Yanbu Petrochemical (YANPET)	SABIC/Mobil	" 1980
Secondary		
Lubrizol	ICIT/Lubrizol	Operational 1986
Salaco	Kanoo/Essochem	= 1987
ACT	Near East Three Saudi Partners/Mobil	= 1987
Safra	Zonal Industries /Total Group	= 1990
Gulf	Almamarani/ GOTCO NV	= 1988
CRISTAL *	Shairco/GCC Investors/Kerr McGee	= 1991
CHLOR *	Cristal/Basic Chemical Inds.	= 1991
Alhamrani/Fuchs	Alhamrani/ Fuchs	= 1991
Light & Support		
Construction (4)	--	1979-1986
Sales & Services (13)	--	1977-1989
Manufacturing (13)	--	1979-1992

Source: RCJY, MYAS (1987, 1991, 1992).

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is considered a primary industrial plant because it provides the industrial park's refineries with the required oil, and is as a loading facility for exports. The five primary industries are operated by Saudi ARAMCO, Petromin, and SABIC. Among the primary industries, there is only one petrochemical plant (YANPET) operated by SABIC. The other four primary industries include three oil refineries and a natural gas liquid plant. The five secondary industries are operated by Saudi private investors in joint ventures with foreign firms. There are, however, three recent secondary industries that began operation during the current Fifth Development Plan, 1990-95. There are five other secondary industries in design and active planning; they are scheduled to start operation as early as 1993 and as late as 1995. The nature of the secondary industrial projects is related to that of the primary products, namely oil, gas, and petrochemical derivatives. This reflects the stated goal of the industrial cities, which emphasizes the interdependence of the three industrial production processes. Indeed, the leading national objective encourages secondary as well as light and support industries to use the primary industrial products. The light and support industrial park in MYAS consists mainly of those industries that are involved in producing construction materials, sales and services, and manufacturing.

The Saudi industrial-city model described above is unique in the sense that it represents the country's main development goal, to diversify the economy through the expansion of the industrial base, and hence to reduce the national dependence on oil as a single source of income. This national strategy is also

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intended to engender a domestic economic balance of growth, based on this industrialization model. In this respect, the spatial pattern of the two industrial cities is introduced to provide both regional balance of growth and urban redistribution.

The urban population in Saudi Arabia, as indicated earlier, is concentrated in the three main urban centers in the Eastern, Central, and Western regions. As shown in Figure 6.7, the population migration on the interregional and intraregional levels represents this urban as well as regional concentration. Although both Jubail and Yanbu industrial cities have been perceived to alleviate imbalances on the regional level, most of the planning prospects on regional implications were developed on the basis of the immediate subregions of the two cities. In the case of Jubail, for example, the expected urban and regional growth redistribution is through its designation as a growth pole. This, it is hoped, will stimulate growth by attracting economic activities to locate within and around the industrial city, thereby alleviating some of the pressure on the Dammam/Alkhobar/Dahran urban centers (see Appendix A.3 for more about the regional context of Jubail city).

Regional implications, however, were expected to be generated through the two phases of the development of the industrial city, namely during the construction phase and the postconstruction industrial production process. Whereas the effect of the initial phase was mostly intraregional, the latter phase is expected to promote both interregional and national growth. These potentials for growth were foreseen to occur through attracting employment and manufacturing activities. On

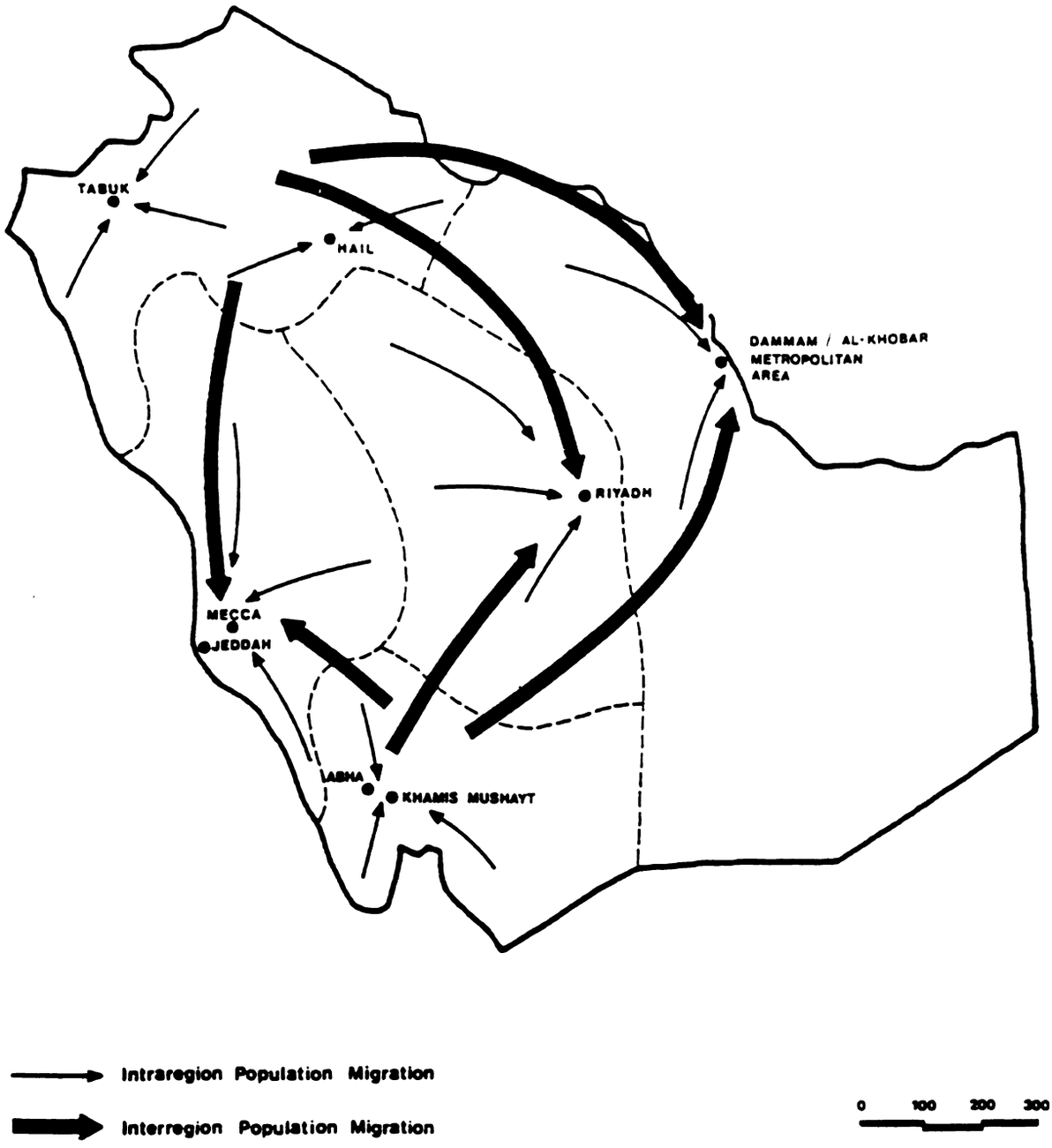

Figure 6.7: Major population migration trends.

Source: RCJY, MAJAS: Master Plan Update (1984), Figure 4.2.1.

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the national level, growth will be in the diversification of the manufacturing activities through the use of primary and secondary industrial products. Both regional and national aspects of growth, are further hoped to contribute to balanced regional growth.

Yanbu, on the other hand, is expected to achieve the same urban and regional effects throughout the Western region and toward the northern-southern axis adjacent to the Red Sea. Although its national and regional objectives are virtually the same as those of Jubail, Yanbu's effect on the regional level is twofold. As the new location of oil refineries and crude oil exports, the city could become the center for oil-based economic growth in the Western region. Such a process, however, can be largely questioned considering the level of integration within the regional economy given the new city's technology and organization of production. The other effect is directly related to the industrial process that has taken place within the city. Although the rise of the industrial city in Yanbu has led to various types of economic and service growth, especially in its immediate subregion, the future development layers in industry, especially those pertaining to raw materials (minerals) available in the region, are expected to provide the region with a potential diversified economic base.

To establish an empirical base for the above policy objectives of the Saudi industrial-city model, regional prospects for growth are largely dependent on how oil-based industry in general and the petrochemical production system in particular permit the spatial integration of industrial growth. Given the external-oriented

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economy of the Saudi oil-based industry and the spatial organization of its production, the locational pattern of the industrial cities of Jubail and Yanbu was adopted to reflect a new approach for regional redistribution of industrial and urban growth. In general, such an approach has been criticized because of various failures experienced by some industrializing countries (e.g., Brazil, South Korea, and Malaysia), which attempted to relocate industries in less-developed regions.

In this study, the underlying argument, pertaining to the causes of these failed regional policies, relates to the conceptual framework, which emphasizes the nature of industrial production systems as an explanatory variable. Most writers on urban political economy have emphasized that regional and urban development cannot be carried out simply by relocating industries without considering the external forces and their spatial linkages created during the course of development of industrial division of labor (Fujita & Hill, 1993; Hill, 1989; Storper, 1991).

Understanding how each industrial production system links economic activities between firms and organizes them over space is a critical component in any policy attempting to establish sound regional and national development decisions. On both levels, governments should know the nature of production forces and how they are technologically and spatially organized. Industrial production systems, however, are also historically and nationally specific. They differ from one industry to another, and their political and economic forces are shaped largely by the nature of industry, the stage of industrialization, and the model for industrial development.

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Based on the preceding argument, although it was developed mainly within a different industrial and political economic context, the main features of the industrial production system that is being developed within the Saudi export-oriented industrial cities is examined in the next chapter. The SABIC petrochemical production system is emphasized as part of the general organization of the industrial city's structure and as a milieu of interrelated layers of production.

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CHAPTER VII

THE SABIC PETROCHEMICAL PRODUCTION SYSTEM

Introduction

In the previous chapter, the structural and analytical framework of the Saudi industrial-city model was established within the context of the national strategic, regional and urban policy dimensions. It emphasized the nature of the two industrial cities of Jubail and Yanbu in terms of their spatial and strategic process. As the result of the Saudi export-oriented, oil-based industrialization, the spatial dimensions of the two cities were introduced to reflect the country's primary concerns for achieving strategic and regional prospects. Strategically, the two industrial cities are considered the primary source of achieving the country's industrialization and its long-term economic diversification. This national economic goal is expected to be generated through expanding the scope of basic industrial process, largely in petrochemical production, hence, the expansion of the local manufacturing industry. Inasmuch as the national strategy has been the driving force behind the development of the Saudi basic industrialization, an expected regional and urban development has also been identified to be the outcome of the locational pattern of industrial cities.

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With regard to the industrial-based regional and urban development, this study has emphasized two analytical approaches. Introduced in the previous chapter, the first was established through examining the nature of the industrial and urban structure of the industrial-city model. The second approach emphasizes the Saudi EOI production system. As the aim of this introductory section, this later approach is based on the concept of the Transnational Production Systems (TPS) developed in Hill's (1989) study of the Japanese auto industry's production system. The main aspects of TPS revolve around the idea of understanding the social and spatial organization of industrial activities as they are interlinked into layers of production for "the manufacture of final products." This definition of TPS represents the general aspects of spatial and social dimensions of the production process of any given industry. Regional and urban development is seen as the outcome of how firms are interlinked in the production process and spatially arranged over space. Emphasizing the Japanese auto industry, Hill viewed the social division of labor as a structural process developed through layers of participating firms whose activities are organized according to their role in the production chain. Layers of production, according to Hill, "are a major feature of all production systems and in the auto industry these include all firms making products that are incorporated into the final vehicle" (p. 464). Hence, each layer, or a firm within layer, specializes in the manufacturing of a product or products that feed into the production of final product(s). Measured by a firm's position in the hierarchy of products' value and technological advances, "specialization" in produc-

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tion generates a system of social "stratification" among firms as well as among employment within different firms. Here, Hill argued: "In Japan, production systems are stratified according to firm size, capital possessed, value added, profits accumulated, wages and work conditions achieved, gender and ethnic composition of the labor force" (p. 466).

The above specialized and stratified nature of the Japanese production system is "also a system of social control." In general, the system of control exists within all production systems. It develops as a governing "mechanisms" created through interlinkages among and within production layers. Here, Hill identified

> three main types of linkages among layers of production chain: (1)relations of market exchange; (2) relations of bureaucratic administration that arise when markets are internalized within large corporations; and (3) intermediate forms that lie between pure market exchange and pure forms of bureaucratic administration, including relations between parent companies and subsidiaries, joint ventures, and subcontracting relationships. (p. 467)

In Japan, subcontracting relationships are highly visible, yet differed in terms of the form of how the above market-bureaucratic relations are organized. Unlike the U.S subcontracting system, the Japanese nature of social control "has strong paternalistic overtones" which characterize the relationship between parent firm and its subcontractors to be more than "mere market exchange" (Hill, 1989, p. 467). In sum, it is the nature of interdependent interests especially between higher value production layers and the parent company that rendered the Japanese organization of social control different, yet effective. However, as Hill argued, mutual interests between the parent firm and its subcontractors vary, or become

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The uneven distribution of profits among upper and lower layers of the production chain is an inherent feature in all production systems. Indeed, this process of uneven development is mostly obvious in the spatial dimensions of the industrial production system. Given the nature of social control in the characterization of relations among the Japanese auto chain of production, the spatial pattern of control is yet another important feature of any industrial production system. The nature of a spatial control system is usually developed in a fashion that induces a form of spatial concentration of industrial activities, hence, promoting an industrial-related process of uneven growth at the regional level. This uneven distribution of industrial-related regional growth was evidenced in the case of Japan's auto manufacturing. The spatial concentration of Japanese auto industry is described by Hill as taking two types of locational patterns. The first is characterized by a regional and urban concentration of industrial development, especially in the mostly dominating urban centers of the central regions versus the limited growth taken place in the northern and southern regions. The second pattern of spatial concentration is what Hill referred to as "locationally specific." This later pattern of spatial concentration is developed in the form of an industrial-city model. In Japan, Hill gave the example of "Toyota City," which he described as "probably the most spatially concentrated in the world" (p. 470).

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Although Hill's spatial and social dimensions of industrial production were examined in the auto industry, he, however, acknowledged that these dimensions are "variables" that can be applicable in various forms. In turn, however, their implications for regional and urban development are industry and country specific. Further, he argued that the nature of industrial production system is a product of both domestic and international political and economic forces. In this regard, he concluded,

> Production systems do not evolve by accident, nor through some immanent logic of the market; they are consequences of social conflicts and shifting political alignments among companies, workers and governments in response to changing local and international circumstances. (p. 477)

Emphasizing these domestic and international factors that shape the nature of industrial production system, the rest of the present section attempts to comparatively examine the TPS main variables for the petrochemical industry in general and, in the next section, for the Saudi industry in particular.

Applying the TPS framework to the petrochemical industry is certainly a complex endeavor given the nature of the industry's structure and production process. For the Saudi petrochemical industry, this task is even more complicated due to the industry's strategic and economic orientation and the specific nature of the Saudi domestic economy and industrial development. Therefore, it is important to acknowledge that, the use of the TPS concept to explain the nature of the petrochemical production is a subject for further modifications of its variables, due to the distinct nature of petrochemical industry. For Saudi Arabian petrochemical production, this nature of the industry is further reinforced by the reverse process

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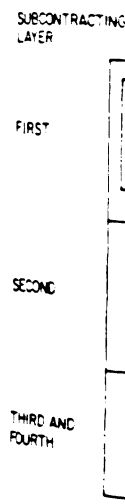
of industrialization, in which the petrochemical sector is the base for the country's manufacturing industry rather than the end stage in industrial structure.

By comparing the auto and petrochemical industries, the general features of production differ in terms of the chain of the industrial process and the nature of the raw materials used. Emphasizing the Japanese auto production system, illustrated in Figure 7.1, the chain of production is characterized by its upward process toward the final stage of production layer, namely the final assembly of the vehicle. In the case of petrochemical production system (PPS), this process is reversed considering the layers involved in the production of final product. Taking the example of Ethane and Methane (the mostly used petrochemical feedstocks), the chain of production begins at the top, at the basic petrochemical plants, downward through the downstream process and then into the final stage of production (see Figure 7.2). In this case, there are many types of final products, some of which are used in auto production.

Within any petrochemical production chain, the first and, in some cases, the second stage may be processed concurrently at one site. The third, or final, stage production, however, is largely undertaken by firms whose relation with the industry is arranged through market. This leads us to another main difference between the two industries, namely the nature of raw materials used. Here, it can be established that, the various bodies and parts supplied by the different layers in the auto production chain are basically end products. Starting at the top layers in the petrochemical production, products used are either basic or processed raw



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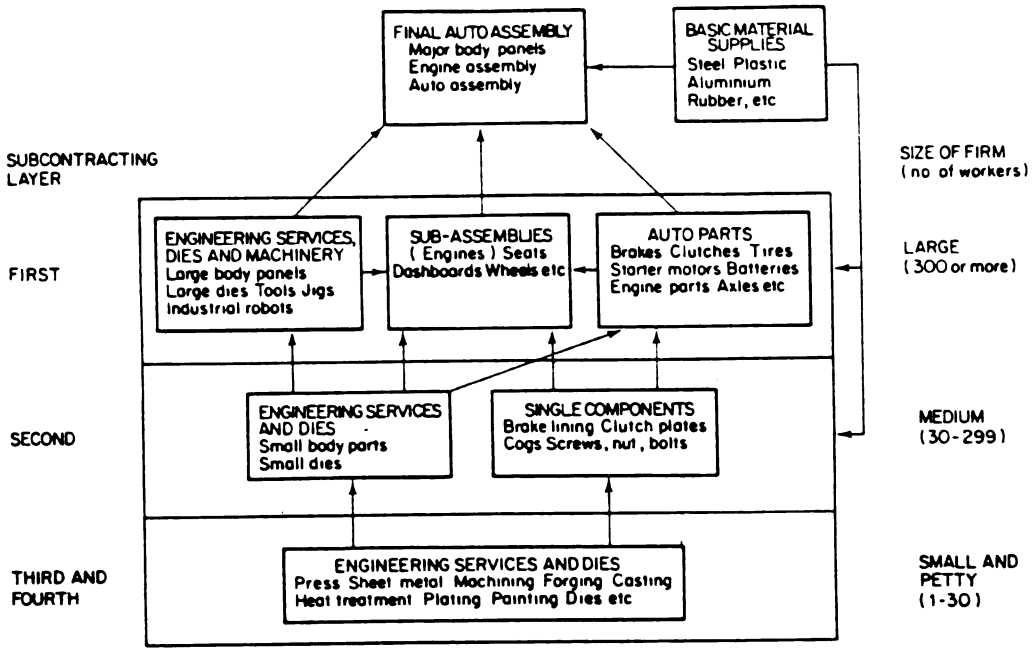
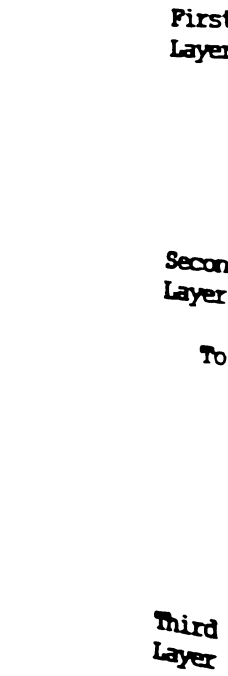


Figure 7.1: The Japanese auto production system.

Source: Hill (1989), Figure 1.

materials. Further, the final stage of production in both industries is another area of obvious difference. In the auto production system, layers of production are all engaged in the process of providing the required parts to produce one product, namely a car. In contrast, the petrochemical chain of production, due to its downward process, the parent firms provide lower layer firms with products to be utilized for either more processed or/and final products. In general, the petrochemical industry is neither linked by a particular product nor by a system of control developed by the top corporate interest. Each layer is an entity developed as a consequent to utilize the products of the basic and intermediate layers,



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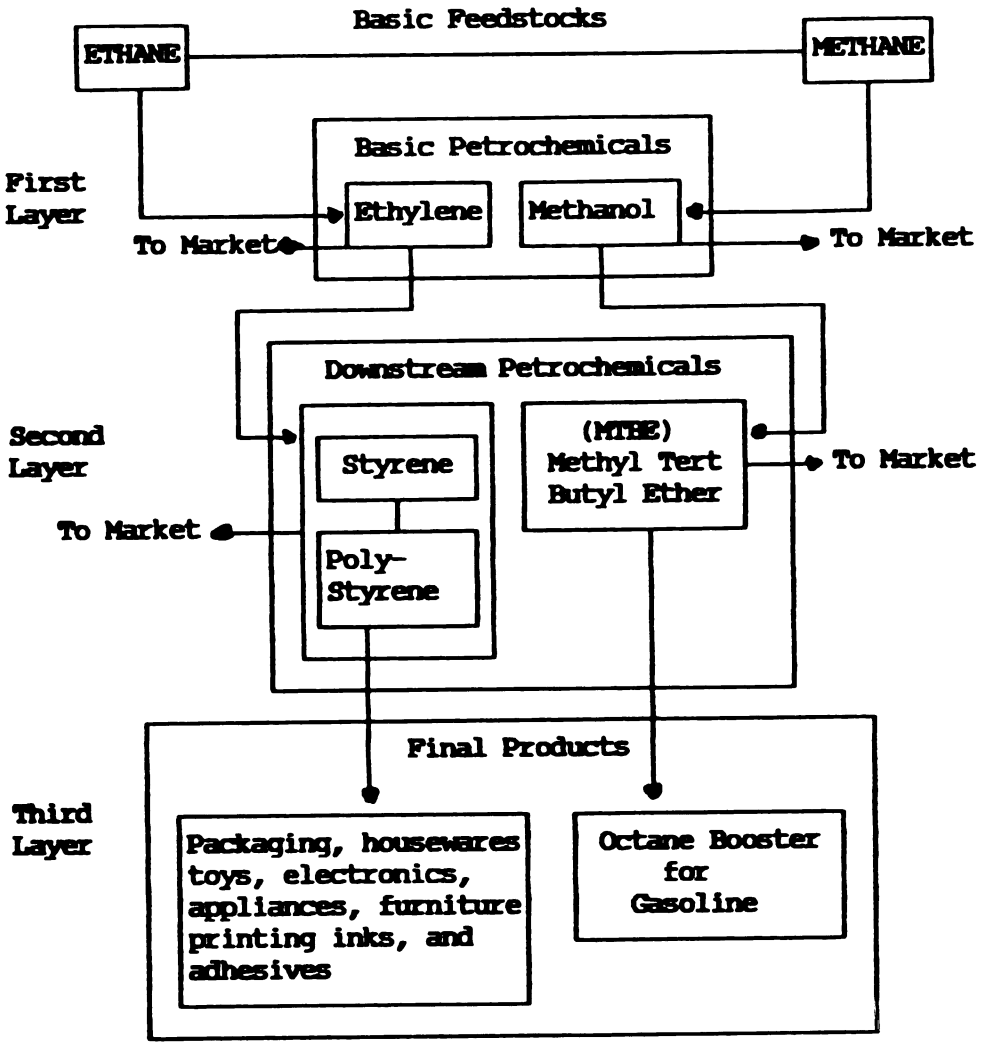

Figure 7.2: The petrochemical production system.

rather than a segment within an interlinked system of industrial process. In a particular petrochemical industry, however, those layers reflect a form of an industry and country specific. In a country like Saudi Arabia, the industrial activities of each layer are hoped to develop a chain of industrial production that

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involves in a rather wide range of industrial process. Such a chain is characterized by different type of social integration and control, yet with specific spatial dimensions that very much shape the economic and social process taking place on the regional and urban level within a given society. This approach to understanding the nature of petrochemical industry is uniquely established to broaden the scope of the conventional process of the industry into more systematically structured outlook.

In general, the petrochemical sector, according to Vergara and Brown (1988), "differs from other industrial sectors . . . in the complexity of its operations, much greater number of products and processes, volatility of its related markets and the lesser degree of government controls and past market intervention" (p. ix). With the exception of the debatable point concerning government intervention, the standpoint in this distinct nature of the petrochemical industry is the inherited multiplicity in its production process. The extent of how petrochemical production is structured within the corporate organization and/or on the spatial level is an issue that has never been systematically addressed. This can be largely attributed to the dominant economy and market-based analysis of the industry and the still underdeveloped subject of the industrial production system in urban and regional studies. For this lack of the basic data, as well as the rising importance of the industry in the state economic development process in some developing countries, the following pages in this section will attempt to provide a first look at the industry through emphasis on its production system to establish a different evaluation

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measure for its economic and social dimensions. Drawing upon the experience of Saudi Arabia, a model of the PPS will be designed to reflect the social and spatial process of the industry. This, it is hoped, will shed the light on three interrelated aspects of industrial development in the oil-based economies. The first concerns the industrial-related regional and urban growth process. This is mainly derived from the notion that the spatial concentration, created through the spatial organization of the operational units of industrial production, is an essential measure to examine the impact of industrial growth. The second aspect is to establish a new feature in the concept of production systems by introducing the state as a corporate manager in the production process of the petrochemical industry. Here, the state's corporate strategy is viewed different from a transnational corporate system in regard to the scop of political and economic interests. Finally, by stressing the spatial and strategic dimensions of the PPS, evaluation of the overall strategic national process can be provided on the basis of industrial-related regional diversification. This last aspect of industrial production process is mostly related to those countries where petrochemical industry is the leading sector toward a diversified economy, e.g., Saudi Arabia.

As indicated in the previous chapter, the Saudi basic industry is organized into an industrial-city model. Led by the petrochemical industry, the Saudi industrialization process is located within the two industrial cities of Jubail and Yanbu. These two cities reflect the Saudi strategic and spatial organization of

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The Saudi Basic Industrial Production System

From the outset, it is important to stress that the nature of the Saudi basic industry is characterized by what is referred to as the "reverse wave" of industrialization. It is the reverse of the common industrial process, namely the light, import-substitution manufacturing followed by export-oriented sector. In the case of petrochemical-based industrialization, like that developed in Saudi Arabia, this reverse nature is acknowledged by many as the combination of both the resource-based economy and the nonexistence of a previous industrial base (Looney, 1990; Stauffer, 1985). In fact, this industrial development process has been viewed as a new approach of South (Third World) industrialization. According to Stauffer,

> This "reverse wave" industrialization, emphasizing export-oriented heavy industry instead of the more customary light and intermediate industry oriented toward import-substitution, is a significant step in the industrialization of the South. (p. 2)

In most developing countries, this industrialization process has become known as the "Catching-up Product Cycle" (Urata, 1988). Using the example of Japanese car industry, Urata argued that the now world largest auto exporter began by the imports of vehicles, followed by a successive stages of import-substitution, export and export expansion and maturity. These industrial processes in the Japanese auto manufacturing are characterized by progressive stages of

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For developing countries where industrialization begins in the exporting sector, the customary nature of product-cycle has to be redefined; hence, the process of industrial production system should be represented as such. Emphasizing the Saudi PPS, the above assertion will be the point of departure in identifying the mechanism of production layers and their social and spatial process. This endeavor will be established by examining the Saudi export-oriented industrial production in general and SABIC PPS in particular within the context of both the state corporate strategy and the national model for industrial development.

Located entirely in the two industrial cities of Jubail and Yanbu, the Saudi basic production system can be characterized as highly concentrated, export-oriented process. Within this context, basic production system can be divided into two main processes, namely the general process of primary production and the petrochemical industry. Including petrochemicals, the primary process in both cities is characterized as to have similar production layers, strategic locational pattern and urban-based spatial organization. SABIC (Saudi Arabian Basic Industries Corporation) and Petromin, the two leading state corporations, represent the primary production process within the two industrial complexes. The two companies carry out the conversion of the domestic basic resources, oil and natural gas, into added-value products, mainly export-oriented refined and petrochemical products (RCJY, MAJAS: Master Plan Update, 1984). As shown in Figure 7.3, the

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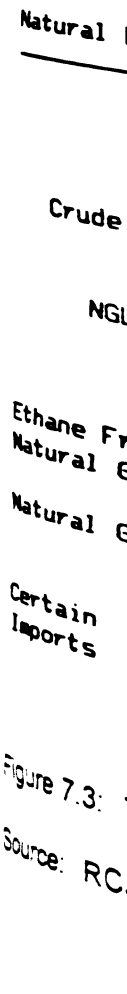

Figure 7.3:

Source: RC

export-oriented process in the primary industries represents the second-stage layer of oil and gas-based production. The products in this layer are either exported or further processed into downstream and final products.

Drawing upon the above resource-based primary process, the basic layers of production within the two industrial cities are basically organized around a system of "Feedstock-Based Production System" (FBPS). The FBPS can be simply defined as a "criterion" by which the primary, as well as the candidate secondary or intermediate industries, is interrelated through the use of feedstocks required in the operation of each industrial plant.

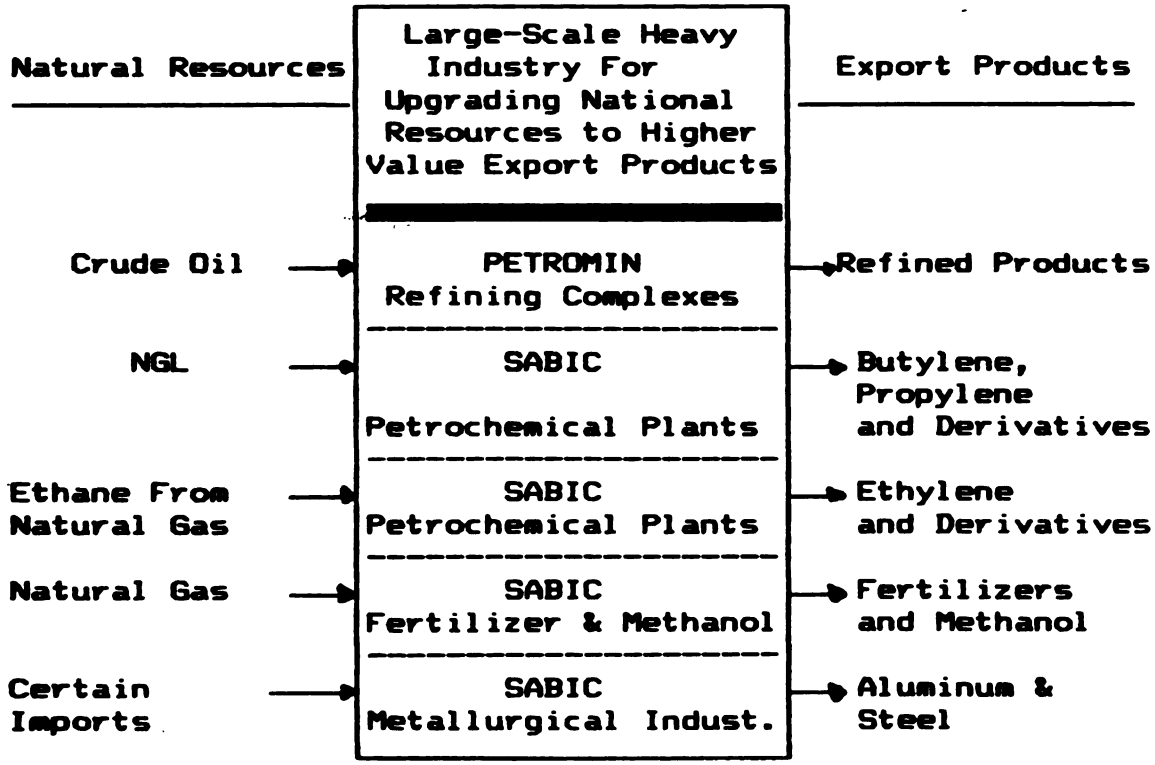

Figure 7.3: The Saudi primary production system.

Source: RCJY: Master Plan Update (1984), Vol. III, Figure 4-1.

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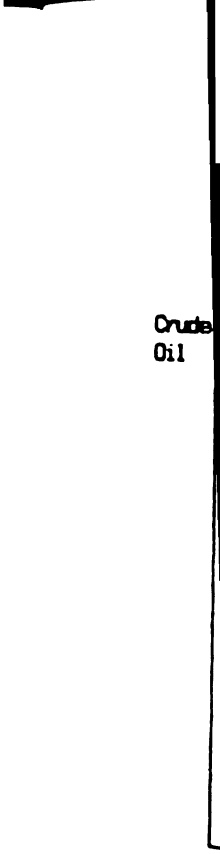
Such feedstock flow process has been developed in two forms. The first can be referred to as the "downward" flow of basic materials which starts at the first layer, namely the crude oil and refining production, to the petrochemical basic and downstream layer and to the secondary industrial layer. The second form of feedstocks flow exists within the second basic petrochemical layer. This within-layer flow can be mainly characterized by the exchange of processed materials among the petrochemical and fertilizer plants, and the downflow of processed products to the secondary industries for the production of intermediate and final manufacturing process. Although the FBPS is similarly structured within both Jubail and Yanbu industrial complexes, its social and spatial organization of production will be established as it developed in the Jubail industrial city. This choice is based on the fact that Jubail is the larger complex and the location of most basic petrochemical firms.

Developed mainly to use the ample indigenous oil and gas resources, the Saudi basic industrial production system is organized around three main divisions of industrial process: refinery, petrochemical and metallurgical industries (see Figure 7.4). The basic raw materials required for their operations include crude oil, natural gas, ethane, methane, propane and butane, and iron ore. With the exception of the crude oil which is the feedstock for petroleum refining industries and as fuel for petrochemical plants, natural gas, ethane, methane, and butane are the basic feedstocks for petrochemicals. Because most of the primary industry's products are liquid products, their transfer from one industry to another is handled by pipelines. The exceptions, however, are those materials required for



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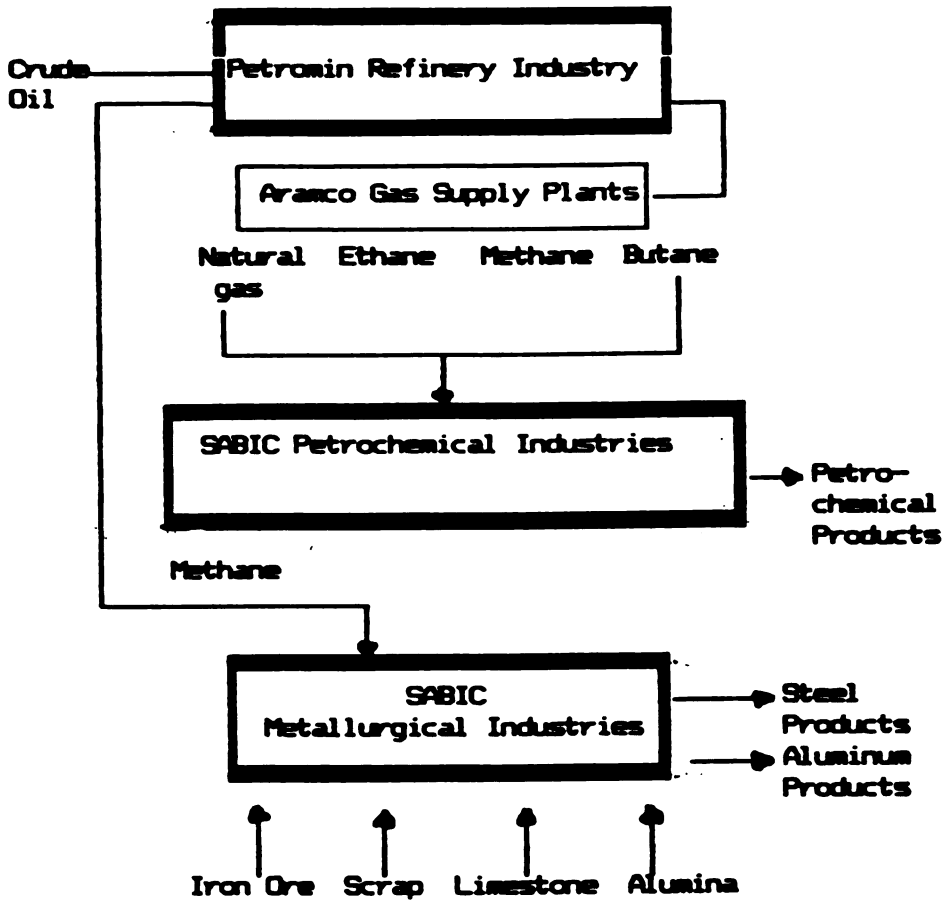

Figure 7.4: The three basic industrial layers in Saudi industrialization.

Source: RCJY, MAJAS: Master Plan Update (1984), Vol. III.

industries (e.g., iron ore and other large size and solid products), such as urea and polyethylene. These are to be handled by "conveyor" and trucks, respectively. These materials are usually imported to the city either from foreign or domestic firms. They are processed in the primary and secondary industries for consumption within the city or in domestic market (RCJY, MAJAS: Master Plan Update,

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The three basic layers, namely refining and the petrochemical and metallurgical industries, represent the structural base for the manufacturing industry in Saudi Arabia. They are the building blocks for the second generation downstream manufacturing process. Each basic layer has an interlinking production process with secondary layers whose role is to utilize the primary products for further manufacturing. This nature of concurrence in industrial development reflects the second stage in the Saudi national industrialization process.

The secondary process represents two main industrial growth patterns. The first is imbedded in the overall export-oriented process of the basic industrialization by contributing to the value-added exported products. The second growth pattern of secondary industrial production represents the main force in the promotion of import-substitution. In fact, this role of the secondary industry is among the leading nationally stated, long-term goals in the Saudi industrialization policy (see previous chapter--Jubail industrial area: secondary industry).

Furthermore, it is important to note that, within the industrial city's structure and production system, the secondary industry represents the link between the national and spatial strategy. In other words, the expansion in the national industrial base and the urban and regional process of the industrial city centers around, as well dependent on, the growth of the secondary industry. Although most of the primary industrial products are export-oriented, the downstream process and the expansion in the light manufacturing are the main sources for developing the local industrial base. Within the city's structure, the secondary

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industry represents an integral part in the overall industrial development. It is considered, within both national strategy and the industrial city's main objectives, as the base for attracting national and foreign private investments. The opportunity in the secondary industry is seen in twofold: as the source of feedstocks for further downstream process (intermediate products) and feedstocks used for producing final products (RCJY, MAJAS: Master Plan Update, 1984, Vol. IV). In fact, these industrial processes represent SABIC's role in the provision of forward linkages to a wide range of potential secondary industries (Masood, 1989).

As a part within the industrial production system, secondary industry is developed as both a stage in the FBPS and as a layer in the basic and petrochemical chain of production. Each of the three basic industries, namely refining, petrochemical and metallurgical, is interlinked with a potential candidates in secondary industries. This has been "a prime criterion" for identifying industries that utilize feedstocks produced by the basic industries. While it is mainly developed as a part of an underlying feedstock-based industrial process, the secondary layer of production encompasses more than one layer. In some cases, such as those of petroleum and petrochemical, the secondary layer constitutes the production of some products that are secondary for a down-level industries and others ready for use in the market (see Figure 7.5). Hence, within the chain of production, secondary layer is a process within which exists other layers whose products can be either secondary, intermediate or/and finished; yet all of these products are within the chain of the FBPS. To examine how these layers are identified and interlinked within the production system, a specific focus will be

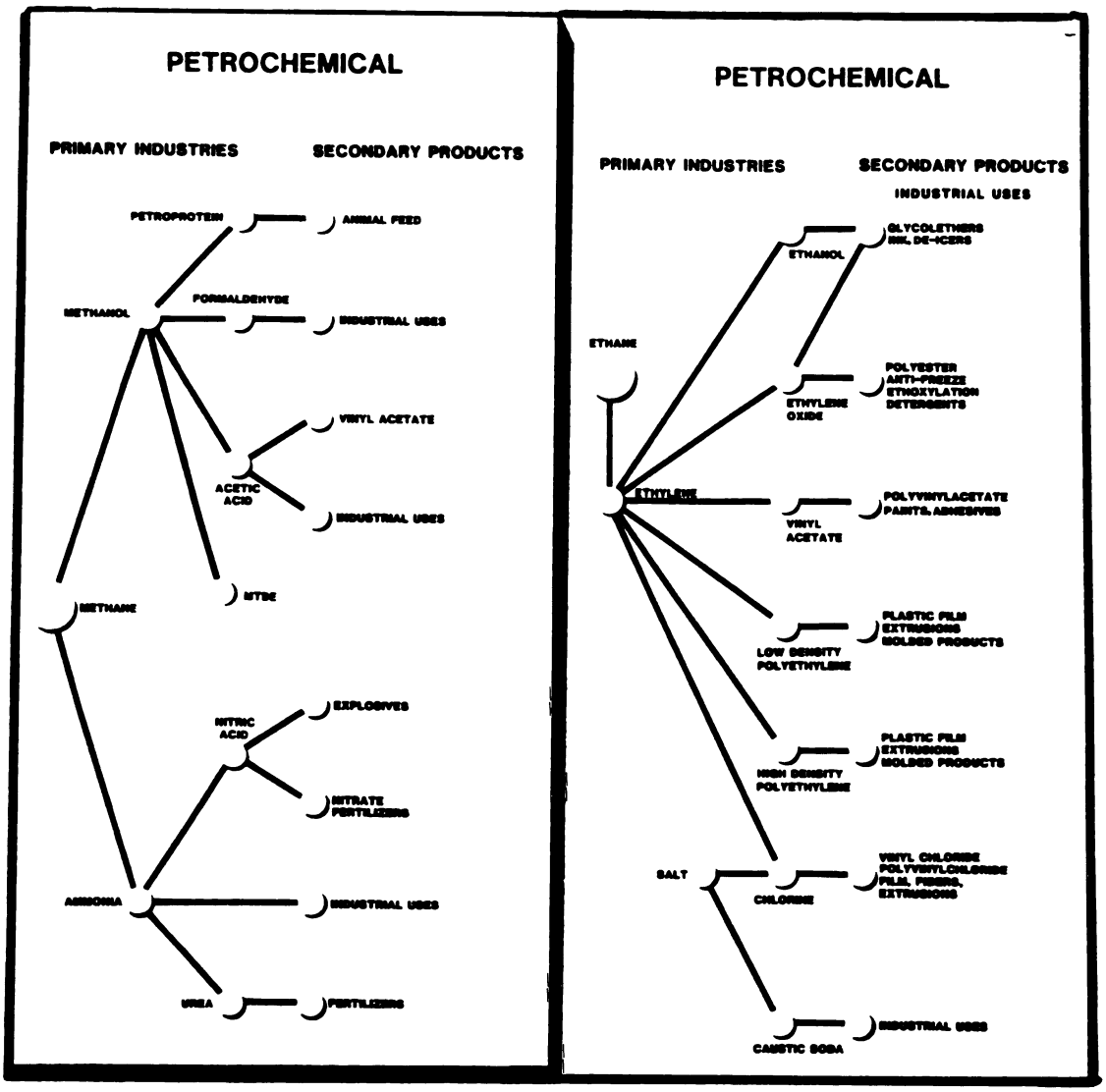
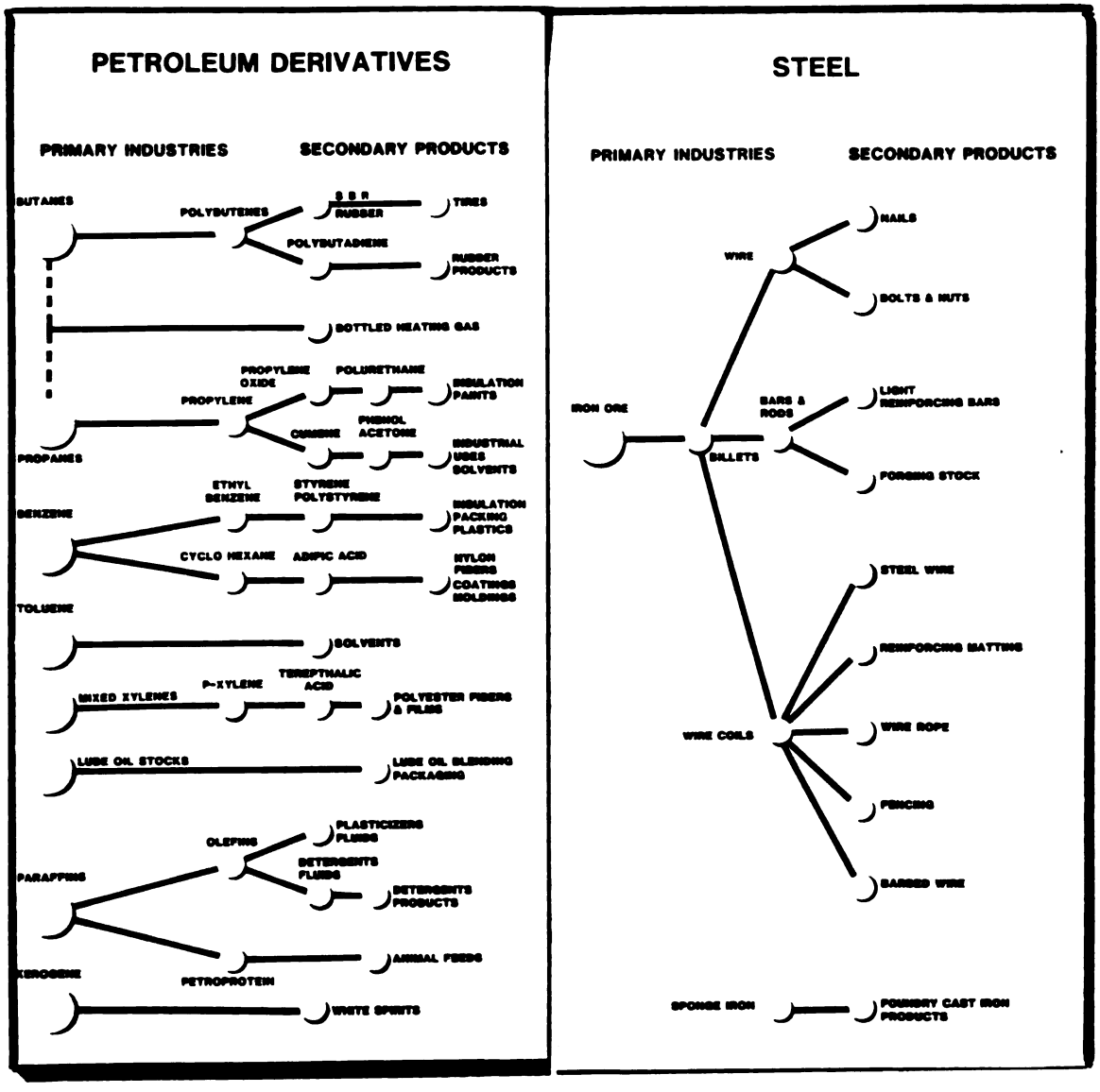


Figure 7.5: Feedstock-based, primary-secondary industries relationships.

Source: RCJY, MAJAS (1992).



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devoted to the leading basic industry, namely petrochemical. Before that, however, two other layers of production, namely support and light industries and service industry, must be identified as part of the industrial city in general and the industrial production process in particular.

In their relationship with the primary and secondary layers, support and light, and service industries rise as a product of the overall industrial production process. Given the combined nature of industrial and urban structure, the need for the service industry has been an integral component in the industrial city since the initial phase of construction. The service industry, be it the provision of industrial, community and administrative services, can also be incorporated within the city's industrial production system. As a layer in the city's industrial process, the service sector is expected to dominate as the result of expansion in other industrial layers. Within the two industrial cities, service industry was predicted to be among the leading sectors to experience rapid growth when all of the three industrial layers and the community reached the completion stage (refer to the previous chapter).

Concerning support and light industries, Jubail, as well as Yanbu, industrial city was designed as a self-sufficient enterprise and a promoter of industrial growth. Within the industrial city structure, support and light industries are located within one area, hence reflecting one unit of industrial and urban process. In the case of the city's production system, the two industries represent two different layers of production. This distinction is based on the role of both industries and the nature of their relationship with the primary and secondary industries.

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Emphasizing the nature of these industries, Jubail Master Plan provided the basis of the above distinction. Based on the Royal Commission's overall policy for the establishment of Jubail city, the city's Master Plan, as stated in the Saudcosult report, introduced support industries as follows:

> A policy was formulated to plan and build the Industrial Complex, without draining the man and material resources earmarked for the projects in other parts of the country. As such, the Jubail complex has to be self contained, importing all its requirement through its industrial and commercial ports. For this purpose, it is essential that a high priority should be assigned to the establishment of support industries which would facilitate the construction of the industrial park as well as the new town of Jubail. The main functions of the support industries will be to store, assemble, modify and supply all the constructional and other requirements for the Jubail Industrial Complex and its work force. (RCJY, MAJAS: Master Plan Update, 1984, Vol. V, p. 1-2)

Light industries, on the other hand, were identified as a necessary stage of industrial development embodying the layer of final process. On the importance of light manufacturing, the Master Plan stated that "the full worth of the Primary and Secondary Industries cannot be gained without the existence of Light Manufacturing Industries which provide the consumer goods that are presently imported extensively and at higher costs" (RCJY, MAJAS: Master Plan Update, 1984, p. 1-2).

While the Plan, in its classification of support and light industries, stressed the necessity to build a self-contained industrial city, it also rendered, albeit indirectly, the basis on which to distinguish between the two industries within the production process. As seen in the preceding definition of the nature of these two industries, support industries can be classified as a technical and maintenance services intended to furnish the required industrial facilities and construction.

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Within the industrial production system, these industries are not in direct feedstock-based relationship. Hence, support industrial process is a part of the city's industrial structure, not as an integrated layer in the chain of production.

For light industries, however, they represent the third and final layer of Jubail city's industrial production. This is based on these industries' relationships with the first layer (primary industries) and second layer (secondary industries) through the FBPS. Using the processed products of the first and second layers, light manufacturing involves in the production of "finished goods for domestic and export purposes." Predominated by private investments, light industries are involved in "steel fabrication, vessel manufacturing, furniture makers, and producers of various plastic products, small appliances, food packaging materials, toiletries, glass and clay products, etc." (RCJY, MAJAS: Master Plan Update, 1984, p. 2-2). As a part of the industrial-city model for growth, expansion in these products is foreseen to achieve the spatial economic impacts of the industrial base on the urban (Jubail City and immediate subregion), regional (the Eastern Province) and national levels.

In sum, the preceding discussion on the general features of the Saudi basic industries' production system has been an introductory attempt to emphasize a new direction of industrialization process in developing countries. By adopting the production system concept, an emphasis was to apply the definition of this concept to a production system characterized by a nationally based (versus transnational), and export-oriented, resource-based industrial-city model. According to Hill (1989) and Fujita and Hill (1993), "A production system is a collection of operating units

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linked by technology and organization into the manufacture of final products." An interlinking mechanism, namely FBPS, was developed to characterize the Saudi industrial production system within the industrial city of Jubail. The FBPS was an assumed concept established to suit the nature of the Saudi oil-based industrial production. Although the industrial city model, presented in the previous chapter, involve the organization of various industrial and community activities, the industrial production system consists only of those layers that linked by an organizing principle, namely feedstock-based relationship. As shown in Figure 7.6, these layers, namely the primary, secondary and light industrial process, are the main units around which other supporting and service industries have risen to construct a unique model of industrialization.

Unlike the auto industry, whose production system is based on maturity of the domestic industrial base, oil and gas-based production in Saudi Arabia is developed to reach this stage of industrial diversification. While this industrial approach is still in its undetermined stage of long-term success, its regional and urban implications are the basis for its possible indications for achieving domestic industrial growth. In the next section, these indications are to be established through a particular focus on the social and spatial dimensions of SABIC petro - chemical production system. This, it is hoped, will provide the basis for understanding the nature of petrochemical production system in general and related urban and regional development as depicted in the Saudi petrochemical industry in particular.

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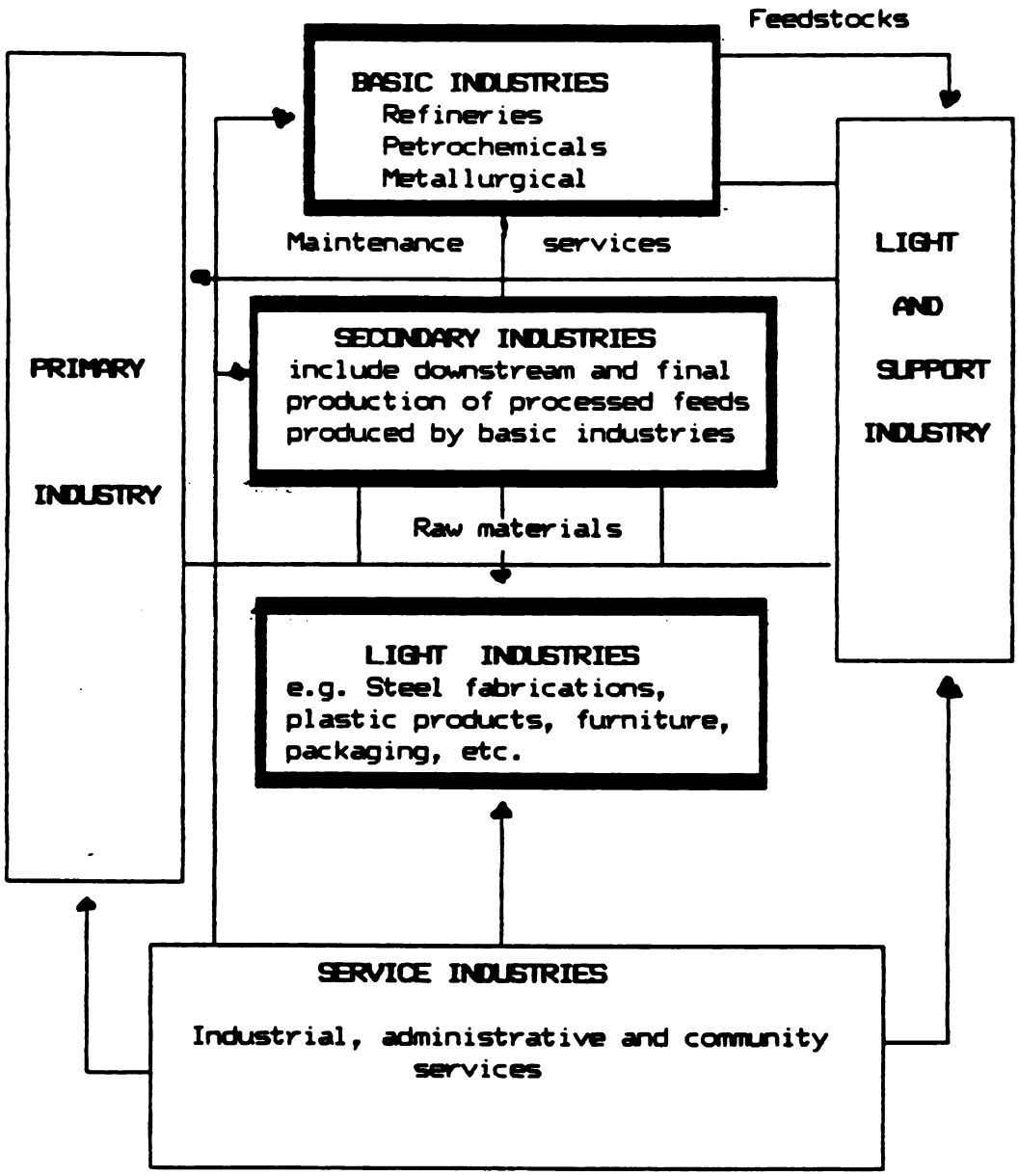

Figure 7.6: The Saudi industrial production system.

Note: This figure represents the industrial city structure within which the industrial production system is interrelated through a program of feedstock-based production process. The layout here shows the horizontal structure of the city's industrial model and the vertical organization of production.

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The SABIC Petrochemical Production System

The Saudi Petrochemical Production System (PPS) is characterized as an energy, capital and technology-intensive industrial process, developed to convert national resources, mainly oil and natural gas, to more value-added products designed largely for exports (Askari, 1990; El-Mallakh, 1982; Looney, 1990; Masood, 1989; Ministry of Planning, Third, Fourth, and Fifth Development Plans, 1980-95; RCJY, MAJAS: Master Plan Summary and Master Plan Update, 1984, Vol. I). Established in 1976, SABIC is the leading state corporation responsible for the achievement of this strategic goal. Among its responsibilities, SABIC is involved in a wide range of industrial undertakings. These include petrochemical, fertilizers and other hydrocarbon-based industries. Also, SABIC is involved in the production of iron, steel, and aluminum, and in other industrial activities necessary for the support of those industries. "Furthermore, SABIC is responsible for domestic and foreign marketing of the products derived from these industries" (El-Mallakh, 1982, p. 112).

Predominantly in petrochemical production, SABIC's industrialization process was rationalized by various interrelated strategic and industrial policy concerns. Lacking the previous industrial base, coupled by the heavy reliance on the exports of crude oil, the Saudi government promoted the development of basic, export-oriented industry as a rationalized approach toward economic diversification. Representing this basic industrial process, the petrochemical sector is expected to lead toward achieving the expansion in domestic manufacturing. In addition to

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the prime goal of expanding the oil-based export sector, the Saudi industrialization process depends on the forward and backward linkages of petrochemical production. Masood (1989) identified this industrial process to be one of the main reasons to embark on the building of the Saudi petrochemical projects. Thus, Masood stated, "Primary processing is the first and necessary stage in forward integration to provide input to downstream petrochemical manufacture, and hence, it becomes unavoidable in the overall process of industrialization" (p. 6).

Indeed, it is this downward, by-product process of petrochemical production that characterizes the Saudi model for industrial development. Within this context, it is important to establish SABIC's PPS by examining the nature of the organizational mechanism linking its production layers. Based on the concept of Transnational Production System (TPS), the analysis of SABIC's production system will be established by examining the social and spatial dimensions of production and how they pertain to a nationally and industry-specific approach. This approach should diverge from the basic order established in the TPS concept, especially on the nature of the industry and the "linkages" among its firms. The main rationale for such diversion is based on three differences between the developed literature on TPS and that of SABIC's PPS. The first is the difference on the issue of multinational versus national corporate organization. Although SABIC has an international market outlook, its production process is nationally based. Second, the nature of SABIC production system differs from those industries, e.g., auto industries, on the basis of its national economic and industrial

structure. While auto industries are based on a diversified and highly developed economies, SABIC PPS represents the advent stage toward this end. In addition, the TPS concept was mainly established and specifically examined to reflect a pattern of transnational corporate production system in developed economies (Hill 1989; Hill & Fujita, 1993; Holmes, 1986). The third difference between SABIC's PPS and that of transnational systems is embodied in the nature of subcontracting-based relationship of production layers. According to Holmes (1986),

> Subcontracting relationships comprise one subset of a myriad of interrelationships which exist between firms and which are often manifested in an observable pattern of material and information flows and linkages between pairs of firms. (p. 82)

The above definition can be agreed upon on the basis of its general identification of the patterns of linkages among firms. However, the nature of subcontracting, developed in the analysis of production systems, is tend to reflect a corporate and industry-specific, in which the interrelationships between firms are formed accordingly. In this regard, the term subcontracting is generally referred to as

> a situation where the firm offering the subcontract requests another independent enterprise to undertake the production or carry out the processing of a material, component, part or subassembly for it according to specifications or plans provided by the firm offering the subcontract. (Ibid, p. 84)

This nature of subcontracting, especially in the case of the auto industries, represents a process in which firms are incorporated within the manufacturing of final product (Hill, 1989).

In the case of SABIC's PPS, subcontracting in the above mentioned form

is unapplicable due to the nature of its industrial production process. Based on this assertion, the following is an attempt to develop a model of the Saudi SABIC PPS by empirically investigating its social and spatial dimensions.

The Social Dimensions

Since its inception in 1920, the petrochemical industry has developed around two main components of production, namely energy and technology. In this respect, energy, namely oil and natural gases, is the basic feedstock that characterizes the nature of petrochemical production in the twentieth century. The industry's technology, however, was first developed 100 years ago in the German coal-based chemical industry (Spitz, 1988). The recent development of the petrochemical industry, largely in the United States, is mostly feedstock driven. Feedstocks, produced through refining process of crude oil and natural gas, are the basis for the production of "intermediate" products used by numerous industries for the manufacturing of a spectrum of end products (see Figures 7.7 and 7.8). This nature of the petrochemical industry is the main point of departure on which the investigation of SABIC production process will be established.

Emphasizing the feedstock-driven nature of the petrochemical industry, SABIC's PPS is a part of the industrial-city structure and as the leading component of the Saudi basic production system. Viewed within the basic production process, petrochemical industries are considered an intermediate stage in resource-based industrial production. However, in relation to firms involved in the PPS, SABIC firms are the primary layer for the lower-layered firms utilizing processed

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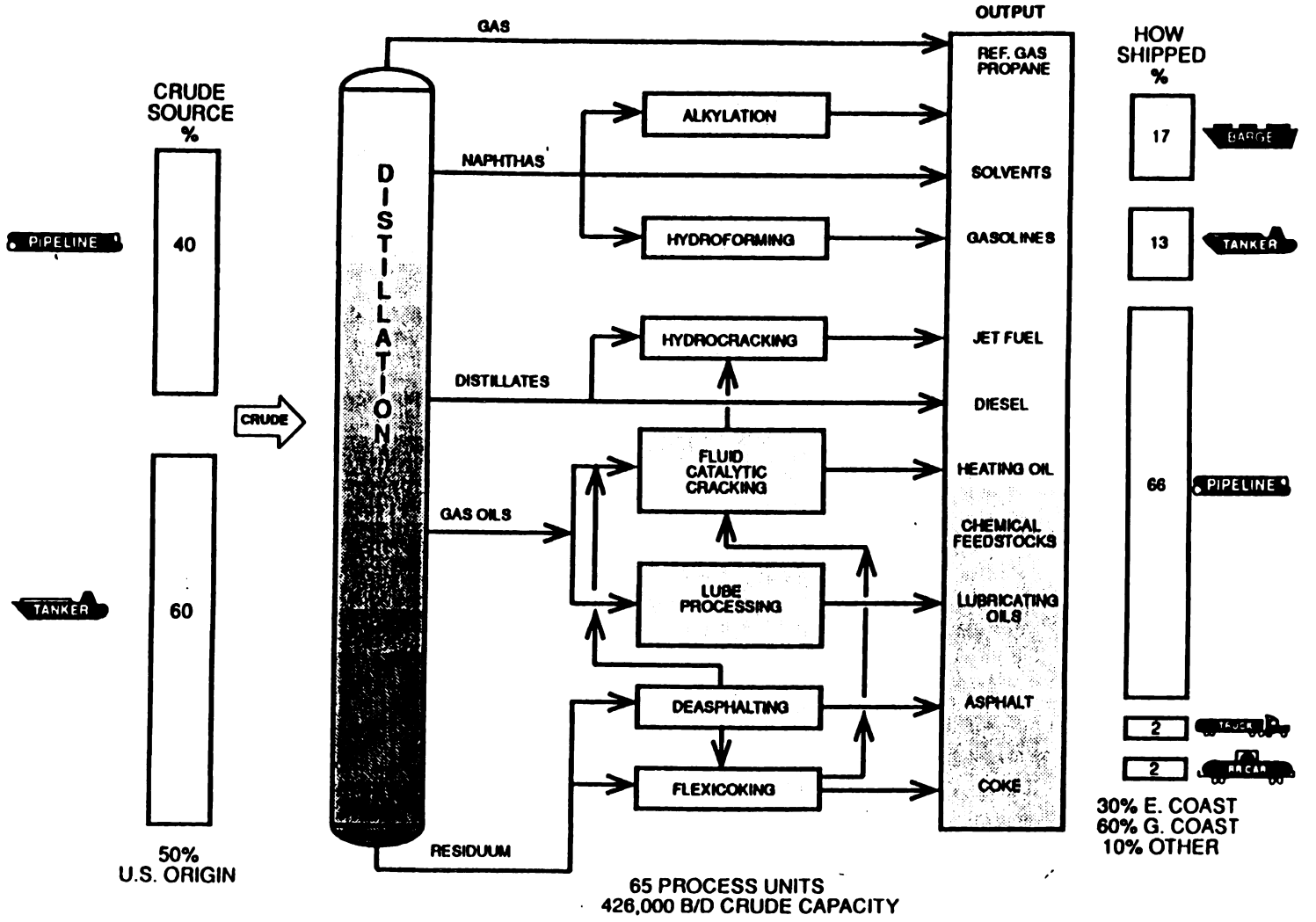

Figure 7.7 Feedstock-Based Refining Production Process.

Source: Exxon Company, USA, Baytown, Texas: Overview.

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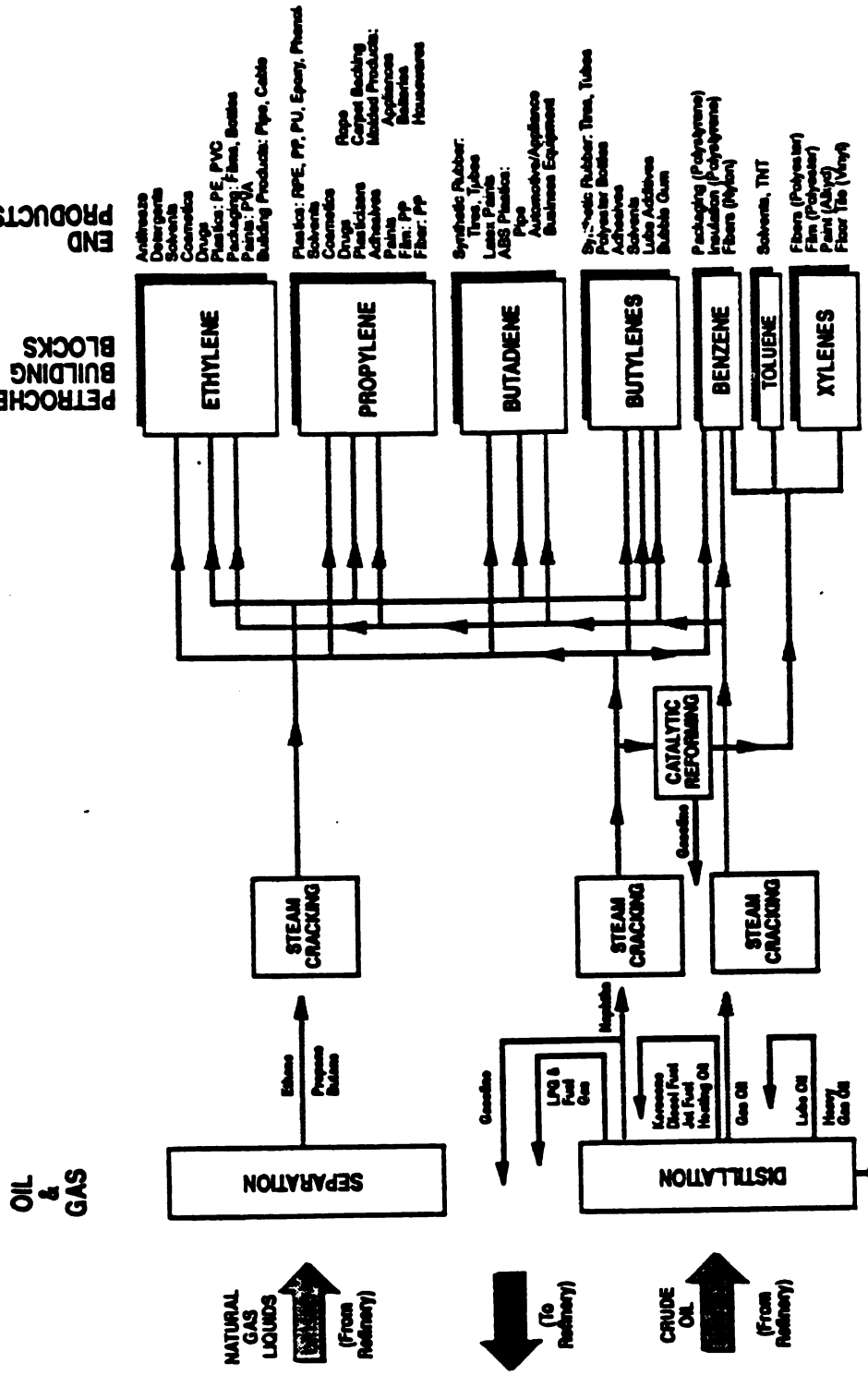

Figure 7.8 Feedstock-Based Petrochemical Production Process.

Source: Exxon Company, USA, Baytown, Texas: Overview.

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petrochemicals toward the manufacturing of intermediate or finished products. Concentrated in the two industrial cities of Jubail and Yanbu, SABIC's PPS is characterized by its feedstock-based relationship upward with the refinery plants, and downward with secondary and light industries. Firms within the SABIC production system are organized according to specialization in the production of petrochemical and fertilizers products. In this study, two main feedstock-based petrochemical derivatives will be used as an example for describing SABIC's organization of production. They are the Ethane and Methane-based petrochemical derivatives. These two basic feedstocks are the most versatile components of natural gas, and the two dominant materials for most of SABIC's industries (SABIC Annual Report, 1986). To identify how firms are interlinked within SABIC PPS, is certainly a complex task. However, based on the directions established in the auto industry (yet acknowledging the differences among the two industries), the Saudi petrochemical production layers will be represented in accordance with two determinant organizational factors, namely feedstock relations and firm specialization. Together, the two factors integrate the non-SABIC firms within the chain of petrochemical production. Non-SABIC firms include the private firms involved in downstream and final production process of petrochemical derivatives.

Based on feedstock relationships and firm specialization, firms within SABIC chain of production are divided into four layers. As shown in Figure 7.9, two of these layers are within SABIC and the other two include firms that have been

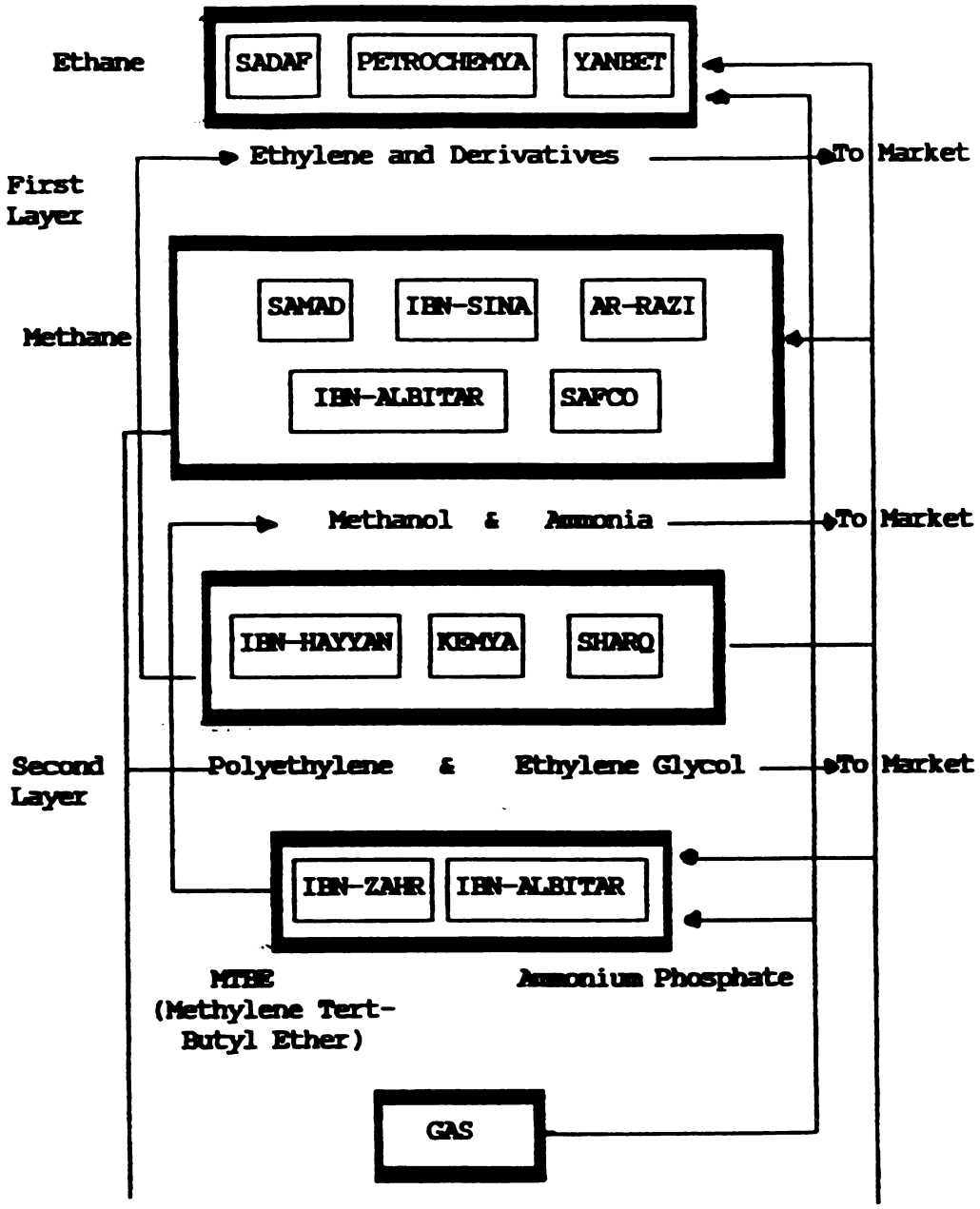

Figure 7.9: The SABIC petrochemical production system.

Source: Aziz Ezzat (1989); RCJY: Master Plan Update (1984), Vols. III, IV, and V; SABIC Review (1991).

Note: SABIC industries are mostly named after Arab and Muslim chemical scientists.

*Used as an example to represent firms within the third layer.

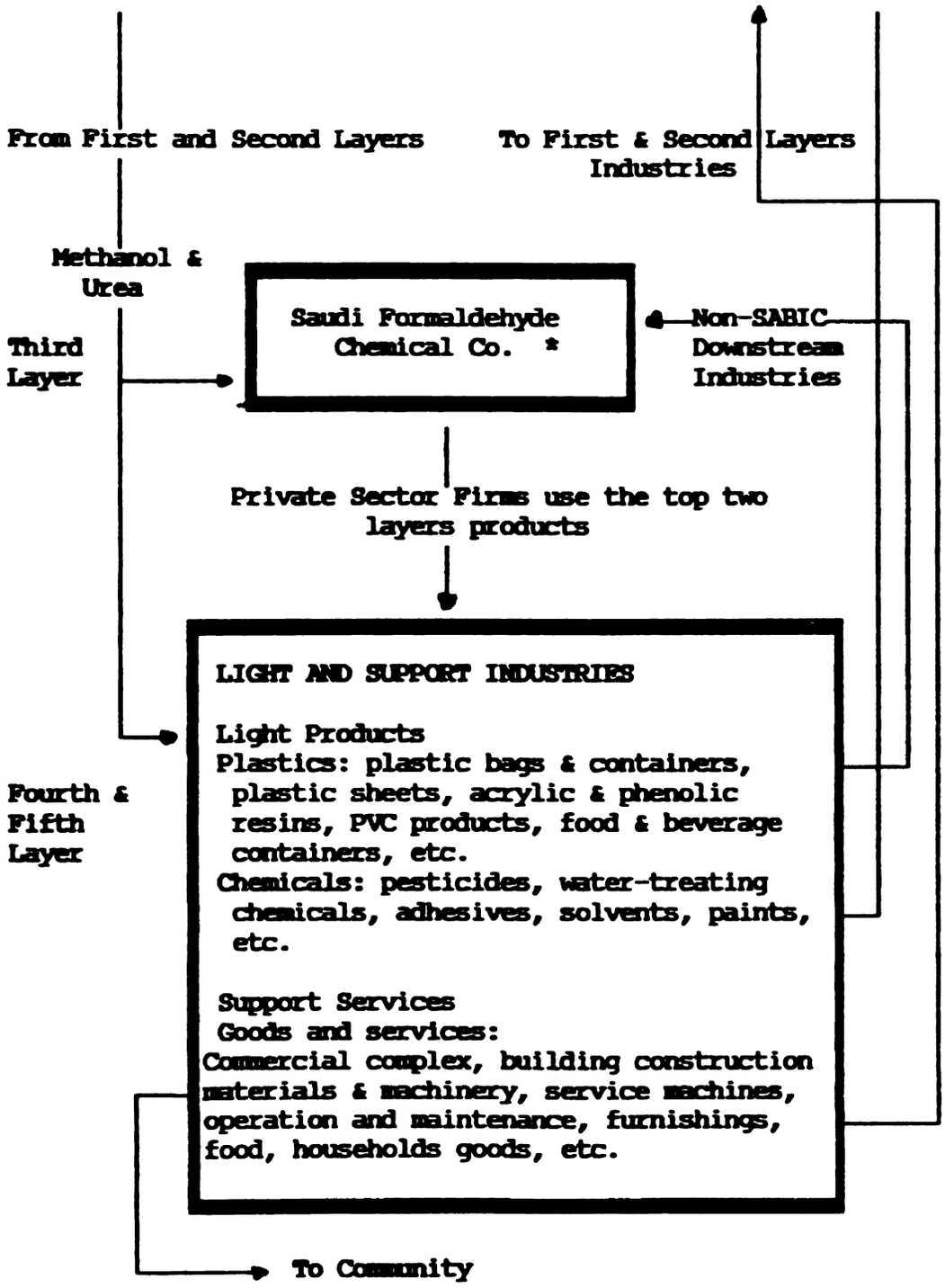

Figure 7.9: Continued.

developed to utilize SABIC's basic and intermediate products. Included in the first and second layers are firms representing SABIC's basic and downstream petrochemical and fertilizer industries. According to SABIC (1986), firms in operation in the two industrial cities are divided into two production-based categories. The first includes firms producing basic petrochemicals. These firms are SADAF (the largest of SABIC's main projects), IBN SINA, KEMYA, YANBET (located in Yanbu industrial city), PETROKEMYA, and SHARQ. The second category consists of industries that are classified as both "downstream and support industries." These industries are SABIC second generation industries which combine the downstream and support projects to complement the basic industries. Gas is the only support industry that provide SABIC projects with the required supplies of industrial gases. The downstream projects are IBN HAYYAN and IBN ZAHR. Representing the second layer in SABIC's production chain, these two industries overlap with the third layer which specializes in the same downstream process. The only distinctive feature that places the later in a separate layer is its feedstock-based relation with SABIC, not as a part of its organization of industrial operations. It is a layer mostly operated by the private sector and represents a part of the city's industrial organization. The fourth and fifth layers are combined into one layer which operates as a necessary component in the two cities industrial structure. While support industries are involved in the supply of services and maintenance for industrial projects, light manufacturing industries represent the final stage in feedstock-based production system. This stage of production,

however, has been identified to also have an overlap with the third (secondary) layer in the area of specialization in production activities. As indicated in the Master Plans of the two industrial cities, this area of overlap exists in the priority nature of manufacturing process. Here, industrial projects in both layers are characterized to emphasize capital-intensive projects and a horizontal integration of production toward the building of import-substitution sector.

Using the industrial city of Jubail, the above four layers of SABIC production are differentiated according to firm size and total employment. In this context, the top two layers, namely the SABIC affiliate firms, are dominant in both the size of firms and their employment. Taking the example of employment size, in 1992, the SABIC joint ventures and contractors accounted for 35.3% of the total workforce living within the industrial city. The third layer, which includes those industries involved in the secondary process of SABIC's basic products, employed only 204 workers of the total 39,769. Finally, the bottom layer rated second within the industrial area employment at 17.5% (RCJY, 1992).

In addition to the combined feedstock and specialization-based staging pattern of SABIC PPS, another distinctive factor stresses the within-layers specialization and corporate organization. Emphasizing the top two layers, SABIC affiliates and corporate organizations tend to form a within-layers system of production. These layers include firms that are incorporated within the corporate production system with a distinct social division of labor. The distinction here is in reference to corporate organization arising as the outcome of the overall

feedstock-based specialization. Organized over national, regional (Gulf Cooperation Council [GCC] countries), and international levels, SABIC's industries and affiliates form a unique structure of corporate strategy (see Figure 7.10). Within SABIC's control, this corporate structure encompass three interrelated layers of industrial production (see Table 7.1). The main pattern of linkages between these layers is in the form of shareholding-based relationship. The first layer, including SABIC subsidiaries, consists of those companies involved either in national and international marketing, R&D, or in manufacturing activities in Jubail and Yanbu industrial cities. Companies in this layer are SABIC totally owned or at least 70% of shareholdings.

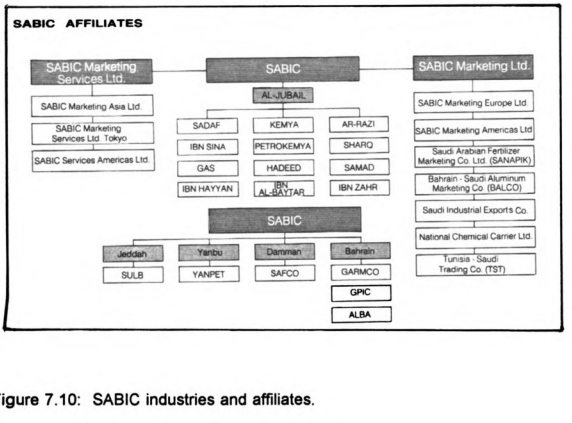

Figure 7.10: SABIC industries and affiliates.

Source: SABIC Review (July-December 1991).

Table 7.1: SABIC corporate shareholding-based divisions.

Industry	No.	Joint-Venture	SABIC Share
SUBSIDIARIES			
Marketing	2	SABIC-Owned	100
Petrochemya	1	==	100
HADEED & SULB	2	HADEED	94.63
IbnHayyan	1	Luky Goldstar (SK)15%/National Ind. Co. 10%/Two Saudi Plastic Companies 3.5% SAFCO	71.50
IbnAlbaytar	1	Private Producers Neste	70.50
GAS	1	Oy 10%/ Eco fuel 10%/	70
IbnZahr	1	APICORP 10%	70
JOINT-VENTURES			
ArRazi	1	Mitsubishi	50
SAMAD	1	Taiwan Fertilizer	50
YANBET	1	Mobil	50
IbnSina	1	Hoechst-Celanese	50
SADAF	1	Pecten (Shell)	50
SHARQ	1	Mitsubishi	50
KEMYA	1	Exxon	50
CONTRACTORS			
SAFCO	1	Private Shareholders/ SAFCO Employees Bahrain	41
BSC Petroch.	1	Bahrain	33.33
BALCO	1	Bahrain	25.67
BSC Aluminum	1		20
NCCC[a]	1		20
TSCIE[b]	1		20[d]
SICE[c]	1		13.88[d]

Source: SABIC Annual Reports (1990, 1991).

[a]National Chemical Carriers Company, Ltd.
[b]Tunisian-Saudi Company for Imports and Exports.
[c]Saudi Industrial Company for Exports.
[d]Companies in the development stage.

The second layer includes SABIC's joint ventures with multinational firms. This layer represents the common denominator that link all of SABIC's production layers, namely in the area of technology. In fact, the "joint-venture" approach is one of the leading characteristics of SABIC's production system. With the exception of two, all of SABIC's petrochemical and fertilizer plants are in joint venture with leading U.S., European and far eastern companies (Al-Jarbou, 1985; Al-Zamil, 1981; SABIC Annual Report, XII, 1988). Two main factors that have been considered as the reason behind SABIC's joint-venture approach: technology and marketing. According to Al-Jarbou,

> The joint-venture approach was chosen for most of SABIC's projects to assure that the products would meet the highest international standards and that their entry into the world market would be in an orderly manner. Selected as SABIC partners have been some of the best-managed companies in the world, known for their proven managerial capabilities, technical achievement, marketing expertise, and willingness to transfer their know-how and to provide training to Saudi personnel. (p. 194)

Among these international companies are U.S Celanese, Exxon, Mobil, and Texas Eastern. Other international companies include Ente Nazionale Idrocarburi of Italy, Deutsche Entwicbung Gesellschaft of West Germany, Lucky of Korea, the Mitsubishi Group, Neste Oy of Finland, and Taiwan Fertilizer. In return, these companies will be guaranteed, in addition to access to the abundant domestic raw materials, various investment incentives provided by the Saudi government, e.g., income-tax exemption, duty-free imports of machinery and equipments, and so on (Masood, 1989; SABIC Annual Report, 1988).

The third layer in SABIC's corporate organization includes companies

engaging in contracting relationship. Contractors are referred to as "associated companies" integrated with the parent corporation in the form of shareholding relationship. SABIC's share in these companies consists the lowest compared to the other two layers. The size of SABIC's shares in these companies ranges from 13% to as high as 41%. SABIC's shares in affiliates and contractors can be viewed as a controlling mechanism in the attempts to insure its market and technology expertise, on one hand, and the expansion of its productivity and capital returns. It is not, however, a mechanism to insure the delivery of cheap labor or products as the case in other corporate strategy. For SABIC, as well as for the oil industry in general, this is largely the result of the nature of social structure of production and the political forces involved. In SABIC's corporate organization, the necessary means of production are controlled by the state and little is monopolized by local productive forces. The local firms, largely linked through market, are less being incorporated within a system of interdependent relationship of production. This is in contrast, for example, to the nature of control established within the Japanese auto industry. Hill (1989) characterized the Japanese parent firms' relationship with their subcontractors as to have "a strong paternalistic overtones." As a stabilizing mechanism, the nature of this relationship is developed through the parent firms owning of shareholdings in subcontractors. In SABIC, while this is the apparent case, the less-than-50% shareholdings are mainly to link affiliates within its market. With regard to the 50-50 joint ventures as another controlling mechanism, SABIC's interdependence with multinationals

is rather unique given the broader national context of industrial strategy. Therefore, this is by no means comparable to the defined system of production as emphasized within the concept of transnational production systems. Within SABIC's production system, multinationals and affiliates are largely linked by a system of exchange organized around technology, market, and raw materials.

Within the general context of SABIC's PPS, there is also a system of social stratification. Because SABIC is only involved in the operation of the top two layers, the lower two layers are connected to SABIC through the use of feedstocks produced by its affiliates in industrial cities. Technology used, firm size, and ownership are factors that distinguish between SABIC basic and secondary layer firms, on one hand, and also between firms involved in secondary and light manufacturing, on the other.

In general, Hill (1989) argued, "the higher up the value-added chain, the bigger the firm, the larger the business profits, the more privileged the conditions of work and pay, and the more male dominated the workforce" (p. 466). In the SABIC production system, the substance of the preceding statement, however, is totally true, except the fact that all of the workforce is composed of male workers. For the Saudi petrochemical industry, the combination of technology, feedstocks, and firm size is the main determinant factor in characterizing the nature of how production is stratified. Hence, it can be argued that, the more extensive the use of technology, the more feedstocks processed, the larger the firm size, the larger

the number of workforce; and the larger the size of exports, the larger the profits, the higher the pay.

Taking the example of SADAF, the largest of SABIC's ethane-based production, these production features are the underlying measures when the comparison involved other firms in the first layer (see Figure 7.11 and Table 7.2).

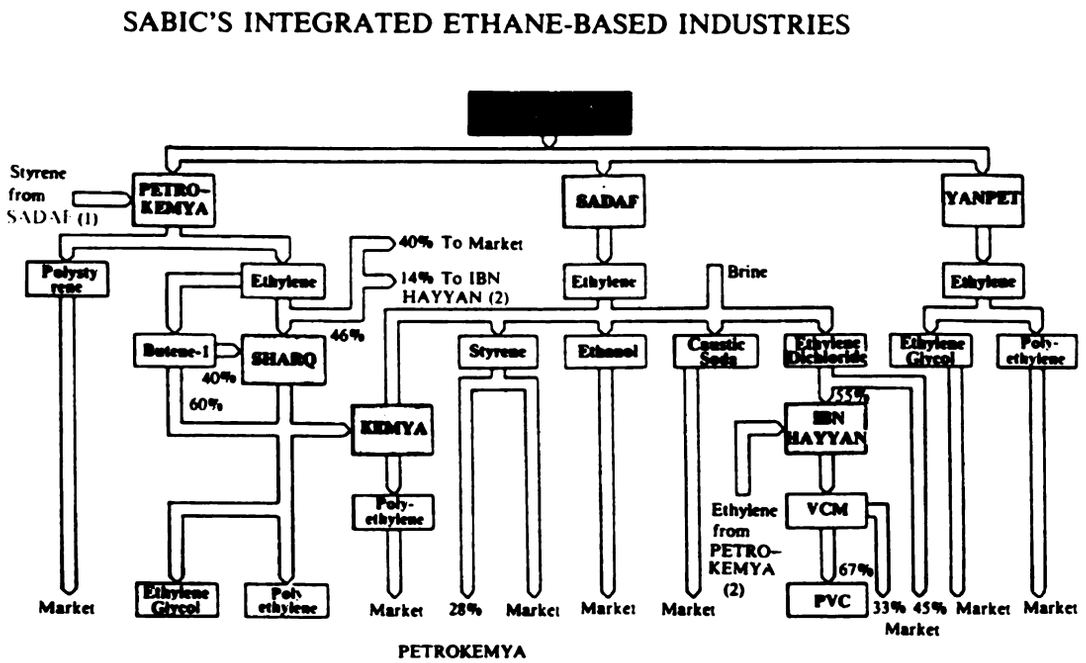

Figure 7.11: SABIC's integrated ethane-based industries.

Source: SABIC Review (July-December, 1991).

Table 7.2: Comparison of SABIC first-layer firms according to employment, feedstocks, and products.

Firm	Employment	Feedstocks	Number of Products
SADAF	747	Ethane, salt & benzene	5
PETROCHEMYA	863	Ethane, styrene	3
YANBET	1,291	Ethane	3
Ibn-Sina	293	Methane	1
Ar-Razi	320	Methane	1
KEMYA	408	Ethylene	1
SHARQ	586	Ethylene	2

Source: SABIC Annual Report (1991).

SADAF is a joint venture with Pecten Arabia Company, a subsidiary of the U.S. Shell Oil Company (SABIC Annual Report, 1991). In comparison to other SABIC petrochemical and fertilizer companies, SADAF is in the lead with regard to capital investments (initial capital of SR 10 billion), feedstocks used, size of products and capacity, and its role as a source of feedstocks for most of SABIC's firms. An important aspect of SADAF's advantageous position over its sister companies in the first layer is in regard to the size of feedstocks and the number of products. In this context, SADAF was built to have several plants using ethane, benzene, and salt. It is involved in the processing of these feeds and in converting them into a number of products intended either for exports or used by other firms as feedstocks to produce other basic and downstream products. Although

SADAF's large production gives her leverage over the others, its role as a source of feedstocks for the majority of firms in the first and second layers is yet another beneficial feature of its production. In fact, the handling and exchange of feeds and products have been one of the prominent features in SABIC production. According to the MYAS Master Plan (1987), the preferred layout of petrochemical industries, both basic and secondary, "is characterized by a high degree of interrelationship between plants--supplying each other with feedstocks and exchanging by-products and utilities" (p. 16). For SADAF, these feeds and products relationship add to its business profits, the level and size of technology and of course the type of employment (mainly highly skilled engineers and technicians), and by its role as the supplier of various feeds and products to other companies. These include most of the firms incorporated in the first and second layers in SABIC petrochemical production (see Figure 7.12).

With regard to the employment-based comparison of SABIC first-layer firms, SADAF came third after YANPET and PETROCHEMYA. As shown in Table 7.2, YANPET's share of SABIC employment is the highest given its role as the only petrochemical plant in the Yanbu industrial city. PETROCHEMYA, on the other hand, came second after YANPET in its share of employment for reasons mostly because of its role in the national training programs, in addition to the fact that it is 100% owned by SABIC. Because of the national pressing goal of Saudization, SADAF and PETROCHEMYA employ the highest share of Saudis who occupy more than 75% and 73% of their workforce, respectively.

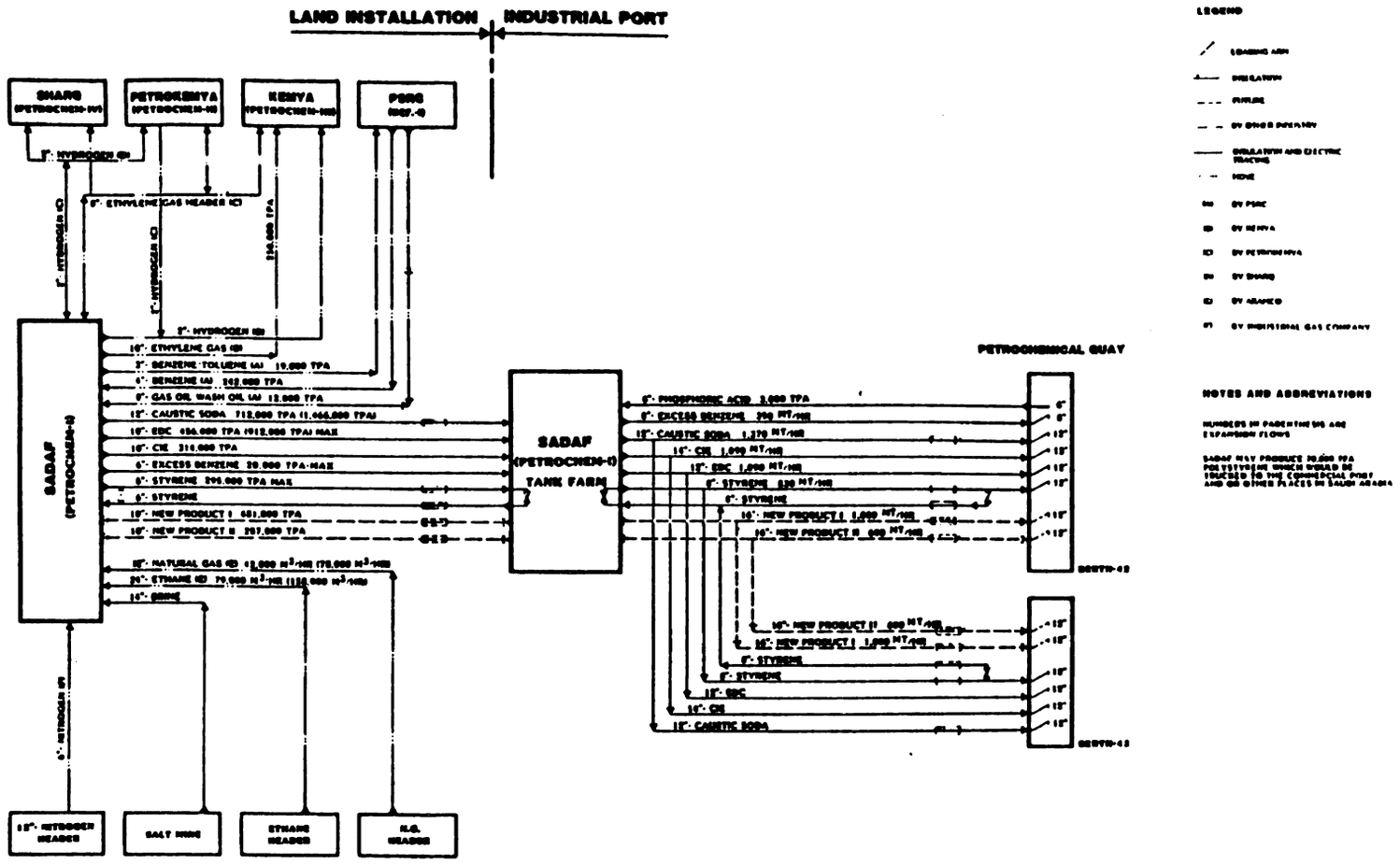

Figure 7.12 SADAF Feeds and Products-Based Relationships of Production.

Source: RCJY, MAJAS: Master Plan Update, 1984, Vol. III, Figure 8.8.

The Spatial Dimensions

SABIC's petrochemical industry represents a highly concentrated system of production in which control over industrial activities is established by locating all of its operations within the two industrial cities of Jubail and Yanbu. This nature of concentration is influenced by the nature of the industry's export-orientation and the locational pattern of principal feedstocks. The Saudi industrial city model, while reinforcing the spatial concentration of SABIC production, has also promoted a system of spatial control and regional imbalance of industrial-related growth.

Notwithstanding the differences in the nature of industry and production systems, Toyota city's "just-in time delivery system" renders a similar pattern of spatial concentration, especially in terms of Toyota's "spatial proximity," approach (Fujita & Hill, 1993). For SABIC PPS, the concentration of projects in two cities is also an industrial approach to avoid the disruption in the flow of feedstocks, required services and employment. Given its liquified-based feedstocks, namely oil and natural gases, the Saudi petrochemical production is far more concentrated than any industry in the world. In the case of Jubail industrial city, spatial concentration of production is exemplified in the handling system of feedstocks. With the exception of Aramco's bulk supply of natural gas and ethane, largely from plants located outside the industrial city, all of the fuels, gases and petrochemical derivatives are transported through pipelines between and within layers incorporated in the primary and secondary chain of production (see Figure 7.13). A "Right-of Way" (ROW) system of pipeline transport was developed to ensure the

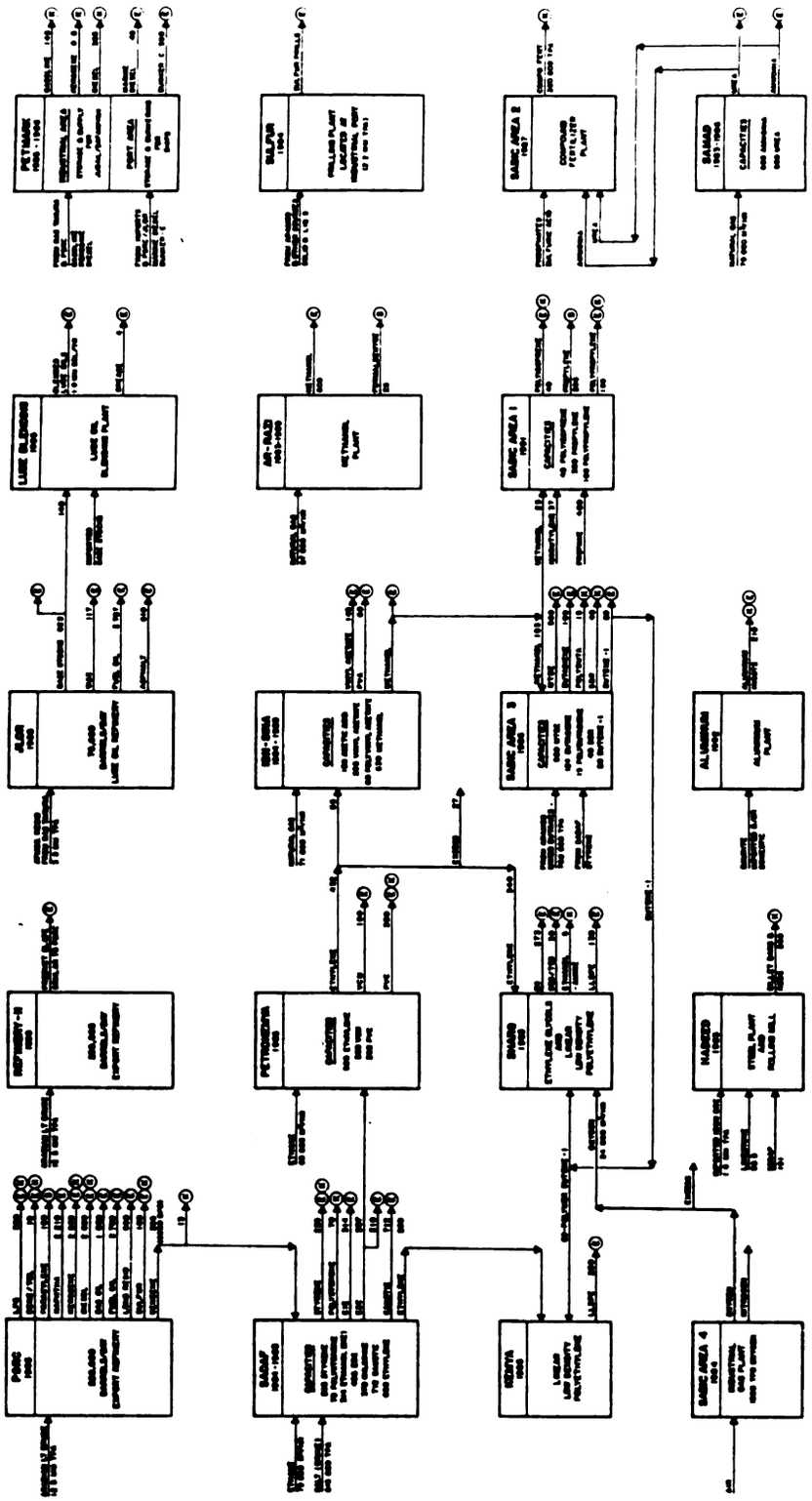

Figure 7.13 Feedstocks Flaw Between and Within Production Layers.

Source: RCJY, MAJAS: Master Plan Update, 1984, Vol. III, Figure, 4.7.

provision of feedstocks and natural gas supply. Although little has been said about its detailed functions, the ROW system refers to the physical layout of pipelines throughout the industrial parks as a facilitating method for the handling of materials. "Looping" of pipelines, "pipe sleeves or culverts" are used to facilitate the supply of required materials. According the Jubail industrial city Master Plan Update (1984), "The dedicated rights-of-way are provided and planned to increase safety, minimize disruption of other services and provide good access to construction and maintenance service requirements" (RCJY, MAJAS: Master Plan Update, 1984, Vol. III, p. 8-5). Furthermore, the predominantly export-oriented nature of the Saudi basic industry is another important aspect in characterizing the spatial pattern of concentration. As an integral part in both industrial cities, an industrial and commercial ports were established to be used for the shipping of products to foreign and domestic markets as well as the imports of needed cargos. The Jubail Commercial Port, for example, is equipped to handle "nine million tones of cargo per year" to meet the needs of the Jubail sub-region, construction and the primary and secondary industries. The industrial port, or the King Fahd Industrial Port in Jubail, is among the world largest ports.

> It consists of an Open Sea Tanker Terminal (OSTT) with four berths, a Breakwater Terminal with three berths and room for additional one . . . , a Petrochemical Quay with four berths and an associated Tankfarm, and a Dry Bulk Terminal (Solids Quay) with nine berths. Further, the port includes a service Quay, a Module Import Facility and a large tankfarm dedicated to the storage of refinery products. (Master Plan Update, 1984, Vol. I, p. 2-33)

The extensive use of a pipeline system in the Saudi basic industries in general, and the petrochemical industry in particular, has rendered another,

essential, pattern in the spatial division of labor process. Due to a strategically-oriented, resource-based industrial development, the concentration of oil, petrochemical and other hydrocarbon-based industrial production in the Eastern Provence gave rise to a new pattern of spatial redistribution. By building the industrial city of Yanbu in the Western region, the Saudi government attempted to regionally reallocate its industrial production. The effort to establish an industrial city far from the oilfields was achieved by extending two pipelines carrying crude oil and natural gas from the Eastern region to the Red Sea port of Yanbu. While Jubail city added to the already developed region in the East, Yanbu was seen as an initial stage in the long-term process of industrial growth in the Western region. Given the nature of industrial production in both cities, the endeavor to disperse industrial growth is spatially restrained. Even though the relocation of the Saudi industrial production was mainly driven by an overall national strategy, namely export-led economy, regional implications are still significant given the stage of the country's industrial sector and its expected growth formation. In general, however, industrial production in Saudi Arabia is characterized by its regional imbalance. In fact, the industrial sector is largely concentrated in the urban centers located in the Eastern, Western, and Central regions. Although SABIC and Petromin production process tends to reduce the urban-based industrial concentration, some hindering factors associated with the nature of petrochemical production and its organizational, technological and spatial linkages seem to perpetuate the status que of regional disparities, at least in the short term. The underlying aspect in this

regard, which will be dealt with in the next chapter, is related to the question of economic and industrial integration of the new poles within the regional base of growth. Regardless of the negative or positive outcome of industrial growth poles, however, it will always be downplayed by the still significant role of the Saudi strategic objectives. This is particularly an essential determinant factor, given the fact that the national industrialization process is still unfolding.

CHAPTER VIII

THE SAUDI EOI AND REGIONAL PROSPECTS: STRATEGIC AND SPATIAL DIMENSIONS

Introduction

In preceding chapters, this study established the policy and empirical framework of the Saudi Arabian oil-based industrialization with a specific focus on its regional and urban implications. In our theoretical and empirical discussions, emphasis revolved around the question of industrial-related regional and urban development and its link to the state industrial policy in general and the strategically led EOI process in particular. Concerning the general aspects of the Saudi industrial-related growth, Chapter V identified the underlying forces that shaped the structural outcome of regional and urban growth. These forces are related to the nature of oil-based economy, yet largely emerged as the product of a specific societal and political structure. Therefore, our conclusion was that both the oil industry and state development strategy have contributed to rising regional disparities. To rectify these problems, the recent Saudi EOI was developed by spatially organizing the strategically oriented, oil-based industrialization. In the previous two chapters (VI and VII), the industrial-related spatial process was established by examining the locational patterns of the Saudi industrial-city model and

SABIC organization of petrochemical production. Hence, and within the context of the Saudi state's strategy relation, this chapter specifically examines the spatial implications of the economic linkages generated by petrochemical-led manufacturing and its prospects thereupon for regional and urban development.

Developed primarily to create a long-term economic base, the state EOI process has both strategic and spatial linkages unique to the Saudi economy and industrial model. Strategically, the Saudi industrial model is linked to the oil industry and its outward-oriented production system. Spatially, the Saudi EOI has a locational pattern which emerged from both the strategic imperatives of oil exports and the industrial-city model. These industrial linkages are the focus of this chapter with particular emphasis on their implications for urban growth and regional planning. Also, they will be examined as the primary components in constructing the base for a Saudi regional policy which addresses the issue of regional development on the basis of long-term process rather than a mere service-oriented regional planning. To examine these issues, however, requires an investigation of the main concepts of this study (state and strategy, and the regional question) as a prelude comparative framework within which the analysis of the Saudi case should be identified.

State-Strategy Relation and Spatial Implications: A Comparative View

The interrelationship between state and strategy and regional development concerns is a policy issue adopted in this study to reflect a process that

characterized the political economy of developmental states, especially in the aftermath of successful economic experiences witnessed in the New Industrializing (or Industrialized) Countries (NICs). Preoccupied with the development of the national industry, these countries embarked on an outward-looking industrial program that was later viewed as one of the major contributing factors which either caused a rise in regional inequalities or acted as a perpetuating force of the existing spatial division of labor. In general, the NICs, as well as other developing countries, have recently developed regional policies that directly deal with rectifying regional inequalities associated with long processes of urban-led growth and industrial-based development. Hence, these regional policies were viewed as a responsive measures taken especially to encounter the extensive polarization of economic activities created during the course of industrialization (Storper, 1991).

As a point of departure, the industrial-related basis for regional concerns by developing states is a controversial policy issue given the existing conflict of interests on the national and regional levels. Nationally, a capitalist state, according to Deyo's (1987) view of the NICs, either directly intervened in economic decision making of selected, strategically based projects, or indirectly induced a favorable economic and political framework for the private sector to implement strategic goals. These state-strategy relationships, whether in the East Asian or South American NICs, were indeed a turning point in both theoretical and development perspectives in social sciences during the second half of this century. The rise and fall of theoretical perspectives were principally the result of "hegemonic"

views, e.g., modernization, dependency and world system theories, driven by the lack of understanding how domestic and international forces can be both interrelated and determinant. The above state-strategy relations can be established as a countervailing evidence in the theorizing of international relations as well as the domestic political economy. The book edited by Frederic Deyo (1987), The Political Economy of the New Asian Industrialism, is a testimonial work that addressed both domestic and geopolitical circumstances where the political and economic base in East Asian countries rendered the emergence of strong, autonomous and developmental states. In general, the main argument of the book revolved around a comparative approach attempted to differentiate cases of development in East Asian countries from those in Latin America on the basis of the domestic political economy, regional and international forces and industrial orientations (Cummings, 1987; Haggard & Cheng, 1987; Koo, 1987). Against both dependency and modernization approaches, the state political economy, state-business alliance, export-oriented industrialization and lesser role of foreign direct investments were the main factors that distinguished the Asian NICs from those in Latin America. According to Haggard and Cheng (1987), the main distinction was related to the level of power each of these actors seemed to exert during the course of development. Thus, they stated that:

> All developing countries exhibit some sort of division of labor between local firms, multinational corporations, and state-owned enterprises. The explanatory problem is to account for sectoral variations and differences in the relative power of the three actors across countries. Such an explanation requires us to address critical domestic variables that dependency analysts ignore, including development sequencing, the

> political and economic strategies of state elites, and the interests and forms of representation of domestic social groups. (p. 85)

The interplay of those three actors are also reinforced by the nature of industrialization. In contrast to the foreign-dominated, import-substitution industrialization in Latin America, the export-oriented industrial strategies of the East Asian states, especially South Korea and Taiwan, were carried out by the state and domestic firms. Multinational capital was concentrated in the import-substitution, mainly in chemical industries, which was by no means a leading industrial sector (Haggard & Cheng, 1987; Koo, 1987, 1986). Koo (1987) referred to the strength and commitment of the state, the weak but "congenial" social classes too dependent on capitalism and the favorable international political economy created after World War II, as the main forces that distinguished South Korea and Taiwan from their counterparts in Latin America. The interplay of these factors, Koo argued, distinguished the main aspects of the political economy in the East Asian and Latin American NICs.

Concerning the comparative views on the two regions' political economies, two important aspects seemed to echo throughout the book. The first is what Koo (1987) called the nature of the "triple alliance--among state, foreign capital, and domestic capital." As a contrasting aspect, alliance differed on the basis of power relation where, in cases like South Korea and Taiwan, the state is the more dominant vis-a-vis foreign and domestic sectors. This nature of the state role is somewhat reversed in the Latin American case. The second comparative aspect is related to the nature of industrial strategy adopted in each country: Export-

Oriented Industrialization (EOI) versus Import-Substitution Industrialization (ISI). Both industrial approaches were believed to be the product of the different paths in the historically specific economic and political process and industrial structure (Haggard & Cheng, 1987; Koo, 1987). Within this context, a suggested distinction can be made on the basis of the political economy of industrialization. Throughout Deyo's book, attempts were made to differentiate between the nature of dependent developments in East Asian and Latin American countries. One of the main differences was related to the association between state domination in export-led growth and weak state role in ISI. The ISI-based growth in Latin America was dominated by foreign capital whose close ties with the "traditional elites" left the state comparatively weak. In contrast, ISI in East Asian countries was achieved largely by national entrepreneurs who were protected from foreign competitions by a strong state because of this sector's role was a prerequisite for the building of EOI-based growth, especially in South Korea and Taiwan (Deyo, 1987; Evans, 1987; Haggard & Cheng, 1987; Koo, 1987).

While it was not intended to provide a thorough comparison between the NICs political economy, the above discussion, however, was an indicative measure and a prelude to this study's main question concerning the interrelationship between the state-EOI strategy relation and the ensuing pattern of interregional development. Emphasizing EOI-led growth in developing countries, this proposed interrelationship is simply an attempt to link the state industrialization and its spatial division of labor in order to establish a sound recommendation for existing

regional problems. In this regard, it is important to acknowledge that governments in developing countries vary in their approaches to correct regional problems depending on their development strategies and national priorities. In general, the main aspect of different regional policies is dependent on the present stage of the EOI process. For new industrializing economies, regional policy was directed to lessen regional inequalities associated with urban concentration of industrial activities, e.g., South Korea, Brazil and other NICs (Storper, 1991). Others are countries whose industrialization process is still in its critical stage of building the national base where regional problems are only a marginal concern rather than being a pressing issue in the national political economy. The latter cases can be referred to as the "on-the-road" industrializing economies. Although they may differ in the level of industrialization and economic development as a whole, both cases are faced with the same aspects of regional policy challenge. Such a challenge, this researcher believes, is embedded in the nature of local-global linkages in general and the social and spatial linkages of the industrial production system in particular.

For the NICs, the issue of regional inequalities as related to the state-EOI strategy, is rarely analyzed. The exception is only evidenced in Deyo's (1987) general view on income distribution in the East Asian countries as compared to Latin American counterparts. In contrast to Latin American ISI, he characterized the East Asian EOI as being less associated with income inequalities, especially during the outset of the export sector. This, he argued, was due to the "substantial

economic inclusion of workers in the fruits of East Asian development, particularly during early EOI" (p. 197). Even for those workers with lower wages, the state compensated them through a system of social welfare. In the case of Latin American countries, income inequalities, Deyo indicated, emerged as the result of the lack of state intervention to compensate for the low-wage workers whose large portion of the workforce was "marginalized" by the "relatively small, protected, high-wage employment sector in modern industry and mining" (p. 198). Evans (1987) echoed this assertion by emphasizing the case of Brazil, which he considered to be the "archetype" case of "bad" industrial-related income distribution. Thus, he argued that, "The mass of the Brazilian population has clearly not received what is like a fair share of the benefits from the country's rapid industrialization" (p. 218). Evans referred this form of inequality to the assertion established in the dependency theory in regard to the relation between foreign direct investment and inequality. With the exception of the Philippines, he viewed the East Asian cases as a contrasting examples where the state, though as authoritarian as that of Latin Americans, repressed "labor's demands, but repression has not been accompanied by increasing levels of inequality" (p. 219). This can be seen as a confirming indication to those views presented by Deyo on the role of the compensating system and Koo's power-relation in the tripolar alliance where the state is relatively the dominant actor.

However, the above comparative analysis can be challenged when a single case study is taken into consideration. Koo (1984) provided a historical

comparison of the state-led, export-based growth in which he seemed to reverse the above picture of lesser equality in East Asian countries through an examination of the South Korean case. Against the claims that stressed the decline of income inequality in South Korea, Koo referred those analyses to data based on the 1960s during the highest economic growth. Hence, he stated, "It turns out that income inequality in Korea increased noticeably in the 1970s, and the question of social inequality has become a very serious social problem, recognized by the majority of Korean people in the late 1970s and early 1980s" (p. 1029). Among other factors, Koo attributed increased inequality in Korea to the state "outward-looking, EOI strategy" during which the prime goal was totally concerned with promoting economic growth. Within this context, he also acknowledged the dependency views on the relationship between foreign capital penetration and increased inequality as inadequate explanation in the case of Korea. This, Koo believed, was due to the role of the state whose actions were seen from the initial stage of EOI as intended to foster inequality among social classes. Hence, it is not the relation between foreign capital and inequality, as the dependency theory argued, but the state promotion of growth without considering the equity question. The interesting question, Koo proposed, was in regard to the state position within the world economy. As an explanatory variable, the international division of labor influences the capitalist state policy choices as the result of the way it is integrated in the world economy. This is not only in the sphere of the social structure of income distribution but also in spatial terms as well.

In Korea, as well as in other developing and developed countries, the spatial division of labor is the physical contour of the social base of growth, especially in industrial-related economic development. In most of the literature on the NICs, spatial consideration of state EOI strategy was rarely incorporated in the overall analysis of dependent development. Writers on the East Asian and Latin American NICs stressed the social rather than spatial "unbalanced or enclave" of industrialization (Barrett & Chin, 1987; Deyo, 1987; Koo, 1984, 1986, 1987). The exception, however, is the recent analysis of industrial-related urban dynamics on the expense of rural areas, with particular focus on primate cities such as Seoul, Rio de Janeiro and Mexico City (Choe, 1990; Enders, 1980; Lee, 1991; Song, 1980; Storper, 1991). Although earlier stages of EOI were mainly dominated by the quest for economic growth, as Koo (1987) argued, the issue of regional inequality and uneven rural-urban development has become of great concern in government planning. One common approach used to confront the industrial-related spatial problems has been to relocate industry from metropolitan areas to other regions. In the case of Seoul (Choe, 1990), Rio de Janeiro, and Sao Paulo (Enders, 1980; Storper, 1991), governments' attempts to disperse industrial investments were believed to have failed. The Korean experience, Choe argued, was not satisfactorily successful.

The same disappointment also took place in Malaysia. Alden and Awang (1985) examined the government regional development planning by attempting to evaluate the recent approaches toward reducing regional disparity and rural-urban

migration. The main concerns in Malaysia were to combat inequality in welfare among regions through various strategies of resource-based growth and "industrial dispersal." In general, the results were disappointing in almost all accounts. Most notably was the difficulty experienced by Malaysian planners to redistribute industrial activities to lagging regions. In this regard, Alden and Awang's findings indicated that industrial dispersal was a failure policy due mainly to the lack of strong economic base needed to achieve efficient economic growth in the peripheral areas. Hence, they concluded that

> the regional strategy focused upon industrial dispersal policy, which aims at locating more industries in the less developed states, has not provided a strong enough pull effect to affect the continued preference of private investors for the more established and efficient industrial areas. (p. 507)

Thus, it is the view of this study to believe that the main reason of these policy failures were apparently due to overlooking the aspects of the political economy of growth and the nature of the spatial and social organization of industrial production. Hence, the relocation of industry from already developed urban areas in Korea or in Malaysia was largely faced with the problem of the economy of scale that was already generated and spatially integrated within the international division of labor.

In light of this view, Storper's (1991) provided an interesting argument on the geography of industrialization with particular emphasis on the relationship between industrial organization and spatial linkages within the context of external economies. In his study of Sao Paulo, Storper examined the national and state governments and international institutions's spatial policies to "depolarize" industrial

activities concentrated in core cities. He started his analysis by refuting arguments generated by neoclassical views on the issue of polarization and its historical political and economic bases. From the outset, he indicated that the Sao Paulo's metropolitan area "currently has the largest manufacturing economy of any similar region in Latin America, in terms of both employment and output, and accounts for about half of Brazil's industrial output" (p. 33). Thus, if attempts of "polarization reversal" occurred, he argued, "it would be extremely significant from a theoretical standpoint" (p. 33).

For Sao Paulo, the location of central government and political powers and the concentration of national resources were seen by neoclassical theorists as the leading historical factors for polarization of industrial activities (Enders, 1980; Storper, 1991). In this regard, Storper's counterargument generally attributed the rise of Sao Paulo to factors beyond the mere resource concentration of the public sector. It was a mix of economic and political powers of private and public investments that led to the emergence of Sao Paulo as an "industrial city-state." These aspects of political economy of Sao Paulo's growth were later, especially during the 1960s and 1970s rise of modern industrial sector, reinforced by the nature of the industrial system developed in the city. On this ground, he rejected recent arguments in locational theory on polarization and polarization reversal. Here, he presented these theoretical arguments advocated by neoclassical and also what he called, "more classical" studies as being inadequate. In their conflicting views on industrial relocation, the former approach suggested relocation

as possible on the basis of "the spatial pattern of relative factor cost," while he later rejected this notion by emphasizing the ability of large centers to create and recreate "producer's surplus," hence, maintaining the factor cost differentials. In response, Storper suggested a framework in which the nature of industrial production systems are considered as both technologically and spatially defined within the context of specific social division of labor. Therefore, his empirical views were stated as follows:

> Our framework, it can now be seen, incorporates the predictions of both these theories by attempting to comprehend the development of industrial systems as technologically complex assemblages of techniques, organizations, and social practices which define, at any given moment, the underlying locational possibilities of the units of the system. Thus, it is to be expected that: (a) Production systems in large urban areas will often manifest external economies that permit them to support higher nominal factor prices than are available in peripheral areas without any loss in efficiency. (b) Production units will not smoothly and automatically move to cheaper peripheral areas even when factor cost differences are great, since such movement frequently depends on scale and scope changes in the production process which permit effective linkages over great distances, and these are not always available or economically efficient; production units may find themselves spatially "trapped." (c) Conversely, production units may "opportunistically" move to cheaper areas even when productivity increases faster than factor costs in existing locations: where scale and scope changes permit effective long-distance linkage, producers may (especially under harshly competitive conditions) abandon central industrial zones. In other words, the geographical responses to factor costs are always mediated by the complex technological and organizational nature of the production system in question, as it imposes constraints and creates possibilities for locational decisions. (pp. 46-48)

Throughout his analysis of the Brazilian industrial system, Storper attempted to apply this framework to the Sao Paulo case. In general, he defied the neoclassical notion that there was an actual polarization reversal of industrial activities from the Sao Paulo metropolitan to the periphery. Here, he empirically

indicated that the data on industrial growth, whether during the high growth of 1970s or currently, suggested no "evidence of a decline in Sao Paulo's real position." Instead, he argued, "the absolute gaps between Sao Paulo and the rest of the economy increased" (p. 64). On this basis, Storper suggested that the documented increase in the peripheral share of employment and output was not an indication of the so-called "relative decentralization," rather it was in "traditional sector's share." In the modern industrial economy, however, Sao Paulo is still dominant. Hence, it is the nature of industrial economy that rendered his argument on the relation between agglomeration and industrialization significant. In this respect, Storper emphasized that the link between industrial production and space is not through a simple pattern of cost-based location or relocation. Rather, it exists through the work of a specific technological structure which varies from one place to another where different economic activities are organized in various forms.

For Storper, as well as other political economists in industrial geography and urban sociology, industrial production system is an essential variable for understanding the nature of regional and urban development. In fact, the general views presented by Storper's analysis of Sao Paulo and the specific spatial and social variables developed by Hill (1989) in the case of Japanese auto production system, as well as Fujita and Hill's (1993) study of Toyota City are a principal depiction of incorporating industrial production system as an explanatory measure. In our view, it is a critical component in any framework attempting to understand

the nature of industrial economies in general and the continuing failures of government policies to combat regional disparity and urban-dominated growth. Due to the country and industry-specific nature of those cases presented above or throughout this study, the following empirical analysis of the Saudi case will utilize questions raised in these works with extreme caution. Within the context of this study's prime focus, attention must be paid to forces shaping the Saudi political economy and oil-based economy and industry in general, and the nature of state-EOI strategy relationship, and petrochemical production system and its local and regional linkages in particular.

The Saudi State-Strategy Relationship

In the case of Saudi Arabia, Deyo's "state-led" and "state-induced" approaches can be viewed as interlinked strategies established within the national development framework. In general, the Saudi state has led the development process through an encompassing economic framework in which the private sector is totally dependent on the state's economic and political decisions. Also, the Saudi state has led the national strategic EOI which came about as the result of its pervasive involvement in the whole economy. This state-led strategy in Saudi Arabia has been the result of the state's control over the oil industry. Within this context, the private sector's role is limited to implementing the policies laid down by the state, mainly in nonoil and non-strategically-oriented industrial projects. In general, this strategy has been justified on the basis that basic industries are too complex for the relatively weak and technically underdeveloped private sector.

Emphasizing Koo's (1987) "triple alliance" concept, the third actor, namely foreign capital, is mainly present in the form of a joint venture with the government, notably in large-scale petrochemical and fertilizer industries. In the private sector, foreign investments are organized by the Ministry of Industry and Electricity under the "National Industries Protection & Encouragement Law, and the Foreign Capital Investment Law."

In Saudi Arabia, the state is the dominant power vis-a-vis both local and foreign actors in the national economy and industry. Since the initial phase of oil discovery, the Saudi government has been the prime, if not the only, party involved in ownership, concession, exploration, marketing, and revenue collection. A clear example in the history of the Saudi state's relationship with foreign companies is that with the Arabian American Oil Company (Aramco: named by Caltex in 1944). Indeed, this company represents a classical case of the American-led international political economy in the postwar era, especially after the rise of "U.S. supremacy over Britain," in controlling the oil industry (Lackner, 1978). For Saudi Arabia, Aramco represented a specific form of the state-TNC relationship during which the Saudi state grew as a political and economic force in world affairs (Evans, 1985; Lackner, 1978; Luke, 1985). Since the end of World War II, the Saudi state-Aramco relationship evolved from a royalty-based arrangement of "21 cents per barrel" to the 50-50 profit share in 1950, and from a 60 % share of the company to total control by the Saudi government over Aramco in 1980 (Al-Farsy, 1990; Johany et al., 1986; Lackner, 1978). Currently, Aramco has become Saudi

Aramco and is the leading state-owned oil company involved in oil production, refining and gas gathering processes (Johany et al., 1986).

The long process for achieving the national ownership of the oil industry in Saudi Arabia can be examined within the context of how it has shaped the current state EOI strategy. Here, the main question is the extent to which the state emerged as the leading power in the industrialization process and how its relationship with TNCs and the private sector has characterized the current political economy of industrialization in Saudi Arabia. In general, the case of Saudi Arabia can be examined by reintroducing Lackner's (1978) view on the relationship between the Saudi government and Aramco. Lackner rejected the notion of what she insinuated as shareholding-based control by the Saudis over Aramco. In other words, she believed that what was announced by the Saudis in 1976 to have taken over 100% of Aramco was only in shareholding rather in the control over the company itself. Writing on the struggle between nation states and foreign companies, Lackner, while acknowledging the Saudi government's struggle to control Aramco's operations, seemed to treat control over oil industry as that of the company. In her view of the Aramco-Saudi government relationship, Lackner argued that

> throughout the period of negotiation, Aramco, far from winding down its operations, has been expanding and developing its activities, hiring new staff from all over the planet, setting up higher and higher budgets, and taking on massive oil-related projects on behalf of the Saudi government, such as the mass gas gathering plant and the integrated power system for the eastern region. (p. 48)

While this was true, the Saudis' main concern at that period was not to control the company's operations per se. Rather, it aimed to retain the ownership of the oil revenues where the Saudi government was only receiving a royalty share of the proceeds. Since then, the Saudi state-company relation has changed to a new form, namely a partnership characterized by the quest to develop the domestic industry's technological and organizational base.

Since the discovery of oil in Saudi Arabia, the government-oil company relationship can be generally characterized by distinguishing between two historical periods. The first can be referred to as the Aramco period, during which most of the nationalization process took place. This period ended in the mid-1970s, after which the Saudi government gained control over its national oil industry. The second period has been characterized by a wide spectrum of arrangements between the government and multinationals in the form of joint ventures in the development of the basic industry.

During both periods, the Saudi government established a corporate organization responsible for the development of the national industry. After gaining more than 60% of the oil industry, the Saudi government founded Petromin in 1962 (almost two years after the establishment of OPEC) as a state oil company under the Ministry of Petroleum and Mineral Resources. Petromin was mainly responsible for the management of oil accruing to the state and for engaging in joint projects with local and foreign companies (Lackner, 1978). The decision to build a hydrocarbon-based industry in the mid- 1970s also led to the creation of

another state corporation, the Saudi Arabian Basic Industries Corporation (SABIC), in 1976 under the authority of the Ministry of Industry and Electricity. SABIC is a state-owned company "responsible for implementing, operating and marketing the products of hydrocarbon and mineral-based industrial projects" mostly with joint-venture partners (Masood, 1989, p. 20).

In general, both Petromin and SABIC, along with the Royal Commission for Jubail and Yanbu (RCJY), represent the Saudi state corporate strategy, in which the political economic aspects of the oil industry and its EOI process have created a specific form of division of labor. Within the context of the Saudi state's corporate organization, this division of labor can be seen as a product of the interrelated nature of three main forces: state-led strategy, foreign firms (in the form of joint-ventures), and the local private sector. Because of the strategic role of the EOI programs in the transitional process of the economy, the weight of each of these forces is dependent on its role in the industrialization process. In general, however, it is important to stress that the key feature of the Saudi state industrial policy revolves around the concept of joint-venture, which has been illustrated in the dependent nature of the national industrialization.

The Saudi State-Led Strategy

Throughout the preceding chapters, the Saudi state-led development strategy was characterized based on two main factors. The first is embedded in the nature of the political economy of the oil industry, where the state plays the leading role in economic planning and development. The second factor is related

to the limited and unreliable nature of the private sector to undertake the strategically oriented large-scale industrial enterprises (Askari, 1990; El-Mallakh, 1982; Johany et al., 1986; Looney, 1990; Masood, 1989; Presley & Westaway, 1989; Richards & Waterbury, 1990; Soufi & Mayer, 1991). Because of the close link between the basic industrial sector and oil policy, the Saudi state's direct role in the EOI process is further heightened by the strategic importance of oil in achieving the national development objectives. Also, the local and foreign firms were deemed incapable to shoulder the gestation of the long-term process.

In general, the Saudi EOI strategy has two interrelated development objectives. The first is to diversify the national income by expanding the vertical base of the oil industry. In this context, the primary industrial development, largely petrochemicals, is expected to add value to the national resources through the expansion of exported products in the oil sector. The second objective is to build upon the basic industry a diversified local productive forces (Abou-Ezze et al., 1989; Askari, 1990; Looney, 1990; Masood, 1989). Because of the raw material and capital-based petrochemical industry, the first objective can be perceived as a logical step in the Saudi industrialization. However, the economic prospects continue to be limited by factors associated with oil exports, mainly in regard to the uncertainty and political factors inherent in the world market. In fact, the Saudi exports of petrochemical products are already faced with more barriers than it is the case for crude oil. In Europe and the United States, for example, "protectionist moves" against Saudi petrochemicals have been witnessed in the form of national

measures to protect domestic industry (Richards & Waterbury, 1990; Robins, 1991).

With regard to diversifying oil income by adding value to its production components, this industrial strategy is also an acceptable rationale given the nature of a single-commodity-based economic structure. Emphasizing the petrochemical industry, the value-added components are derived from the processing of hydrocarbon, where the returns on investments are much higher than for crude oil. In his explanation of petrochemical-based industrialization in oil economies, Abou-Ezze (1989) underscored both economic and financial considerations as the main reasons behind the expansion of the oil industry's vertical integration. In his argument, moving into what he called the "deepening processing of activities," is an important industrial consideration, given the associated goals for achieving both "economies of scale" and "technical linkages." Thus, he stated that "the larger the use of domestic resources in the processing activity, the higher are the returns to those factors and therefore the higher the domestic value-added contribution of the activity" (p. 33). Indeed, this economic interpretation is the underlying policy objective most characterizing the Saudi industrialization strategy.

The other state strategic objective is industrial-based diversification of the national economic base. As far as this study is concerned, diversifying the domestic industrial base is the primary testimony for the successful prospects of the Saudi EOI process. This assertion is considered on the basis of two oil-related

economic factors. The first is embedded in the exporting nature of oil industry and its limited domestic linkages. This is particularly significant given the fact that the Saudi oil-based EOI process was established as the initial phase in national industrial development on which, it is hoped, an import-substitution manufacturing sector will rise (Looney, 1990; Stauffer, 1985). Although in the context of industrial development sequencing this process is questionable, for Saudi Arabia, however, this was never a choice. Rather, it was a natural outcome of the nonexistent diversified economic base before the discovery of oil and the subsequent oil-related limited industrial linkages.

The second, though related, basis for emphasizing the long-term structural objective in EOI-based diversification is inherent in the nature of oil-based, petrochemical-led industrialization. The most common argument questioning the viability of the Saudi industrialization has stressed the preeminent interdependence between oil and the downstream industrial activities (Askari, 1990; Presley & Westaway, 1989; Richards & Waterbury, 1990; Stevens, 1982). In this respect, several factors have been considered as potential hinderance to establishing an oil-based industrial development. One of the leading factors is the depletable nature of oil. Given the dependent nature of hydrocarbon-based projects on oil and its derived capital, critics believe that the finite nature of oil is a counterproductive factor in such an industrialization process. In the Saudi case, although this argument is applicable, the vast oil reserves, however, puts her in somewhat advantageous position (Richards & Waterbury, 1990).

Other limiting factors in the Saudi industrialization are inherent in the interrelationship between oil and industrial policies. These factors are related to decisions on the level of oil production required by the world economy and that needed for industrial development (Presley & Westawy, 1989; Stevens, 1982). On the national level, those policy issues are further heightened by the Saudi government's domestic security and economic commitments, which place great constraints on the oil-derived national budget. Among the recent effects that have been witnessed is the delay or reduction of annual budgets. Although the implications of these factors for the future outlook of Saudi political and economic security are not known, especially as far as the strategic role of oil in the world economy is concerned, the short-term considerations indicate how the foreseeable future will be. Therefore, for the success of the Saudi industrialization programs, the interrelationship of these external and domestic forces must be considered in order to have a clear perception of how they influence the current and future national planning and development.

Particular to the Saudi EOI process, external and local forces are primarily linked to the role of joint ventures. The joint-venture approach, which has been preferred for political and development reasons, is an essential factor in determining the prospect of the state strategy. In this respect, it is especially crucial for the "localization" of production through the successful transfer of technology and ownership of industrial operations to local private sector (Masood, 1989). Within the context of the Saudi state's industrial strategy, these develop-

mental components are integral parts to build the national industrial base and, hence, the transformation of economic structure.

The Joint-Venture Approach to Economic Transformation

Instead of foreign direct investments, the Saudi government preferred the joint-venture approach. This choice has been attributed to the pressing developmental considerations, especially those related to the transfer of technology, know-how, development of indigenous workforce, and securing markets, especially for SABIC petrochemical products (Askari, 1990; Johany et al., 1986; Masood, 1989; Presley & Westaway, 1989; Richards & Waterbury, 1990; Townsend, 1980). Also, the successful experience with Aramco, coupled with the bad experience of the "turn-key" approach in the first industrial project (namely, SAFCO Fertilizer Company, which was formed in 1965) led the Saudis to choose joint-ventures. Thus, Bedore (1984) argued, the Saudis' "ARAMCO experience has been viewed as largely successful. Why change a successful formula?" (p. 193). Generally, however, the joint-venture approach indicated by Townsend (1980) is favored by almost all of the Gulf states. He believed that

> a joint venture permits an Arab Gulf country to maintain control of its heavy industries whilst obtaining from the joint venture partner the management, technology and access to markets deemed essential for successful heavy industrial projects. Equity participation by the joint venture partner, up to a maximum of 49 per cent, is favored rather than a straightforward management contract because it is believed that a foreign joint venture partner who is prepared to stake his own money in a project is, in effect, locked in and hence will be more likely to exert every effort to ensure the profitability and the success of the project. (pp. 89-99)

The political considerations, however, surpassed this definition of joint venture. In Saudi Arabia, the oil policy is central to any government decision, given the crucial role of oil in the development of the country's social and economic structures. The Saudi government's decision to reject foreign direct investments was based on the same grounds that justified the political and economic implications of the local private sector's participation. In other words, because of the long-term objectives associated with the EOI process, a direct involvement, either by local or foreign firms, may be an area of conflict in interests. For foreign companies, a direct-investment approach is characterized by an inherent reality of self-interest and limited concerns for the future of the domestic economy. Further political considerations are manifested in the societal structure of Saudi Arabia, where the state is greatly concerned with the social outcome had such a method of industrialization is applied. This is apparent in the role of the religious and traditional structure, which is sensitive to the direct intervention of foreign establishments. In fact, the example of the presence of a large foreign workforce can be a supportive argument. It has been an unwelcome reality that, for political and cultural reasons, the Saudi government has set a specific policy to lessen the influence of large expatriate workforce (Richards & Waterbury, 1990, p. 322). This social phenomenon has arisen because of the overall Islamic structure, which the Saudi state abides. In fact, in every development plan the general and strategic objectives are initiated by the commitment "To safeguard

Islamic values by duly observing, disseminating and confirming Allah's Sharia [God's Divine Law] (Ministry of Planning, Fifth Development Plan, 1990-95, p. 45).

While concurring on these political forces, the state's decision to adopt joint ventures was largely influenced by development objectives. For Saudi Arabia, the joint-venture approach is believed to lessen the profound dependence inherent in the domestic economic structure. To establish a petrochemical-led, export-oriented industrial sector, planners were faced with three major development shortages: a shortage in technological base, a proficient marketing network, and a well-trained workforce. Thus, foreign firms were invited to provide the technological and managerial requirements for the operations of industrial projects and to help, through their well-developed marketing systems, market the Saudi industrial products (Masood, 1989; SABIC Annual Reports, 1988, 1989). In return, the joint-venture partners would have access to the Saudi "cheap raw materials," and other processed products. This, according to Masood (1989) was initially not considered enough to attract multinationals to participate in the Saudi industrial projects. Hence, they were reluctant to enter in joint-venture agreements because of the belief that the Saudi long-term interests will not be "identical" with theirs. This fear was evident considering the experiences in Japan and in East Asia whose products have become a threat to these companies' markets in developed countries. In the case of Saudi Arabia, Masood argued,

> Some foreign partners feared that the expansion of the export-oriented and latest technology-based petrochemical projects in Saudi Arabia would drastically reduce Arab imports from industrialized countries and Saudi

> petrochemical products would encroach on their own traditional markets just as the Japanese products did in the US and European markets. (p. 31)

Constrained by its dependent position, the Saudi government added more incentives to attract multinationals. These incentives were in the form of soft capital loans, crude supplies, and subsidized infrastructures and services, mainly provided in the two industrial cities (Johany et al., 1986; Masood, 1989). Finally, the Saudi government was successful in attracting major multinational firms (see Appendix A.4). Therefore, the question to be asked is whether this strategy has been successful in terms of achieving the localization of industrial production, especially in its contribution to local productivity. In the remainder of this section, this question will be tackled on the basis of how joint ventures have enhanced employment productivity and private sector participation in the industrialization process.

Central to the joint-venture agreements, foreign firms must "allow Saudi nationals to participate in the higher levels of management, administration, production and operation" (Masood, 1989, p. 29). This strategy is an integral part of the Saudi political economy of development. It is a process which embodies the policy of gradually replacing foreign workers whose large presence is a part of the dependent nature Saudi Arabia is struggling to overcome (Johany et al., 1986). As a part of "manpower development" policy, "Saudization" of the workforce was adopted. Saudization, according to El-Mallakh (1982), was greatly emphasized in the Third Plan which treated employment as the potential

> area of greatest reward and greatest risk. If Saudi Arabia develops with optimal participation of its own population, stability will be greatly enhanced. If, on the other hand, large numbers of foreign workers continue to be employed when significant segments of the Saudi population are unemployed, dissatisfaction with the economy could result. (p. 219)

In general, Saudization policy has continued to be among the government's top priorities. Efforts by the government to increase the share of Saudi nationals in the skilled labor sector were dominating during the Third and Fourth Development Plans. For instance, this was seen in the government's countermeasurement policy to restore the decline in national share of employment, which fell from 72% in 1974-1975, to 49% in 1979-80 and to 40% in 1984-85. Government measures were expected to take effect by the end of the Fourth Plan (1985-90). Although there was an average increase of 1.9% in employment during the Fourth Plan (Ministry of Planning, Fifth Development Plan, 1990-95), there was no indication of how that affected the share of national labor. For lack of data, however, available indications, such as the size of foreign population and workforce, are probably a sign of still long way for Saudi Arabia to reduce dependence on expatriates. According to the recent 1992 population Census, the number of foreigners in Saudi Arabia was estimated to reach more than 27% of the 17 million total. Even if we excluded foreign workers' dependents, the number is still high, which indicates a disappointing result for policy measures. Hence, it is important to ask about the extent to which the Saudi industrial strategy contributed to reducing dependence on foreign labor.

As an essential policy measure, the joint-venture approach has been linked to offsetting the employment problem. Here, it is in terms of the relationship between ventures and localization of production in the Saudi industry. The strategy of localization, as defined by Masood (1989) is related to the overall success of industrialization process. The two ends of localization, namely technological and technical improvement, are long-term objectives linked to the industrialization process. The productive linkages of the petrochemical industry, especially to the local industry and employment, can be seen as the practical manifestation of the Saudi EOI strategy. Therefore, Masood stated that the Saudi venture-based localization strategy

> provides employment for local population and gives them an opportunity to obtain training and experience in management and administration leading to localization of the industry in its operation and maintenance. It is anticipated that the Saudi nationals would acquire, from their training in the multinational firms and jobs in the plants, the technical and managerial skills which would enable them to replace foreign workers and minimize the economic dependency. This localization is considered as a means of transformation of the economic structure. (p. 29)

To investigate the extent to which these localization processes are leading toward their intended goal, it is important to consider the role of SABIC in shaping the development of the national productive process, namely, industry, local manufacturing and employment. As a prelude to this empirical analysis, however, we should briefly put the localization concept into perspective by providing a comparative view of a relatively similar experiences took place in Taiwan and South Korean petrochemical industry.

While the two cases were somewhat different in their organization of petrochemical industry, the common goal to localize both technology and capital was clearly identical. In both Taiwan and Korea, Evans (1987) distinguished the process of petrochemical production in terms of how the triple alliance between the state, foreign partners and local private sector was organized. In the case of Taiwan, for example, joint ventures were concentrated in the intermediate process leaving the basic and downstream activities in the hands of the state and local firms respectively. Therefore, Evans argued that

> The China Petroleum Corporation went on to organize the triple alliance in the petrochemical industry, keeping upstream activities under state control, encouraging joint ventures in intermediate products, and drawing local private capital into downstream activities. (p. 216)

In the case of the Korean petrochemical industry, Evans indicated that the state was more in control over the planning and organization of production by both ventures and the local capital. Within the division of labor of the industry, the ventures were mainly in the downstream activities and eventually were "bought out" leaving "control over technology" in the hands of the local firms.

Regardless of the differences in timing and stages of industrial development, the Taiwanese and Korean cases provide a general base for comparison and contrast with the Saudi case. In comparison, Saudi Arabia shares the goal of achieving the final outcome: the "buying out" of partners. In the case of Saudi Arabia, this stage is predictable if the successful experience with Aramco is repeated. Emphasizing the nature of division of labor in petrochemical industry, the organization of production among the so called "triple alliance" revealed

another, interesting, area of comparison. In contrast to both cases, the Saudi petrochemical industry is involved in joint ventures throughout all layers of production, whether these ventures by SABIC or local private capital. Within the general organization of industrial production, namely primary, secondary and light manufacturing, the state joint ventures are concentrated in the primary level of production. The secondary (intermediate) activities are joint ventures with local private sector whose activities are closely linked with the first layer. The light manufacturing sector, which falls within the domain of the private sector, is a layer that resulted as the spin-off effects of the basic and secondary layers throughout the construction and operation stages.

The impact of the Saudi localization strategy during the construction phase of industry was most beneficial to the light manufacturing layer. This sector, Bedore (1984) indicated, received 70% of total government contracts in 1980. In the post construction period, the focus has been on the impact of SABIC petrochemical industry on the economy and local manufacturing.

In general, evaluation of SABIC performance and economic contribution over the past decade has inspired mixed views. Emphasizing the issue of diversification, some found that SABIC's higher profits during the 1980s were considered an indication of the promise toward self-sustained growth (Masood, 1989; Soufi & Mayer, 1991). Others considered that as only a short-term achievement while the long range prospects still "await the passage of time," (Askari, 1990; Looney, 1990). The third argument, however, believed that there has already been signs

of disappointment, especially when attention is paid to the decline of backward linkages created during the construction phase (Auty, 1988).

On the positive side, it is compelling to argue that the unprecedented rise of the Saudi industry in general and SABIC corporate process in particular is a clear testimony of the government commitment to establish a sound economic growth. As an exporting entity, today SABIC's share of world basic petrochemical products is about 4%. In the short run, this share, however, will be dependent on the world market and the foreign companies' commitment to the marketing of SABIC's products (Askari, 1990; Ibn Salamah, 1991).

On the domestic front, however, SABIC is the leading national corporation in the execution of the state industrial strategy and its localization process. This is expected to ensue through its joint ventures, especially in the areas of technology, training and commercial development. Although the outward orientation is the underlying factor of SABIC's success, contribution to local manufacturing, research and development, and labor training are integral components in SABIC's corporate production system. Within the overall industrial strategy, SABIC's operations represent the prime mover of expanding manufacturing in all sectors (see Figure 8.1). The petrochemical sector, although still small in the share of the nonoil GDP (2.6% in 1989-1990--Askari, 1990), is the reason behind the rise of a wide range of downstream activities, particularly in plastic manufacturing. In fact, the rise of plastics as an industry in Saudi Arabia is the direct outcome of SABIC petrochemical production, which initially began in 1983. Up until the early 1980s,

plastics manufacturing consisted of few processing units which, according to SABIC, utilized only 15,000 tons per year of "resin" (thermoplastic materials used in the production of plastic products). By the end of 1990, this level of resin consumption increased to 300,000 tons per year, which was used by more than 120 firms or almost 43% of the total national chemical industry (SABIC, 1992; Saudi Consulting House, 1991). The role SABIC has played in the development of plastics industry as well as other sectors is through its provisions of processed products. Indeed, this is the underlying formula that links SABIC with the private sector.

As shown in Figure 8.1, the private sector, for reasons related to its limited capital and expertise, is encouraged to become involve in the secondary and final layers of production organized by SABIC. Although SABIC will eventually be privatized, the current role by the private sector in industry is influenced by government discretion in project selection, especially when loans are involved. In general, this approach is for the government to insure that private large projects fell within the overall development process (Presley & Westaway, 1989). Further government measure to guarantee development-oriented projects is through technical support provided to the private sector. SABIC's Studies Department, along with other government agencies, are involved in preparing feasibility reports on investments opportunities for the private sector to utilize SABIC final products (SABIC, 1992). In general, this has resulted in SABIC's overall share of domestic sales which increased from 18% in 1988 to 37% in 1991. Among SABIC products,

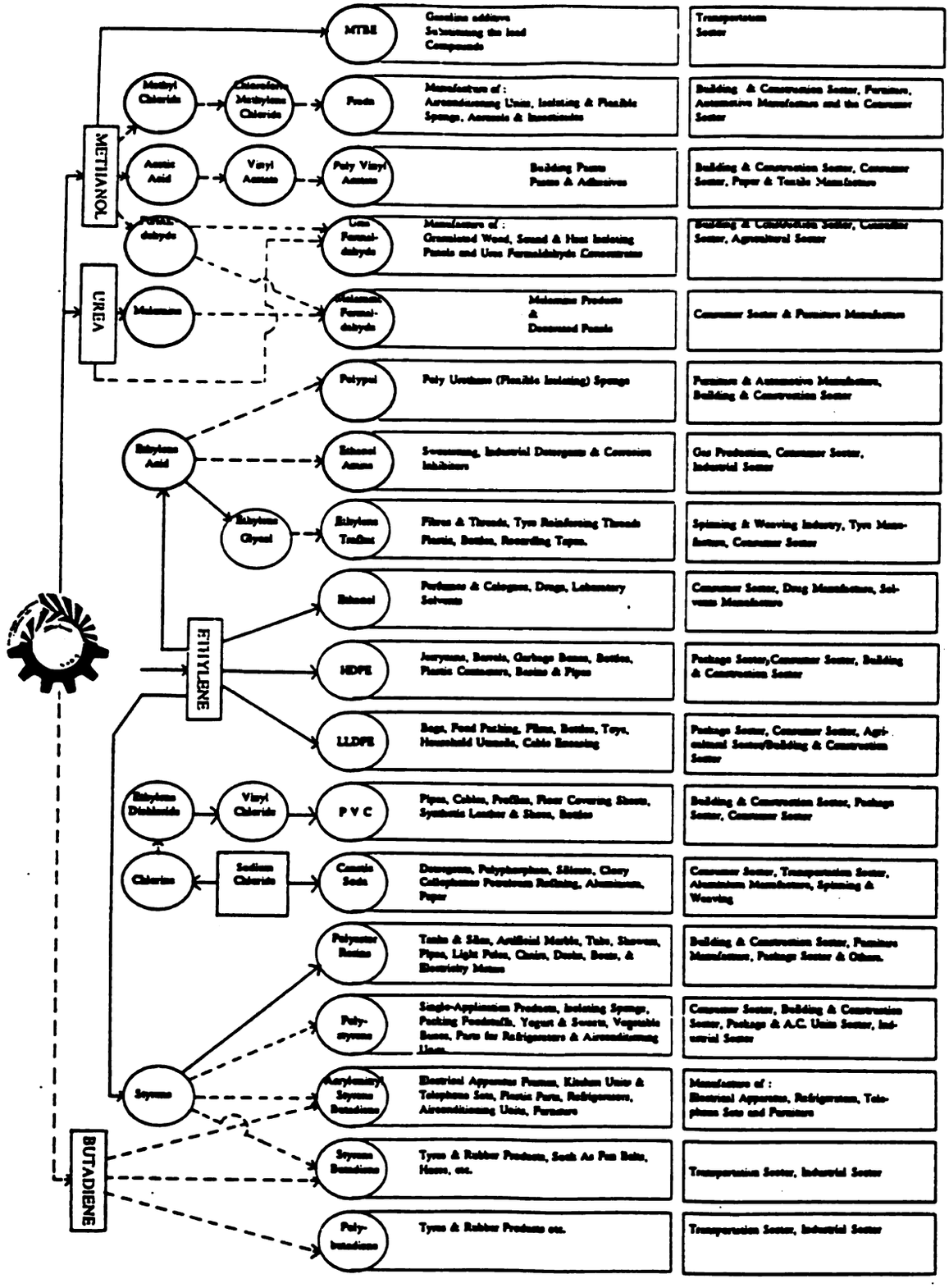

Figure 8.1: SABIC's on-stream and planned projects and their related sectoral development.

Source: Masood (1989), Table 6.1.

however, fertilizers rank the highest in domestic sale, which accounted for 50% of total sales in 1991 (SABIC, 1988, 1990, 1991).

Another indication of SABIC's contribution to the localization process can be established with regard to its role in labor training and Saudization. As a state-owned corporation, SABIC's socioeconomic objectives reflect those embedded in the Saudi industrialization process. In general, SABIC's role in human development is probably the most effective national method, due to its reliance on technology-led operation and maintenance. In contrast to other agencies involved in the industrialization process, SABIC has the highest share of the Saudi skilled workforce. In SABIC and its affiliates, the total number of workers, as of the end of 1991, reached 9,730, of whom 62% are Saudis (SABIC, 1991). Considering SABIC's short history, which was not until 1988 when all of its 15 industrial plants were in full operation, its efforts in creating a successful corporate organization on the world scale in general and its local contribution to the upgrading of indigenous workforce can be seen as a major achievement.

Given the outward-looking nature of SABIC industries, however, the challenge has been in terms of creating linkages with local manufacturing. Within this context, two problems have surfaced throughout the industrialization process. The first is related to the technological gap between SABIC and the private sector. The second problem emerges as the result of the lack of coordination and cooperation in SABIC-private sector relation. In their survey of the Saudi business and government officials, Soufi and Mayer (1991) discussed these two problems

by presenting the arguments of both parties. On the issue of technology, for example, government officials reinforced the overall lack of private sector's limited technological base. This is seen to have created lack of linkages between SABIC's production layers and the manufacturing sector. Although, officials argued, there are sincere efforts by SABIC to narrow this gap, at least on the level of coordination and exchange of information, this problem is a structural one which falls within the whole prospect of the EOI strategy.

Concerning the second problem, local firms expressed dissatisfaction in SABIC's production and planning strategy which, some local managers argued, does not reflect the concerns of private sector. Emphasizing the SABIC-private sector relationship, Soufi and Mayer stated that

> Many managers of industrial firms . . . saw SABIC as not paying enough attention to businesses at the local level. They argued that existing regulations and tariffs on imported items encouraged them to use SABIC's products as inputs to their final products; yet, they say, SABIC did not stick to its delivery schedule in the way foreign exporters did and sometimes even reduced production in its plants without notifying its local clients, causing disruption to production and planning. (p. 95)

Regardless of the extent to which these problems have changed, SABIC's production strategy will remain influenced by the international market forces and much less by local market. For local firms, the problem goes beyond a mere lacking of cooperation with SABIC. It is, indeed, the overall government-private sector relationship, where the private sector is left with little direction from the government. "In the name of free enterprise," the Saudi government left the development of manufacturing and services to the discretion of the private sector

whose initiatives usually run into conflict with the government long-term development policies. For the government, the common explanation of its position is in the belief that it has built the required infrastructure and it is the private sector's turn to take part in the national development. The private sector, on the other hand, feels that the government, while it delivered the needed infrastructure and financial commitment, should provide "more direction and certainty" so productive results can be realized (Askari, 1990, pp. 126-127).

The reality of the Saudi government-business relation is further characterized by the overall nature of the political economy of oil. Because of the strategic role of oil, this has led the Saudi government to initiate almost all development aspects in both the economy and industry. This state-led development strategy has not only set the stage for the private sector involvement, but also has spatially influenced the location of its investments. Especially in industrial development, the Saudi government has attempted to incorporate the spatial dimensions in its strategic objectives. Therefore, in the next section, this strategic-spatial relationship will be examined by establishing the economic linkages of the Saudi EOI strategy and the implications thereupon for regional and urban development.

The Strategy-Spatial Relation of The Saudi EOI

As a result of the discovery of oil in the east, the state urbanization in the central and western regions, and the rise of the new industrial urban centers (Jubail and Yanbu), the Saudi oil-based spatial outcomes can be distinguished on

the basis of two industrial-related production systems. Given the locationally specific nature of oil production, the first production system is an "oil-led" industrial organization of production which emerged in the form of light manufacturing and service-oriented sectors. This was the result of direct and planned spill-over effects of oil production activities. The second is an "oil-based" industrial production system, which emerged as the result of the recent move into downstream, petrochemical production process. As has been the norm in the industrialization process in most of OPEC nations, these two forms of production vary according to the nature of the political economic forces within each nation.

In the case of Saudi Arabia, these two production systems can be distinguished on the basis of the spatial-strategy relation in which the state has influenced the locational pattern of oil-related growth through the planning and development process. The locational aspect of Aramco's production system within the Eastern Province was fostered to oil-led growth benefiting those areas outside the immediate production centers. Knowing the limitation of the economies of the oil industry, the Saudi government developed the national oil-based industrial production system again with another locational approach to advance a long-term strategy while offsetting the growth imbalance existing in the previous form. In both cases, however, the Saudi oil production system is characterized by an urban model of industrialization.

The Oil-Led Industrial Production System

Before 1970, the impact of the oil industry in Saudi Arabia was mostly visible in the Eastern Province where Aramco had established its city in the center of oilfields. In addition to its primary works in oil and gas, Aramco built the region's basic infrastructure and promoted local manufacturing through an established policy for growth (Bedore, 1984; Lackner, 1978). The Saudi government, through its increased oil revenues, took over Aramco's role in establishing an infrastructural base throughout the country. During this building phase of the national economy, the primary concern was to construct the required transportation and service facilities along with the responsible institutions to meet the rising imports of goods and service materials. As this development process was unfolding, the government started encouraging local industry to engage in import-substitution manufacturing, and in construction and other related industries. While at that point industry was insignificant, the locational choice for building the base for industrial development was noticeable. Lackner (1978) was the first to address this issue within the context of the political economy of industrial location. She stated that

> In the late 1960s three industrial estates were being planned in Jeddah, Riyadh and the East. The locations chosen indicate the intention to develop further the areas which were already the main centers, where economic expansion has already taken place--the East because of oil, Riyadh the royal and administrative center, and Jeddah the sea port where the Hejazi [those who reside in the Western Region] bourgeoisie were beginning to diversify from trade into industry. (p. 139)

This locational trend in the Saudi industrial development has continued, leading to

the rise of these cities as centers of the most dynamic economies in the Middle Eastern region.

With the exception of oil-based growth in Dammam urban center, Riyadh and Jeddah gained their dominant economic position through the political and strategic significance they occupied before the discovery of oil. When oil was discovered and became an essential source of growth, there occurred massive infrastructural build up and the subsequent rise of highly agglomerated economies, particularly in construction and service industry. These industrial activities, however, are not directly integrated within the division of labor created by the oil industry, as we shall see in the case of the new urban centers. Rather, they are the direct outcome of oil-derived income where the rise of an enormous public sector created a peculiar division of labor mostly in the service sector.

In Riyadh, for example, infrastructural build-up was the primary base of its present economy. It was the cause of its population growth. According to Al-Hathloul (1991), Riyadh's population had dramatically increased from only 400 thousand in 1970 to more than 1.5 million in 1990. As the result of this growth, Riyadh has become the center of political and economic power. As the capital of the country, the location of the ruling family and the government ministerial and military headquarters, Riyadh's economy has been strengthened by the presence of the strong alliance between the central government, the Amarah and a large private sector. The interplay of these forces has sustained the city's economies of scale, which drained labor from other regions and led the government to

consider depolarizing measures.

Jeddah has experienced almost the same magnitude of growth in both secondary and service sectors. However, its economy is more diversified than Riyadh's. Before oil-based modernization, the western Amarahs, especially Makkah, were economically diversified due to their role as Muslim world centers and their locations on international routes. The annual Hajj season was as significant for this region as oil has been for the Eastern Province (Al-Hathloul, 1991; Presley & Westaway, 1989). The historical and strategic importance of Jeddah, and the western region, created a comparative advantage which later influenced the state's development allocation programs. In comparison to Riyadh, Jeddah's prominent position in population and economy gave her a comparative edge especially during the first stage of the oil boom era (1970 to 1980). In this period, Jeddah received almost "two-fifths" of the 1975-1980 investments in construction compared to only "one-third" in Riyadh. This picture was reversed during the 1980s when a shift in construction investments led to the decline of Jeddah as the national primate city and the rise of Riyadh in population and industry. This trend in the Saudi urban political economy is impossible to document well due to limited data.

Some planning factors have had an impact on Jeddah's economic decline. This can be established by reexamining the development allocation of the Third Plan's (1980-85) expenditure among regions (see Chapter V). The plan reversed the previous plans' estimates of regional share of development projects. During

the Third Plan, the central region (predominantly Riyadh Amarah) received almost 40% of the total projects and more than twice the share of projects received by the western region. The central region's lower share of total value ($US 8.22 billion versus 8.88 billion for western region) and average cost per project (19.8 versus 42.7 billion) does not indicate that Jeddah, being the largest urban center in the west, had leverage over Riyadh. The high project value in the west included the highly capital-intensive projects established in Yanbu industrial city whose impact on Jeddah had not yet materialized considering it was in the early stage of construction as an the industrial city.

Another indication of the shift in urbanization process can be seen in the share of industrial estates, number of MIE licensed firms and share of SIDF's projects distributed in the leading urban centers during the period of the Fourth Plan 1985-90 (see Table 8.1). In 1980, Jeddah's share of the total area of industrial estates was 39% while it was only 20% in Riyadh (Presley & Westaway, 1989). By 1987, these estimates were reversed. Of the developed industrial estates area, more than 37% is located in Riyadh and only 26.4% in Jeddah. This has shaped the two cities' share of industrial establishments and SIDF's projects. Of the total MIE firms, more than 33% are located in Riyadh, while Jeddah and the Eastern Province received an estimated share of 27 and 23% respectively.

Riyadh's promised 50% share of SIDF loans in 1984 reversed the previous concentration of capital-intensive projects in the western as well as the eastern region. In 1987, 35.4% of SIDF projects was located in Riyadh, with an estimated

Table 8.1: The implications of the Saudi development policy for shifts in urban hierarchy (%).

Amarah	Industrial Estates[a] Area	Factories	MIE Firms[b]	SIDF[c] Projects
Riyadh	37.1	43.0	33.3	35.4
Makkah (Jeddah)	26.4	26.0	26.9	26.9
Eastern	30.8	23.9	23.0	26.3

[a]The total area is 33.7 million square meter, and total factory plots is 1,294.

[b]Total operational firms, licensed under the National Industries Protection and Encouragement Law and the Foreign Capital Investment Law, is 2,061 (1987 estimates).

[c]The total number of SIDF loaned projects is 997.

value of 28.7%, which came a very close second to the east, whose 26.3% of projects received 29.3% of total SIDF loans. Jeddah, however, came second after Riyadh in the total number of projects (26.9%) and third in total loans (25.4%).

The above changes in the Saudi urban hierarchy have been the result of two dominant factors: The locational pattern of the "central" government (considering the fact that the government sector is the largest in the Saudi service industry and employment) and the state planning and development strategy. While both factors have led to the rise of Riyadh, they have also brought about a geographically uneven distribution of growth in the national economy and industry. The Saudi state generally emphasized urban-led growth giving dominance to the three urban centers of Riyadh, Jeddah and Dammam. Through the political weight

of the central region, however, Riyadh was able to rise as the leading urban center over the traditionally dominant Jeddah.

The cities of Riyadh, Jeddah and Dammam control within their territories more than 90% of existing industrial estates, 80% of licensed firms and almost 90% of government loans (Table 8.1). The urban concentration of industrial activities can be attributed to the state's development strategy and the political and strategic importance of particular locations for national economic security. Throughout the two decades of industrialization, urban economies developed by pulling in most of the country's population, employment and industry in both public and private sectors. This spatial pattern of growth was reinforced by the state distribution of investments. The 1970s and 1980s planning period, during which most of the country's basic infrastructure was developed, set the base for the nation's industry concentrated in urbanized regions (see Figure 8.2).

In Figure 8.2, two important differences can be observed. The first is related to the dominance of nonoil regions in the center and west in terms of number of firms and employees. Almost 70% of industrial establishments and more than 66% of employees are located within these two regions. The Eastern Province, the site of the oilfields, accounted for a lesser share in both firms and employment. This development trend can be largely attributed to the nature of oil economies in Saudi Arabia where oil production has few spatial linkages to other industries because of its decoupled operations.

The second observed difference between regions emphasizes the share of

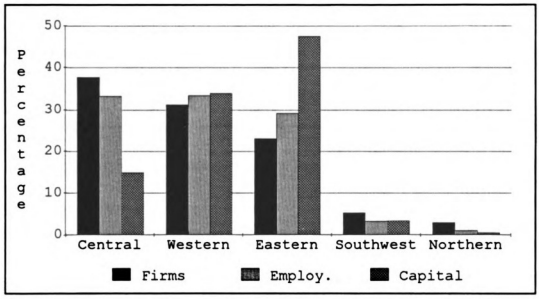

Figure 8.2: Regional share of industrial growth.

Source: Ministry of Industry and Electricity, Industrial Statistical Report (1987), various tables.

capital investments in the industrial sector. Here, the eastern oil region has the advantage. Almost half of the total industrial capital was invested in this region due to the rise of the highly capital-intensive projects in Jubail industrial city. Also, as the result of government location decisions, the industrial city of Yanbu drew 34% of the Western region's share in national capital investments allocated for industrialization. The central region, which received less than 15% of investments, is still significant if we exclude the industrial cities projects.

While capturing the largest share of the country's industrial activities, the Central, Western and Eastern regions differ in their link to the oil-based economy.

As indicated earlier, oil-derived income permitted the Saudi government to establish an infrastructural base outside the traditional location of the oil industry. An exception, however, is the oil-based industrial production system developed in the Eastern Province through Aramco's organization of oil production.

In contrast to state-led, urban-dominated growth in the central and western regions, urbanization in the eastern region was mostly the product of oil-related production and industrial activities. Since the discovery of oil, Aramco has been the leading planning body, along with local and national development agencies, in constructing the Dammam urban center. There are two other agencies involved in the planning and development of this region's economy and industry. The first is the Dammam regional Planning and Development Department whose role involves the planning and execution of the Dammam urban center's master plans and municipal activities. The second planning agency is the Royal Commission for Jubail and Yanbu. While it is responsible for the development of the two industrial centers, the Commission is also involved in the planning of the Dammam urban region.

In general, Aramco's industrial production system in the Eastern Province was developed in response to expansion in oil production. Emphasizing the export-oriented nature of the oil industry, Aramco's organization of production is largely linked to the world oil market. Local firms' link within Aramco's chain of production is rather unique to the nature of oil industry. Unlike the automobile industry, for example, the oil industry is organized around the production of raw

materials where the immediate layers of production are vertically integrated and mostly operated by Aramco's firms. Hence, local firms have been linked in Aramco's organization not in the form of an integrated operational unit, as is the case in other final product-oriented industries. Rather, they are linked as supporting and service layers organized around the industry to meet the required services needed by Aramco's operations and employment. This division of labor derives from raw material-based production where the deepening of the social dimensions of industry is not as intensive as that developed in the full chain of industrial production (from raw material and the following process of transformation into final output). Aramco's final product (crude oil or gas), for example, does not include upward segments of specialized parts production to fit into a final manufactured output. The oil production system characterizes the political economy of the Saudi Arabia industrialization process. The state, through its control over oil resources, has set both the spatial and social dimensions of production. The local forces, within this state-led, oil-based growth, are not directly involved in the oil production process which, in turn, has had little impact on the formation of the industry. Political and economic forces within a Saudi city influence the course of growth mainly through their links to the national economy and security.

The Oil-Based Industrial Production System

The term "oil-based" industrial production system is adopted here to characterize the upward production layers of the oil industry. The term also

represents the new spatial aspects of the Saudi industrial strategy, namely the oil-based industrial cities of Jubail and Yanbu. The rest of this chapter addresses the interplay of these spatial and strategic dimensions of the Saudi industrialization in shaping the urban and regional growth and the state regional policy. The two industrial urban centers of Jubail and Yanbu represent the Saudi industrial and urban model for growth, and the means for rectifying regional growth imbalance. The two industrial cities will be presented as a model for both the Saudi oil-based industrial production system and as a model for the spatial organization of industrial-related urban and regional development.

Jubail and Yanbu: An industrial and Spatial Model

The decision to build the industrial cities of Jubail and Yanbu was largely a product of the export-oriented nature of oil-based industrialization and state domestic planning and development policy. Reflecting the organization of industrial production and the spatial linkages created by the division of labor in the oil-based industrial production system, the two industrial cities are cornerstones in the country's quest for economic diversification and industrial-led growth. These cities' industrial output has not yet contributed much to national economic growth, and the Fifth Plan (1990-95) argued against the possibility of any nonoil sector, including petrochemicals, replacing the oil sector, at least in the foreseeable future. While there are noticeable evidences of successful outcomes, particularly through SABIC and the Royal Commission's industrial and training activities, satisfactory

results for the national economy, as Masood (1989) argued, may take decades to fully materialize. The final part of this chapter, takes this conclusion and further examines its merits against another analytical measure, namely the spatial dimensions of the Saudi industrial-city model.

Emphasizing the relationship between state strategy and the spatial organization of industrial production, the role of Jubail and Yanbu in economic diversification can be productive if these cities permit the anticipated development linkages with the rest of the economy. Strategically, the two cities reflect the nature of export-led, oil-based industrialization. Spatially, the export-oriented production in these cities is organized according to integrated plant-operations rather than a specialized locational division of "functions within the vertical chain of operations of the production process" (Storper, 1991, p. 27). The different nature of spatial linkages in oil production renders the Saudi model for industrialization unique; in a sense, it attempts to exploit the geographical dimensions of oil exporting economy while providing new regions, within the national territory, with the base for economic growth. The main question is the extent to which the social and spatial dimensions of the petrochemical production system (PPS) have shaped industrial diversification and regional growth balance.

Petrochemical-Led Diversification

Based on the Saudi definition of economic diversification, petrochemical-based industrialization leads the building of a national import-substitution sector.

Implementation is largely dependent on the level of integration of domestic firms within the petrochemical industry. Within the two cities, the petrochemical industry is organized around feedstocks and a production system managed under SABIC corporate firms. SABIC operates basic and intermediate production processes furnishing several products for local firms to further manufacturing into intermediate and final products. This technical division of labor is largely based on the level of processed raw materials and the technology used, which differentiate between existing layers of production. It is essential for Saudi industrial development that expansion should take place within the lower two layers, the intermediate (downstream) and light manufacturing activities, both within and outside the two industrial complexes.

In the industrial cities of Jubail and Yanbu, the impact of developing basic industries can be observed in new development institutions, new urban centers and the rise of several areas of industrial activity. In contrast to the old urban centers, Jubail and Yanbu industrial cities emerged as a result of a planned economy and as an integral part of the national development strategy. Because of their direct link to the oil industry, the two industrial centers are the core of the overall national strategic framework. They primarily reflect the future base for the economy and industry, while geographically underscoring the importance of regional redistribution of growth. Therefore, the state, through its planning and development agencies, predominantly shapes the political, social and planning structure of each city. The exception, however, is the role expected to be played

by the private sector in these cities' future industrial and community growth.

The state's role in these cities' political economy is part of a transitional process in the national industrialization program. Currently, state agencies and corporate organizations are the managers of Jubail and Yanbu industrial and urban activities. While SABIC and Petromin are responsible for the industrial and refining operations, the Royal Commission is responsible for the planning and implementation of urban construction and services, and the arrangement of private industrial investments. Reflecting the centralization of planning and policy, the Commission's organization represents all of the state agencies involved in industrial, financial and urban affairs. The Commission also includes representatives from the business community whose involvement is seen as integral for the success of manufacturing activities associated with the rise of the two industrial growth centers (refer to Chapter VI).

In comparison to other urban centers, workers in Jubail and Yanbu are highly skilled, due to the nature of the technologically based production, especially in the petrochemical sector. As for the national employment policy's role in the cities' planning structure, this again falls within the overall state industrial strategy. The effects on the local labor force is mainly through the state's Saudization policy, in which the two industrial cities represent the training centers for achieving state ends. Nevertheless, the current share of the national workforce in Jubail and Yanbu industrial cities is still comparatively small. According to the Royal Commission's 1992 estimates of Jubail industrial city, Saudis accounted for 34.3%

of total employment and 21% of industrial employment. Saudi employment prospects depend on state pursuance of the human development process and a joint-venture approach contributing to the rise of a generation of national skilled labor.

Another important aspect in the Saudi political economy of industrialization is the link between the export-oriented, petrochemical production system and the local private sector. Given the nature of the social division of labor in the petrochemical industry, this link is established mainly through exchange of processed feedstocks and the joint-venture approach for technology-based production. This industrial organization constitutes the Saudi model for petrochemical-based diversification. Local firms are interlinked through an industrial policy dominated by the government's strategic, long-term approach. Given the capital-intensive nature of the petrochemical industry, subsidizing private firms will be an integral part of the state's long-term strategy and it may continue parallel to the state commitment to industrialization and diversification. It is only logical to believe that the private sector's influence in the state strategy arises from an interdependent relationship where the state is the primary source of finance and raw materials while the private sector is expected to use these resources to contribute to economic diversification.

In the political economy of Saudi industrialization there is also a role of foreign firms. Through a joint-venture formula, the Saudi state and foreign companies form the basis for the future Saudi industrial economy. By relying on

transnational corporations (TNCs) for the development of the country's technological base and the marketing of petrochemical products, the Saudi government has accepted a dependent approach for reasons inherent in the nature of oil-based industrialization. In the long-term, however, this dependent relationship will hopefully be minimized as Saudi corporate organization becomes more self-reliant in the world market economy. Whether this goal is realizable or not depends upon the level of technological and organizational transfer. More important is the degree to which the domestic industry expands into downstream activities, especially in the chemical sector.

Jubail and Yanbu industrial cities represent the primary source of industrial growth, mainly through their impact on the national manufacturing sector. Considering the nature of the industrial production system, the export-oriented, petrochemical projects located in these two cities have led to the rise of a new political economy of industrialization somewhat different from that existed in the traditional oil-derived industrial urban centers. As the main force to achieve economic diversification, petrochemical industry has influenced Saudi state sectoral investments. This has clear intersectoral and interregional implications.

On the sectoral level, the decline of investments in infrastructure and the focus on productive activities during the Third Plan (1980-85) (refer to Chapter IV), indicates the strategic weight of the chemical sector as the leading base for diversification. This is supported by comparing the chemical sector to other industrial activities. As of 1990, national and joint industrial firms in Saudi Arabia were

estimated to total 2,221 of which 15% were involved in chemical activities and responsible for 17.8% of total industrial employment. Concerning the share of investments, however, the chemical sector received more than 59% of total finance, which was estimated to reach more than SR 102.5 ($US 27.3) billion by the end of that year (see Appendix A.5). The largest share in these investments was received by the basic industrial sector (see Figure 8.3). As a percentage of the total chemical sector, basic industries (except fertilizers) received 58% of total investments by the end of 1990 while representing only 12% of total chemical projects (Saudi Consulting House, 1990).

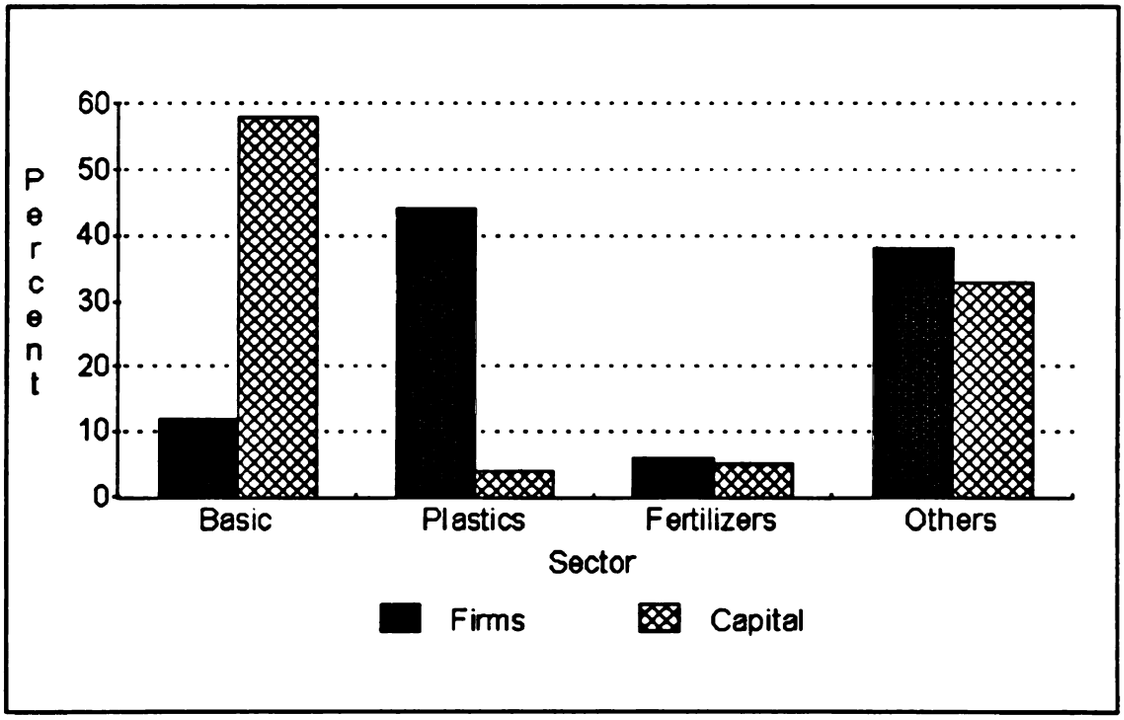

Figure 8.3: The percentage share of chemical sectors in the Saudi chemical industry (1990).

Source: Saudi Consulting House (1990).

This trend in capital allocations to the industrial sector has been echoed in private sector investments whose initiatives are mostly encouraged by government strategy and subsidies. Of the various government agencies providing loans to businesses, SIDF is the most notable. Since its establishment in 1974 until the end of 1991, SIDF disbursed a total of almost SR 20 ($US 5) billion to 1,160 projects. Private firms have been influenced by the state policy encouraging investments in the export-oriented, petrochemical sector. As shown in Table 8.2, the trend in loan provision by SIDF almost paralleled overall national allocations, with a shift from infrastructure to productive activities. This can be seen in the decline of the share of the Building Material sector from almost 28% during the Second and Third Plans (1975-80) to 14.5% by the beginning of the Fifth Plan (1990-95). This shift toward productive activities has been led by state investments in the chemical sector. As indicated in the table, the chemical sector's share of SIDF's loans has increased over the past 15 years from only 11.2% of loans disbursed until 1980 to becoming the highest recipient (26.1%) by the end of 1991. The period of increased chemical activities came after 1985 coinciding with the completion of SABIC projects in the two industrial cities of Jubail and Yanbu. The higher share of the chemical sector is, in addition, the result of its expected lead in the diversification process. The extent to which the chemical sector has contributed to diversification is due to the export-oriented nature of its production and its backward linkages with domestic manufacturing sectors. The leading export-oriented sectors, oil refining and the nonoil basic industries, dominate the total share of the chemical sector's productive capacity (see Figure 8.4).

Table 8.2: Percentage share of SIDF loans, by productive sector, up to 1991.

Sectors	Up to 1980 Capital	1985 Capital	1991 No.	1991 Capital
Consumer	17.8	18.0	28.7	18.9
Chemical	11.2	17.5	19.2	26.1
Cement	24.9	24.5	0.9	17.5
Building Materials	27.7	18.2	21.0	14.5
Engineered Products	17.4	20.9	28.6	22.0
Others	1.0	0.9	1.6	1.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: SIDF Annual Reports (1983, 1991), Table 2 and Tables 2 and 3, respectively.

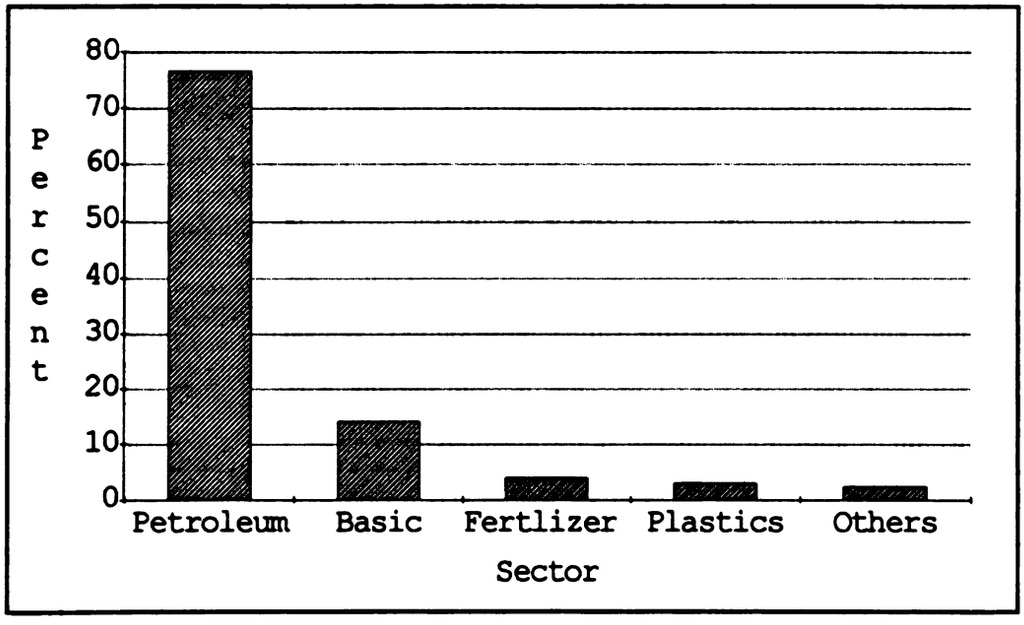

Figure 8.4: The percentage share of productive chemical activities (1990).

Source: Saudi Consulting House (1990).

The still-low productivity of the basic industrial sector (petrochemicals) compared to the oil sector is due to the short time it has been on stream (it was in 1983 when SABIC first began petrochemical production and 1988 when all of its 15 plants were completed). On the other hand, the nonoil sectors, whose expansion is considered the actual embodiment of diversified growth, are still insignificant compared to oil, regardless of the recent progress. This is evident in the continuing dominance of the oil industry in production and income-generation in the Saudi economy.

Although the direct link between oil and industry continues to render the prospects for the Saudi EOI questionable, past industrial achievements can be seen to be considerable. The Saudi economy and society has changed from underdeveloped to highly developing in less than two decades.

Lessening dependence on oil has been the national prime goal which, in turn, has shaped all aspects of economic and industrial development. Export-oriented, petrochemical-based industrialization as the expected to deliver this national strategic objective. Strategically based EOI has been associated with an uneven distribution of industrial growth within national territories in many Third World countries. The external economies of EOI and the internal determinants of production and technological organization give rise to a spatial pattern of polarized industrial centers, and uneven regional development. In the last part of this chapter, the issue of industrial-related growth imbalance will be evaluated within

the context of the Saudi spatial organization of industry in general and the PPS in particular.

Petrochemical-Led Regional Growth Balance

The spatial organization of the Saudi petrochemical industry is also linked to a regional and urban pattern of growth. Many developing countries have tried to counteract polarized industrial economies, especially through "growth pole" centers to redistribute industrial growth (Storper, 1991). In the Saudi Arabian case, an industrial-regional policy has been identified with "urban-industrial, growth-pole" centers, the industrial cities of Jubail and Yanbu. In contrast to the various cases established previously in this chapter (e.g., South Korea, Malaysia, and Brazil), the Saudi growth-pole approach is characterized by two distinctive economic and industrial aspects. The first is that the Saudi industrial growth poles were primarily developed as a part of the national industrialization strategy rather than in response to concerns over redistribution of industrial activities. This is particularly apparent when considering the difference between these poles and old urban centers in terms of the existing industrial production system. The second contrast concerns the nature of oil-based industry with regard to its external economies and its locational patterns. For Saudi Arabia, as for other oil exporting countries, it is this spatial and organizational nature of oil-based industrial activities which can be considered the underlying determinant of uneven growth and the regional redistribution of growth.

To evaluate the spatial implications of the Saudi petrochemical industry for interregional and urban growth, we stress two analytical arguments pertinent to the geography and strategy of the Saudi industrial-city model. Both arguments revolved around the "growth-pole" approach as a government policy for reducing polarized industrial growth and achieving regional balance. The first argument is that of regional economists whose views, although sometimes critical of the shortcomings of growth-pole policy, focus mainly on the prospects of the market economy in evaluating a growth pole or relocated industrial center. The second argument, while taking into account the spatial forces of the market, emphasizes the nature of the industry's organization of production and technological structure as the underlying factors that shape the spatial impacts of the industry's activities. In the Saudi case, the second argument seems logical given the nature of the petrochemical organization of production and its heavy dependence on the external market. However, both arguments should be integrated to fully understand the different political economic forces as well as the nature of industry, especially in those cases where the state and industry together play the decisive role in shaping the spatial aspects of growth.

Emphasizing this integrated approach, we think four interrelated factors determine the Saudi industrial strategy and the regional development implications of growth poles. These factors include the state strategy, petrochemical production system (PPS), external market and local firms. For reasons related to the nature of the Saudi oil-based EOI, these factors are integrated the strategically

based state industrialization, the locational pattern of growth poles and, therefore, the regional prospects for growth balance. The growth poles' location can be established through examining the external economies of the petrochemical industry in general and how PPS promotes local linkages foreseen by the Saudi industrial strategy.

Like oil, the Saudi petrochemical industry is largely dependent on the international market. The local market cannot absorb the industry's outputs (estimated at 5% of the world total production and still rising) (Al-Hathloul, 1991). This explains the export-based location of Jubail and Yanbu industrial cities on international waterpaths. However, integrated efforts by the Saudi government, SABIC and the private firms to expand local manufacturing are the main forces fostering the industry's backward linkages. Nevertheless, the targeted consumers, at least for the present time, are in the foreign market.

The capital-intensive nature of petrochemical production mainly determines the prospects for regional growth. As has been the case of the Saudi state-led growth throughout the industrial development process, local firms operating within and outside the two cities are encouraged to engage in capital-intensive projects for reasons mostly pertaining to shortage in the national workforce. This was the second strongest rationale, after the comparative advantage factor, behind the strategy of petrochemical-based industrialization. However, the locational aspect of raw materials and state strategy have shaped the regional location of manufacturing activities, especially urban-led growth.

Emphasizing petrochemical-led manufacturing, the Saudi state encouraged local firms to invest in sectors utilizing SABIC products--largely fertilizers and chemicals. This approach, as Al-Hathloul (1991) argued, may lead to other sectors to receive an unfair share of subsidies from the government. Given the concentration of infrastructure and markets in urban areas, the government's encouragement for investments in the chemical sector can lead to the exacerbation of the uneven distribution of industrial growth among regions and the polarization of growth poles in Jubail and Yanbu (Al-Hathloul, 1991).

The favoring of chemical sector subsidies by the Saudi government is further reinforced by the spatial division of labor inherent in the PPS. In contrast to other exporting industries, the petrochemical industry is locationally concentrated. It has limited production and organizational linkages with other local manufacturing sectors. This is largely due to the nature of the industry's organization of production within which the operational layers are linked through technical and raw-material process with a rather uncoupled social division of labor. It resembles the nature of the oil production system, except that the final layer in the petrochemical industry (the processed raw materials used in the production of final consumer products) has backward linkages which can foster diversified domestic manufacturing activities. The basic and intermediate layers in the Saudi PPS, however, are spatially concentrated within the two cities of Jubail and Yanbu whose growth is expected to generate a shift in the old, oil-based, spatial patterns of manufacturing activities.

Three layers represent the main components of the new spatial organization of industrial production and the base for achieving urban and regional balance of development. The first two basic layers in the Saudi PPS, represented in Jubail and Yanbu industrial-city model, are shaped by the industry's export-led nature and its technological organization. This has two urban growth implications specific to the Saudi oil-based, EOI. Unlike Storper's (1991) view of the relation between external economies of scale and urban agglomeration, the petrochemical-based EOI in Jubail and Yanbu has an extensive spatial structure mainly organized around a vertically integrated production. Economic returns (capital) are divorced from the domestic market except for expansion in production capacity of a plant's output or the possible introduction of a new product within the existing chain of production. This, I believe, has caused a slow impact, at least in the short run, on the two cities' growth process and, in comparison, rendered older urban centers more influential in attracting manufacturing activities mainly through their political and economic weight.

Given the more diversified economies and strong political alliances in the leading urban centers, the rise of the new industrial complexes has not altered the nature of the old urban hierarchy in Saudi Arabia. Thus, the already established urban political economies in old urban centers have continued to influence the spatial distribution of industrial growth as they have done during the construction phases. To establish this spatial pattern of urban-led industrialization, a

comparative analysis of regional shares of manufacturing outputs produced by petrochemical industry should be considered (in this case the chemical sector).

Jubail and Yanbu's industrial base is characterized by its capital-intensive nature. This is what distinguishes the industrial cities' role in local manufacturing from that of other urban centers. By the end of 1987, more than 2,000 projects, representing major manufacturing sectors, were again captured by the leading urban centers. This was apparent in the number and capital share of manufacturing activities (see Tables 8.3 and 8.4).

The leading Amarahs of the Central, Western, and Eastern regions dominated in total and chemical manufacturing activities. The Western and Eastern Amarahs' highest share of capital invested is the direct outcome of the industrial cities' locations within these regions' boundaries. The impact of Jubail and Yanbu is evident when comparing regions according to their share of chemical firms and investments. The Riyadh Amarah, for example, has always had a comparable share of industrial activities to other leading regions. The exception is share in the chemical sector. As shown in Table 8.3, capital-intensive production in Jubail and Yanbu has placed the Riyadh Amarah's share of capital investments in the chemical industry in the lowest fourth (3.2%) after the two Amarahs in the west and the Eastern Province. The overall determinants of this interregional imbalance are the state strategically led capital allocations and the locational pattern of industrial cities.

The other, albeit more important, dimension of regional growth concerns

Table 8.3: Interregional comparison of total and chemical manufacturing (%).

Regions/Amarahs	Total		Chemical	
	Number	Capital	Number	Capital
Central Region	**37.7**	**14.8**	**26.8**	**3.4**
Riyadh	33.3	12.9	24.5	3.2
Qaseem	4.4	1.9	2.3	0.2
Western Region	**31.1**	**34.0**	**37.4**	**38.4**
Makkah	26.9	12.1	33.1	3.6
Madinah	4.2	21.9	4.3	34.8
Yanbu[a]	2.0	19.0	3.3	34.0
Eastern Province	**23.0**	**47.5**	**31.4**	**58.0**
Dammam	18.8	26.4	24.8	19.8
Jubail[a]	4.2	21.1	6.6	38.2
Northern Region	**3.0**	**0.4**	**2.0**	**0.1**
Southwestern Region	**5.2**	**3.3**	**2.4**	**0.1**
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: MIE, Industrial Statistical Report (1987); RCJY (1992); SIDF (1989).

[a]Due to the lack of data, the capital shares for Jubail and Yanbu are approximate, not exact, estimates.

how the organization of production and political forces shape the "intra-regional" (Amarah) level, especially between the Amarahs of Makkah, Madinah and the Eastern Province.

In general, the regional impact of Jubail is more visible, especially in adding to the industrial and spatial diversification of the oil-based economy of the Eastern Province. In contrast, Yanbu's regional impact is rather limited mainly due to the

Table 8.4: Intraregional (intra-Amarah) comparison of total and chemical Manufacturing (%).

Amarahs	Total		Chemical	
	Number	Capital	Number	Capital
Central Region	**37.7**	**14.8**	**26.8**	**3.4**
Riyadh	88.2	87.1	91.4	94.4
Qaseem	11.8	12.9	8.6	5.6
Western Region	**31.1**	**34.0**	**37.4**	**38.4**
Makkah	86.4	35.4	88.5	9.5
Madinah	13.6	64.6	11.5	90.5
Yanbu Share of Madinah Total[a]	47.1	86.5	76.9	85.8
Eastern Province	**23.0**	**47.5**	**31.5**	**58.0**
Dammam	81.6	55.6	78.9	34.2
Jubail	18.4	44.4	21.1	65.8
Northern Region	**3.0**	**0.4**	**2.0**	**0.1**
Southwestern Region	**5.2**	**3.3**	**2.3**	**0.1**
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: MIE, Industrial Statistical Report (1987); RCJY (1992); SIDF (1989).

[a]Approximate estimates.

uncoupling of the industrial city's economy from the rest of the region, particularly within the administrative area of Madinah.

Jubail's similarity with the overall Eastern region's oil-based industrial production and regional planning forces (Saudi Aramco, Petromin, the Royal Commission, and SABIC) has created a suitable ground for integration of the

industrial city within the regional economic and political structure. Jubail industrial city is becoming strategically and spatially interlinked with the regional industrial economy, especially in the area of capital-led growth. This is particularly evident in the smaller gap between Jubail and Dammam's share of total and chemical manufacturing sector investments as compared, for instance, to the case of Jeddah and Yanbu in the Western region (see Table 8.4). In the chemical sector, Dammam accounted for more than one-third (34.2%) of regional share, while Jeddah (being the dominant urban center in the west) received less than one-tenth (9.5%) of the capital invested up until the end of 1987. Dammam also dominated the total industrial investments (55.6%) and of course the number of firms in both total and chemical manufacturing. Jubail industrial city, however, dominated the chemical sector investments (65.8%), mainly because of the concentration of capital-intensive petrochemical projects within its boundaries.

Yanbu's spatial linkages were expected to provide manufacturing opportunities within its immediate area, the Madinah region. The industrial growth in this region, mainly through the spillover of the industrial growth pole, can be described as lagging. As shown in Table 8.4, the massive capital invested in Yanbu industrial complex (approximately 85.8% of the Madinah region's share) has had little impact on the region's industrial development. This can be attributed to the region's small share of total and chemical industrial investments, only 14.5% and 5%, respectively.

The impact of Yanbu industrial city on the western region's industrial growth

must be perceived within the strategic industrialization process. Yanbu's location in the western region was not to relocate industrial activities nor to redistribute regional development as was the case in many developing countries. Rather, it was a part of the initial stages of industrial development as shaped by oil-based, export-oriented industry and by state strategic interests. Jubail industrial city seemed to have a positive impact on its immediate and surrounding areas when considering the chemical-based, capital-led activities. Using the same indicators for Yanbu, however, the same results do not appear.

The contrasting regional impacts of the two cities are strongly associated with how the social and political structure of production developed within the international division of labor of the oil industry. The oil production system developed in the Eastern Province over the past six decades has established a local structure which incorporated the regional economic forces within an external economy. Therefore, the rise of Jubail industrial city has been only an expansion in the same system of production. Yanbu, on the other hand, is foreign to the region's industrial activities and, hence, it is more linked to the eastern region than the west. This explains the lesser regional impact of Yanbu and more its link to the state strategy of export-led industrialization.

CHAPTER IX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study has examined the relation between state's development strategy and the spatial organization of production in oil-based, export-oriented industrialization. Using the Saudi case, two research problems were introduced and empirically evaluated. The first concerned the relation between the oil-based economy and the Saudi state development strategy. The second research problem concerned the implications of the Saudi oil-based, export-oriented industrial model for the regional redistribution of industry.

With regard to the first research problem, the Saudi state utilized oil-derived revenues to develop national economic and social bases for a diversified economy. The spatial aspects of development were the product of three influential forces in the Saudi political and economic process. First was the locational determinants of oil production and related industrial activities. Oil is located in the eastern part of Saudi Arabia, so the discovery of oil has caused Eastern regional and urban growth.

Second, oil revenues accrue to the state, and state policy has extended the spatial impact of the oil economy to the rest of the national territories through

planned development. During the first three development plans (1970-1985), the Saudi government directed most of its oil revenues to the building of the country's physical infrastructure. Third, urban forces were largely decisive in shaping the regional shares of growth. The administration in Riyadh, tradition in Jeddah, Makkah and Madinah, and oil in the Dammam/Dahran have concentrated market, population and services in these centers.

The second, productive-led development, phase in Saudi economic planning emphasized industrial, agriculture and service sectors. Disproportionate growth occurred in the Amarahs located in southwestern and northern regions due to allocative development programs.

The Saudi government has considered various means to rectify growth imbalance. Although still comparatively marginal within the national development strategy, two spatial approaches have been visible. The first involved the provision of services to lagging regions through a system of growth centers. These service centers were mainly aimed at short-term accommodations rather than developing a self-sustained basis for regional growth. An Amarah-based system of regional growth was then introduced with more concern for long-term potentials for development. However, regional-led growth strategies have not yet been fully developed. Sectoral-led planning and development continues to be dominant. This conclusion results from our comparative analysis of development sectors. Our empirical analysis revealed the link between state strategy and its urban-led development, on one hand. On the other, it found that the service-oriented spatial

systems had little impact on industrial redistribution, and hence on reducing existing regional disparities.

Concerning the second research problem, we examined Saudi industrial regional and urban development through the spatial organization of petrochemical production. Based on the geographical location and the industrial-urban model of Jubail and Yanbu, and the nature of SABIC PPS, our empirical questions were as follows:

1. To what extent has the industrial-city model reflected the strategic aspects of oil-based, EOI?

2. How is SABIC PPS spatially organized, and how has it shaped Jubail and Yanbu's integration within both national and regional economies?

3. To what extent has the Saudi industrial-city model contributed to the redistribution of growth among regions?

To establish the empirical base for these questions, this study first described the spatial settings of the Saudi industrial-city model. Second, within this model, we examined the nature of the Saudi petrochemical production system.

It was established that Jubail and Yanbu's spatial location, physical planning and organization reflected their strategic role as export-oriented industrial complexes and regional growth centers. The cities' physical layout and industrial structure were detailed in their master plans. The two cities differed greatly from other urban centers in the country due to the all-encompassing nature of their export-led, capital-intensive industrial operations. Also, Jubail and Yanbu were identified as planned national centers where the dominant development forces (namely, the Royal Commission, SABIC, Aramco, Petromin) are more closely

linked to national planning and corporate structure, rather than to regional development agencies. Although these characteristics may be somewhat present in other cities, the strategic nature of these two cities means they are more influenced by national priorities.

The Saudi spatial organization of production was for the SABIC petrochemical production system (PPS). Based on the industrial production model used by Hill (1989) in the auto industry, SABIC PPS was used as an explanatory concept. We first examined the social relations of SABIC PPS by introducing the various layers involved in the production of basic and intermediate products. Unlike the auto industry, petrochemical operations are mostly organized around raw materials where SABIC represents the basic and intermediate layers. Other layers, such as those involved in downstream and final production, are incorporated within SABIC through a feedstock-exchange system. This system also reveals the Saudi PPS linkages to domestic and foreign markets. SABIC's spatial organization reveals national and regional industrial linkages.

Conclusion

The Saudi political economy and its oil-based, EOI represent a unique case in economic development reflected in the short history of Saudi Arabia as a modern state, her political and social formation, her oil-dependent economy and her role in the international political economy of oil. These distinct factors have led us to a conceptual framework designed for a historically-specific case study. There is a lack of such a specific framework for Saudi Arabia and theories which

have attempted to generalize to oil states (e.g. the rentier state concept) suffer the problem of theoretical emulation and fail to consider domestic political and economic structures as explanatory factors.

Political and traditional powers, the state-oil company relation, and the rise of the state as a powerful actor, distinguished Saudi Arabia from countries in East Asia, especially in terms of how the local and international forces interact and affect the economic and industrialization process. On the issue of state EOI, the examples of South Korea, indonesia, and Brazil were presented to prove our point. The comparisons between these countries and Saudi Arabia identified the distinguishing features of the Saudi state and its oil-based economy, and also revealed that local factors seemed to determine each country's national development strategy.

Saudi Arabia is distinguished from other oil states by economic structure, size of oil reserves, state strength, and the industrialization strategy adopted to realize national development goals. Although they almost share the same strategic objective to reduce dependence on oil, each oil state adopts a different approach to development. State and local forces shape the development process on both national and regional levels.

Our general conclusion emphasizes that state strategy shapes spatial outcomes. The various domestic and international forces are embodied within the state development strategy, with uneven spatial distribution of growth as an outcome. A developmental state strategically influenced a course of

industrialization, with limited linkages to peripheral regions. The industrializing state then tries to rectify uneven development problems by relocating industry to underdeveloped regions. These regional policies have failed, however, mainly due to the neglect of the social and spatial organization of industry. These regional policy outcomes are evident in countries like Malaysia, South Korea, and Brazil. Storper's (1991) study of the industrial production system in Brazil is a case in point. Our analysis of the Saudi case reveals a similar interlinkage of industry and the space economy.

During the early period of development, Saudi planning mostly furnished the infrastructure for a productive, sectoral-based economy. This strategy was crucial for an oil-dependent economy. Urban forces also determined the spatial distribution of basic infrastructure. Indeed, these forces were the main reasons behind the rise of regional disparities.

Regional problems are the product of the uneven local shares of infrastructure and services, and distribution of sectoral investments. The limited economic base in peripheral regions contributed to their small shares of public and private investment. The Saudi government has recently redistributed production through a regional model of growth centers.

The locational pattern of industrial cities and the nature of SABIC PPS suggests that in locating some of basic industries in Yanbu, the planners' goal was predominantly strategic. Considering the oil industry's export nature, this relocation opened a new avenue for exports away from the volatile surroundings of the

Eastern oil region. Indeed, this was evident in the makeup of Yanbu's industrial structure, which is mostly dominated by crude oil shipment facilities and refinery processing.

The regional impact associated with the relocation of oil-based industry was also dependent on the spatial organization of SABIC PPS as indicated by Jubail and Yanbu's regional share of industrial growth.

There have been noticeable growth impacts on the cities and villages located within the Jubail and Yanbu sub-regions. The old cities of Al-Jubail and Yanbu have increased in service and economic activities as well as population. However, the two cities' differed in local-external linkages of industrial production. Taking the example of petrochemical-related industrial activities, this study found a positive link between growth in Jubail industrial city and the rest of the eastern region as indicated by shares of chemical firms and capital among planning and administrative regions. The eastern region's share of chemical industry exceeds that of other regions, especially in the area of capital, largely due to the nature of Jubail's capital-intensive operations.

On the intra-regional level, Jubail's impact on the eastern region was also positive, especially when compared with Yanbu's regional impact, as indicated by the smaller gap between its share of capital in the chemical sector compared to Dammam. The productive regional linkages of Jubail can be attributed to its spatial integration within the region's oil-based industry, its external economies, and regional corporate planning and development forces.

Yanbu's lack of spatial linkages with other industries in the region demonstrate its lagging economic integration. This lack of integration in the western region is indicated by the region's share of capital in the chemical sector. Therefore, Yanbu's limited impacts on the Madinah region are based on the Royal Commission's role in attracting local and foreign private investments.

Yanbu's limited regional development impact results from strategic policy. This may be an appropriate approach for an oil-based, export-oriented industry. Saudi uneven regional growth cannot be fixed by attempts to redistribute industrial activities. According to Storper (1991) relocation of industry may "very likely" lead to unfavorable outcomes for the national economy as a whole. Although concentration of industry may "open major gaps" on the spatial level, its contribution to national development is wholesome (p. 92). Indeed, this argument is highly relevant to the Saudi oil-based economy and the spatial nature of its related industrial production. Though this may lead to regional imbalance, the national aspects of the Saudi industrialization should be the decisive factor. And, this will be the case as long as the economic diversification process continues to dominate national priorities.

The urban-led growth and sectoral-based state development strategy will continue to shape the regional share of industrial investments, including the disadvantaged northern and southwestern regions. We argue against the spatial redistribution of industry, but these regions' conditions will not change without the government's provision of the means for economic growth. By investing in these

regions' basic infrastructure and potential growth sectors, their shares of the economy will increase. This can be accomplished when these basic investments secure the drive required for the private sector to invest.

In sum, this study evaluates the Saudi strategic and spatial objectives through the role of export-oriented, Jubail and Yanbu industrial cities in reducing oil dependence and achieving regional balance. The oil sector continues to be the main source of national foreign exchange, and source of capital for the development of other nonoil sectors, especially the capital-intensive petrochemical industry.

With regard to basic industry's contribution to the localization of productive resources, SABIC's role in the Saudization process and R&D indicates long-term development promise. Also, the Royal Commission for Jubail and Yanbu is a supporting development institution, especially in technical training and industrial promotion.

The impact of Jubail and Yanbu on regional economies is positive varying with each city's corporate and industrial integration within its respective region. However, regional impact is still limited by national strategic objectives. In the long run, the regional and urban impact of the two growth poles will depend on the extent to which their industrial projects develop expected forward and backward linkages.

Recommendations

Our recommendations include the following:

a. Sectoral-regional integration

1. Given the continuing predominance of national economic objectives in Saudi Arabia, a spatial policy must be considered while simultaneously aiming toward national economic goals. This can be achieved by strengthening the current spatial strategy and emphasizing coordination between sectoral and regional-level agencies.

2. For regions with limited growth potentials, the ongoing service-oriented programs should continue but they should be improved and regularly evaluated. The recent regional-based system of development, announced by His Majesty King Fahad, can improve services and future development in each region.

b. Population-based regional development

Although population size as a basis for regional development is not a national priority, issues of reverse migration, improving rural regions and equitable growth shares should not be downplayed.

c. Industry-related regional balance

1. The above regional development approaches can be the basis for disbursing shares of growth, and raising regional potentials to attract industrial investments. This can be largely achieved by improving coordination between government and the private sector, on the one hand, and among planning agencies, on the other.

2. In the effort to contribute to sectoral-regional coordination and government-private sector cooperation, the experience of the Royal Commission

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in industry and urban planning is valuable. Because of its multi-ministerial organizational structure, the Commission will be an asset especially after its role in industrial cities is replaced by the private sector. In fact, it could assume the future role of an independent (or a part of a) ministerial agency managing regional planning and development and coordinating sectors on the regional level.

3. In the short run, however, the Commission's role in contributing to regional growth should be strengthened. The significance of this effort is inherent in the Commission's role as a promoter of industrial investments, and hence the regional and urban prospects of Jubail and Yanbu. The Commission's urban and industrial planning and implementation system represents a national model for regional-centers development. As the Third Development Plan emphasized, Jubail and Yanbu represent the Saudi model for regional growth. Therefore, it is important to build upon this model, along with other spatial development approaches, as bases for a well-defined regional policy. Although nationwide concerns are still considerable, regional-based planning not only would help achieve equatable growth, but would also identify areas of potential contribution to the national economy.

4. With regard to petrochemical-led diversification, its external economies influence the development of local manufacturing. Unless more weight is given to the domestic aspects of oil-based industries, the nature of an oil-dependent economy will not greatly change. The government should encourage more involvement of businesses in development planning, and provide more

guidance and support. The private sector must also consider its priorities as an integral part within the national development strategy.

5. To further establish the domestic linkages of petrochemical industry, SABIC's role is significant. In addition to already successful efforts in organization, management, training and research and development, SABIC should take into consideration two areas for improvement and future development.

a. Due to its leading role in economic diversification, SABIC should further expand its coordination efforts with both public agencies and private businesses. Especially needed is the building of local markets, which enhance the sectoral potentials for using SABIC's intermediate products.

b. Because of its dependence on foreign markets, SABIC should continue expansion of downstream activities while considering finished products. This latter role is decisive, not only for offsetting some of the uncertainty inherent in petrochemical markets, but also as a required stage of development prior to turning the company over to the private sector, as planned.

6. The above state and private sectors' role in the expansion of petrochemical-led industrial development should spawn two regional impacts. Productive chemical activities will increase within developed regions which in turn will lead to rising ancillary and service industries. The petrochemical sector will be less of a contributing factor to industrial growth in other regions. In the long run, these regions will increase shares in industrial growth providing that their share of basic infrastructure and subsequent private investments is already in place.

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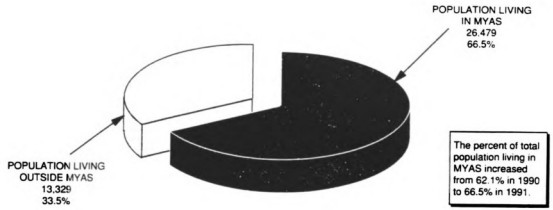
Appendix A.1 The Hierarchy of Planning Objectives in Saudi Arabia

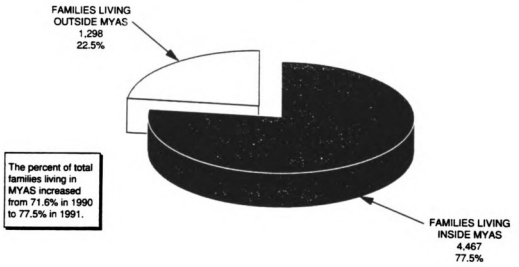
Planning Dimensions	General Goals	Long Term Strategic Objectives	Medium Term Objectives & Programs for Sequential Five Year Plans
The Domestic Economy	- Efficient utilization of resources.	- Diversification of the economic base.	- Expansion of absorptive capacity through infrastructural growth.
	- Structural change.	- Development based on natural resources and rising levels of productivity	- Industrialization based on: i) hydrocarbon/energy-intensive activities; ii) market demand and technological capability.
	- Growth	- Balanced sectoral and regional growth.	- Modernized agriculture. - Efficient network of services.
The Saudi Society	- Maintenance of Islamic values.	- Creation of an appropriate system of social services.	- Development of comprehensive educational, health and social services.
	- Improvement in cultural & material standards. - Social well-being. - Development of human resources.	- Socially adequate & regionally balanced economic, settlement and housing policies.	- Housing and housing finance programs.
The Institutions	- Defense of religion and country.	- Adequate defense capabilities	- Agency-based expenditure programs to promote specific planning and policy objectives.
	- Efficient government services in both the civilian & non-civilian branches.	- Institutional capabilities for economic & social planning; - Measures to administer policy and control the implementation of projects. - Institutional support for the private sector.	

Source: Ministry of Planning: Third Development Plan (1980-85)

Appendix A.2-a MYAS Population by Residential Location.

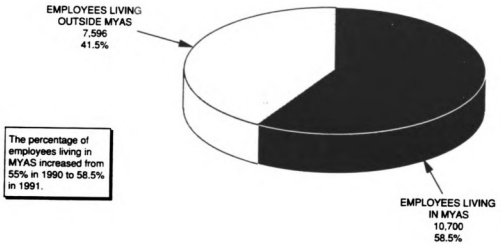


FAMILIES LIVING INSIDE/OUTSIDE MYAS

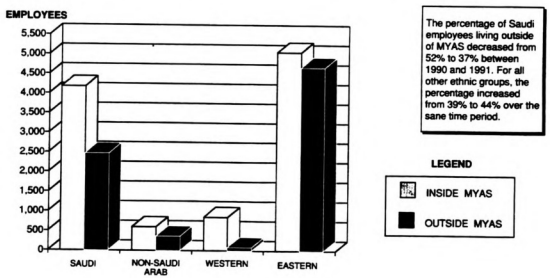


Source: RCJY, 1992. MYAS Census-13, 1991, p. 3.5.

Appendix A.2-b MYAS Employment by Residential Location.

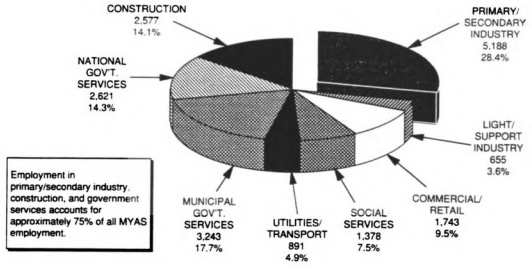


EMPLOYMENT BY ETHNICITY: RESIDENCE ON–SITE/OUTSIDE MYAS

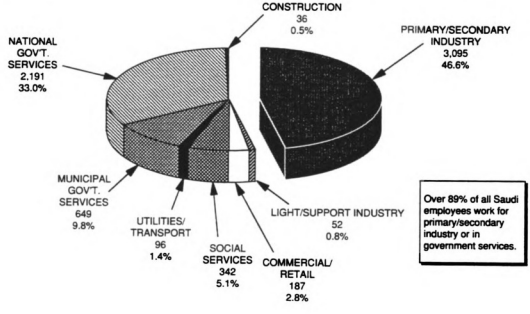


Source: RCJY, 1992. MYAS Census-13, 1991, p. 2.4.

Appendix A.2-c MYAS Employment by Economic Sector.



SAUDI EMPLOYMENT BY ECONOMIC SECTOR



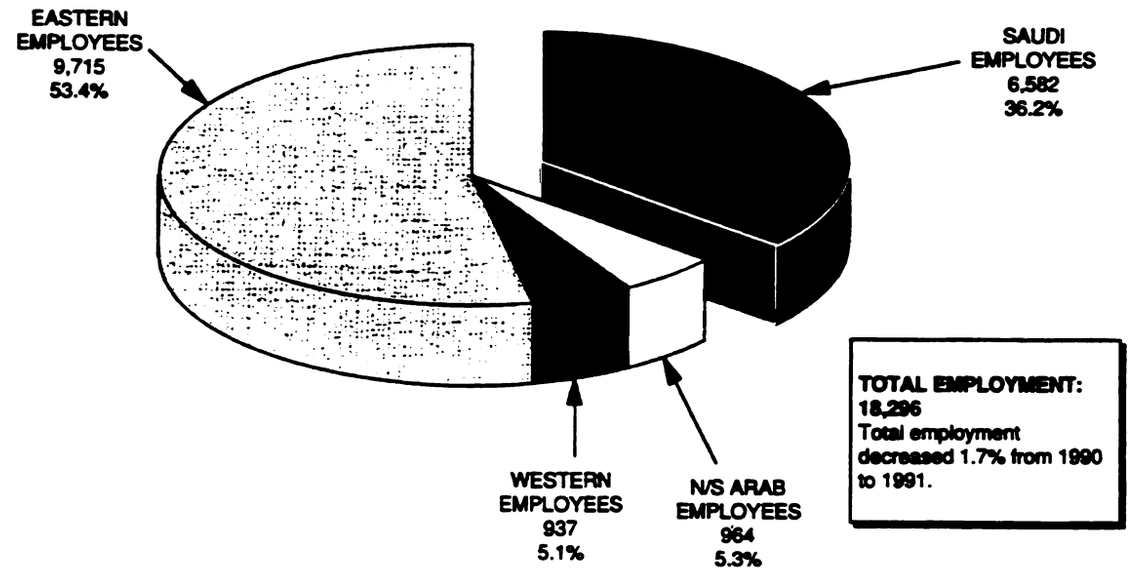
Source: RCJY, 1992. MYAS Census-13, 1991, p. 2.3.

Appendix A.2-d MYAS Employment by Economic Sector and Ethnicity.

ECONOMIC SECTOR	ETHNICITY								TOTAL	
	SAUDI		N/S ARAB		WESTERN		EASTERN			
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
Primary/Secondary Industry	3,095	46.6	188	19.5	513	54.7	1,392	14.3	5,188	28.4
Light/Support Industry	52	0.8	44	4.6	14	1.5	545	5.6	655	3.6
Commercial/Retail	187	2.8	151	15.7	52	5.5	1,353	13.9	1,743	9.5
Social Services	342	5.1	254	26.3	101	10.8	681	7.0	1,378	7.5
Utilities/Transport	96	1.4	33	3.4	10	1.1	752	7.7	891	4.9
Municipal Gov't. Services	649	9.8	77	8.0	188	20.1	2,329	23.9	3,243	17.7
National Gov't. Services*	2,191	33.0	32	3.3	5	0.5	393	4.0	2,621	14.3
Construction	36	0.5	185	19.2	54	5.8	2,302	23.6	2,577	14.1
TOTAL	6,648	100.0	964	100.0	937	100.0	9,747	100.0	18,296	100.0

**Includes SWCC, YIC students, Frontier Forces, and Defense Forces.*

EMPLOYMENT BY ETHNICITY



Source: RCJY, 1992. MYAS Census-13, 1991, p. 2.2.

Appendix A.3 MAJAS Regional Context Policies and Issues.

EXISTING	PROPOSED	REMARKS
REGIONAL GROWTH (Jubail Sub-area vs. Dammam)		
1. Heavy Industry		
Locate petrochemical, steel and other heavy (Primary and some Secondary) industry in Jubail.	Same	Regional growth strategy to focus heavy industry in Jubail remains most logical and beneficial. Due to changes in international economics, there is a need to monitor market trends to assure growth projections will be met.
2. Secondary and Light Industry		
Rapid development was assumed in Dammam and Jubail for support and light industries that could locate in either area. Market MAJAS sites aggressively.	RC will work with or encourage national agency to conduct further regional economic growth studies; RC will continue to develop regional contacts and coordinate policy for regional allocation of industry between competing centers; continue aggressive marketing of MAJAS sites.	Due to reduced expectations in region's industrial growth, further regional cooperation in promotion and analysis of secondary and light industry is required both to attract growth to the region and to avoid inefficient duplication of effort within the region.
3. Commercial		
Jubail sub-area was assumed to become an office and retail center for the region - "Regional City". Market MAJAS sites aggressively for regional office and retail.	Jubail sub-area role assumed to be second to Dammam for office and retail ervices - "Industrial City". Selective marketing of MAJAS commercial sites: mainly sub-area office and retail.	In response to update of regional trends, it was considered best to focus efforts on industry and related areas where Jubail sub-area clearly can best contribute to regional growth.
1. Industry		
Assume MAJAS will accommodate almost all industry attracted to the sub-region.	RC will increase its cooperation within the sub-area in order to assure that appropriate sub-regional industry locates in MAJAS; further analysis of sub-regional trend will be made to identify corrective measures if needed.	In response to development of heavy industry in MAJAS, an industrial park has been developed by the MIE in Al-Jubail and other industry has located scattered about Al-Jubail, so the need for cooperation has increased to ensure that MAJAS continues to attract suitable industries.
2. Commercial		
MAJAS was assumed to dominate sub-region in office and retail development.	Continue to encourage sub-regional office development to locate in MAJAS; continue cooperation with others in sub-region to share regional functions.	RC policy to date has been to allow retail boom in Jubail. To avoid damage to Jubail commercial area, retail functions will be shared in future.
3. Housing		
Assume most growth in sub-region will be located in MAJAS	Cooperate with others in sub-region to share housing growth between MAJAS and Al-Jubail, and ensure MAJAS achieves housing goals.	Early housing needs were met by both MAJAS and Al-Jubail; to avoid damage to Jubail housing plans, housing functions will continue to be shared in future.

Source: RCJY: MAJAS, Master Plan Update, 1984, Vol. II, Table 2.4.1

Appendix A.4 SABIC Industries and Affiliates

AFFILIATE	PARTNER	PRODUCT	DESIGN Capacity '000 mty
AR-RAZI Saudi Methanol Co Al-Jubail	Consortium of Japanese companies led by Mitsubishi	Chemical Grade Methanol	640
IBN SINA National Methanol Co Al-Jubail	Hoechst-Celanese and Panhandle Eastern, USA	Chemical Grade Methanol	770
SADAF Saudi Petrochemical Co Al-Jubail	Shell, USA	Ethylene Crude Industrial Ethanol Ethylene Dichloride Caustic Soda Styrene	760 300 560 450 360
KEMYA Al-Jubail Petrochemical Co. Al-Jubail	Exxon, USA	Polyethylene	300
YANPET Saudi Yanbu Petrochemical Co. Yanbu	Mobil, USA	Ethylene Polyethylene Ethylene Glycol	560 430 250
PETROKEMYA Arabian Petrochemical Co. Al-Jubail	No partner	Ethylene Polystyrene Butene-1	650 100 50
SHARQ Eastern Petrochemical Co. Al-Jubail	Consortium of Japanese companies led by Mitsubishi	LLDPE Ethylene Glycol	140 330
IBN HAYYAN National Plastic Co. Al-Jubail	Lucky Goldstar Group, South Korea; NIC, SAPPCO and APLACO, Saudi Arabia	Vinyl Chloride Monomer Polyvinyl Chloride	300 300
IBN ZAHR Saudi European Petrochemical Co. Al-Jubail	Neste Oy, Finland, Ecofuel, Italy; Apicorp, GCC	MTBE	500
GAS Saudi Industrial Gases Co. Al-Jubail	Other Saudi producers of industrial gases	Oxygen Nitrogen	438 219
SAFCO Saudi Arabian Fertilizer Co. Dammam	Private Saudi shareholders and SAFCO employees	Ammonia Urea Sulfuric Acid Melamine	200 330 100 20
SAMAD Al-Jubail Fertilizer Co. Al-Jubail	Taiwan Fertilizer Company, Republic of China	Ammonia Urea	300 600
IBN AL-BAYTAR National Chemical Fertilizer Co. Al-Jubail	SABIC's SAFCO affiliate	Ammonia Granular Urea Compound and Phosphate Fertilizers	500 500 810
HADEED Saudi Iron & Steel Co Al-Jubail	DEG, Germany	Steel rebar, coils and wire	1,600
SULB Steel Rolling Co. Jeddah	Wholly owned subsidiary of HADEED	Steel rebar	140
ALBA Aluminium Bahrain Bahrain	State of Bahrain; Brenton, Germany	Aluminum ingots, slabs and billets	210
GARMCO Gulf Aluminium Rolling Mill Co. Bahrain	Bahrain, Iraq, Kuwait, Oman and Qatar	Aluminum sheets and can stocks	60
GPIC Gulf Petrochemical Industries Co. Bahrain	Kuwait and Bahrain	Ammonia Methanol	400 400

MARKETING COMPANIES

SABIC Marketing Ltd., Riyadh
SABIC Marketing Europe Ltd., London
SABIC Marketing Americas Inc., Stamford, Connecticut
SABIC Marketing Services Ltd. Riyadh
SABIC Marketing Asia Ltd., Hong Kong
SABIC Marketing Services Ltd., Tokyo
SABIC Services Americas Inc., Houston, Texas
Saudi Arabian Fertilizer Marketing Co Ltd (SANAPTK)
Bahrain-Saudi Aluminum Marketing Co (BALCO)
Saudi Industrial Exports Co
Tunisie-Saudi Trading Co (TST)

SHIPPING COMPANY

National Chemical Carrier Ltd (NCC)

Source: SABIC, 1991.

Appendix A.5 The Saudi Industrial Investments, Productive Factories and Employment, Up Until 1991.

C. No.	INDUSTRIAL ACTIVITY	FULLY NATIONAL			JOINT			TOTAL		
		F.No.	TOTAL FINANCE	MANPOWER	F. No.	JOINT FINANCE	MANPOWER	F.No.	TOTAL FINANCE	MANPOWER
31	Food	321	5,869,001,171	18,968	32	1,148,742,082	3,889	353	7,017,743,253	22,857
32	Textile & Clothing	44	713,964,000	3,167	8	141,810,000	826	52	855,774,000	3,993
32	Leather	13	139,720,000	835				13	139,720,000	835
33	Wood & Wood Products	71	806,787,045	4,796	13	123,831,135	1,661	84	930,618,180	6,457
34	Paper Prin. & Publ.	118	1,430,654,143	5,730	18	823,221,282	2,122	136	2,253,875,425	7,852
35	Chemicals	242	6,352,637,827	13,312	93	54,415,713,488	14,810	335	60,768,351,315	28,122
36	Ceramic, China & Pottery	17	957,100,000	3,454	4	285,500,000	238	21	1,242,600,000	3,692
36	Building Materials	462	12,497,548,826	29,611	61	4,297,941,585	9,070	523	16,795,490,411	38,681
37-38	Metal	467	5,827,036,401	30,281	153	5,725,147,223	11,428	620	11,552,183,624	41,709
39	Other	76	793,680,000	2,954	8	225,368,000	462	84	1,019,084,000	3,416
	TOTAL:	1,831	35,388,129,413	113,108	390	67,187,274,795	44,506	2,221	102,575,404,208	157,614

F. No: Factory Numbers
C. No: Classification Numbers

Source: The Saudi Consulting House, 1992, Table 7.5.