

CHAPTER FOUR

INDUSTRIAL DEVELOPMENT

4.1 INDUSTRIAL DEVELOPMENT

4.1.1 Achievements of the Industrial Sector

The Kingdom's industrial sector made considerable achievements over the past thirty-six years, thanks to development plans policies that have been inspired by the national economy diversification strategy in general, and development of the country's industrial sector in particular. In order to achieve these objectives, large allocations were made for investment in industrial projects, particularly manufacturing industries (petrochemicals, oil refining etc). The Kingdom's wide-scale industrial progress has in turn led to increased national production and has generated hundreds of thousands of job opportunities. Industrial production has also contributed towards exports and helped to satisfy domestic demand for manufactured goods and products.

In 1425/26 (2005), the value added, generated by the Kingdom's manufacturing sector was estimated at some SR 86.3 billion, equivalent to 11.2% of the country's GDP, at constant prices of 1419/20 (1999). The significance of this considerable progress is clearly recognizable when one compares it to the sector's value added in 1389/90

(1969), which stood at SR 8.3 billion, and constituted 5.3% of the real GDP.

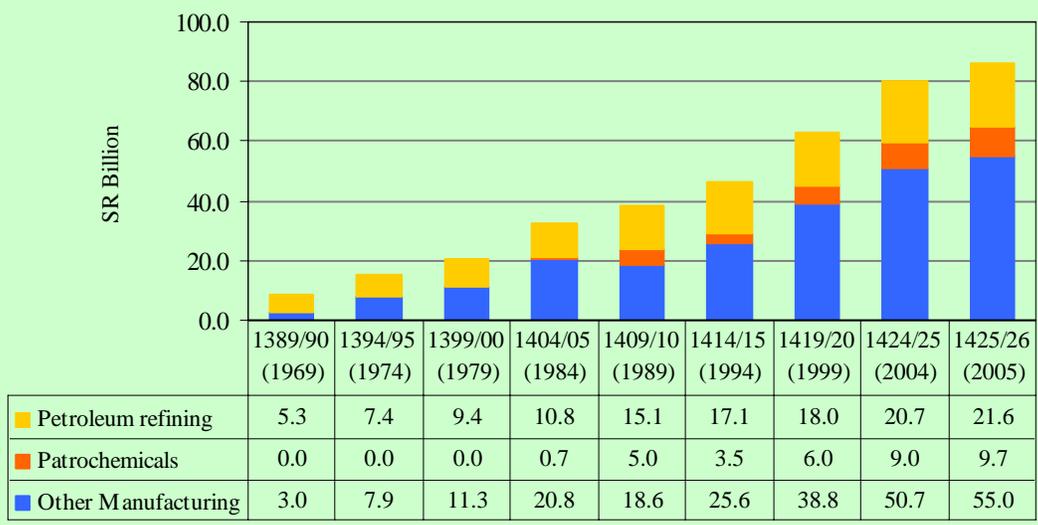
A key indicator of the Kingdom's considerable industrial progress can be seen in increased value of investments (fixed capital formation) in manufacturing industry, which rose from SR 0.04 billion in 1389/90 (1969) to SR 25.9 billion in 1425/26 (2005). Investments in petrochemical industries is estimated at SR 15.3 billion in 1425/26 (2005), equivalent to 59.3% of the sector's total physical investments, against 0.7% in 1389/90 (1969). A noticeable feature of the progress of these investments over the duration of the development plans has been the fact that investment in oil refining industries increased from SR 0.130 billion during the First Plan to SR 1.021 billion in the Second Plan, then doubled to SR 6.88 billion in the Fourth Plan, and amounted to SR 6.61 billion in the Fifth Plan. Investments rose to SR 10.44 billion in the Sixth Plan, and reached about SR 9.13 billion during the Seventh Plan.

Oil refining holds a significant position in manufacturing industries. In 1425/26 (2005), the value added of oil refining stood at some SR 21.6 billion, compared to SR 5.34 billion in 1389/90 (1969). Petrochemical industry contri-

Figure 17

Development of Value Added in Industrial Sector

At 1419/20 (1999) Constant Prices



bute an equally high share of manufacturing industry output, having generated some SR 9.7 billion in value added in 1425/26 (2005), compared SR 0.26 billion in 1403/04 (1983), at constant prices of 1419/20 (1999).

Value added of the manufacturing industrial sector went up from about SR 10.3 billion in 1970 to SR 15.2 billion at the end of the First Plan. The sector's value added reached about 20.8 billion by the end of the Second Plan.

The sector continued its distinguished performance throughout the successive development plans. The value added increased continuously as from the end of the Third Development Plan and until the end of the Seventh Development Plan as well as during the first year of the Eighth Development

Plan. The sector realized a real average annual growth rate of 6.7% over the period 1390/91-1425/26 (1970-2005). This rate is greater than the real average annual growth rate of the national economy during the same period.

Value added of petrochemical industry, which stood at SR 0.71 billion in the last year of the Third Plan (1984), increased to SR 4.95 billion in the last year of the Fourth Plan. However, the value added took a downward trend during the Fifth Development Plan where it reached SR 3.45 billion by the end of the Plan. The value added started rising once again to increase the contribution of petrochemicals in GDP during the Sixth Development Plan to SR 6.0 billion in 1419/20 (1999). During the Seventh Plan, value added of petrochemical industry increased

from SR 6.1 billion in 1420/21 (2000) to SR 8.95 billion in 1424/25 (2004). It then reached about SR 9.7 billion in the first year of the Eighth Development Plan.

Oil refining industry's value added increased from SR 6.98 billion in the first year of the First Plan to SR 7.4 billion in the last year of the plan. Value added contribution of oil refining industry to real GDP continued to rise over the duration of subsequent development plans where it reached SR 9.44 billion and SR 10.83 billion in the last year of the Second and Third Development Plans, respectively. During the period from the Fourth to the Seventh Plan (except for some years) the value added of oil refining industry resumed its rising trend as it rose from SR 15.1 billion in 1409/10 (1989) to SR 17.1 billion in 1414/15 (1994). It went up to SR 18.02 billion by the end of the Sixth Development Plan. Value added of oil refining industry continued to increase during the Seventh Plan, rising from SR 18.7 billion in 1420/21 (2000) to SR 20.7 billion in 1424/25 (2004). In the first year of the Eight Development Plan the value added reached SR 21.6 billion.

Other manufacturing industry, which include various mining, food and construction industries, as well as

production of consumer goods and clothes etc., excluding petrochemicals and oil refining, saw an increasing trend. Value added generated by this sector at constant prices of 1419/20 (1999) rose from SR 3.3 billion in the first year of the First Plan to SR 7.9 billion in the last year of the plan. During the Second Plan, the sector's value added rose from SR 8.6 billion in 1395/96 (1975) to SR 11.3 billion in 1399/1400 (1979). It then increased during the Third Plan to SR 20.8 billion in 1404/05 (1984). During the Fourth Plan the other manufacturing industries value added fell to SR 18.6 billion in 1409/10 (1989). It then resumed its upward trend during the successive plans and reached about SR 25.6 billion in 1414/15 (1994) and SR 38.8 billion by the end of the Sixth Development Plan. During the Seventh Plan, contribution of other manufacturing industry's to GDP amounted to SR 50.7 billion in 1424/25 (2004), compared to SR 41.03 billion in 1420/21 (2000).

Overall, value added of other manufacturing industries posted an average annual growth rate of 8.4% during the period 1389/90-1424/25 (1969-2004). Within this context, oil refining industry contributed an average annual growth rate of 4.0%, while petrochemical industry contributed an

average annual growth rate of 17.9% during the period 1403/04-1425/26 (1983-2005).

In the first year of the Eighth Plan 1425/26 (2005), private sector's investments in the petrochemicals Industry amounted to SR 15.3 billion.

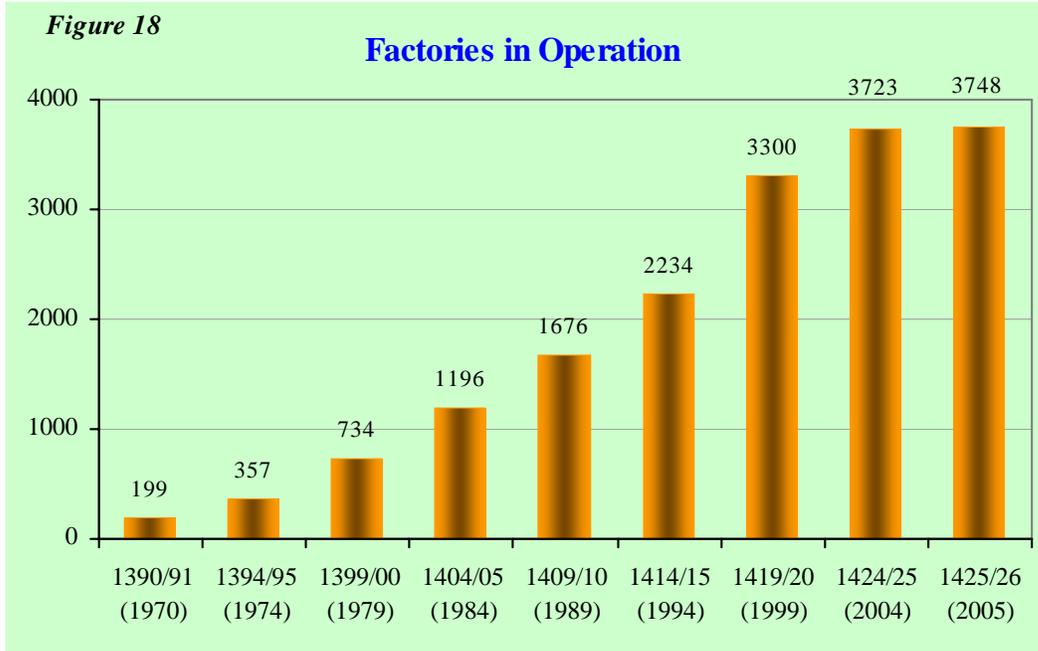
Oil refining industry investments (fixed capital formation) increased from SR 44 million in 1389/90 (1969) to SR 510 million by the end of the First Plan, and to SR 630 million by the end of the Second Plan, SR 190 million by the end of the Fourth Plan. It then rose to SR 1.03 billion by the end of the Fifth Plan, then posted an over six-fold increase to SR 6.2 billion by the end of the Sixth Plan.

In the first year of the Seventh Plan 1420/21 (2000), the value of physical investments in oil refining sector amounted to SR 1.6 billion, and it increased to SR 2.3 billion in the fifth year of the Plan, and to about SR 2.5 billion in the beginning of the Eighth Plan. Generally, the average annual growth rate of investment in oil refining over the past thirty-six years amounted to 11.9%.

The capital invested in the industrial sector translated into establishing

several national, joint and foreign factories. Their number increased from 199 factories with a total capital of SR 2.8 billion in 1390/91 (1970) to 3748 factories in 1425/26 (2005) with a total capital of SR 266.3 billion. Total employment in these factories increased from about 13.9 thousand to 357.4 thousand workers over the same period. On the other hand, the number of foreign and joint venture factories reached 504 or 13.4% of the total number of factories, with total investment of SR 137.8 billion or about 52% of total capital invested in all factories. The total value of the industrial capital in the Kingdom, which amounted SR 266.3 billion in 1425/26 (2005), i.e. the total value has increased by about 95-folds compared to total value of SR 2.8 billion in 1390/91 (1970).

In the context of the government efforts to support industrial development and provide it with advanced technology to make it more competitive in foreign markets through promotion and attraction of direct foreign investment in the Kingdom, the Council of Ministers issued Resolution No. (2) on 5/1/1421 (2000) for the establishment of "The Saudi Arabia General Investment Authority" (SAGIA). It also issued Resolution No. (1) on



5/1/1421 pertaining to the approval of the "New Foreign Investment Act," which aims at removing the constraints, streamlining the procedures and facilitating issuance of licenses, approval of visas and residence permits by establishing the "one-stop shops system." These shops comprise of representatives from all government agencies related to foreign investment. The new law also provides many other incentives such as ownership of real estate, increased tax holidays, eased sponsorship rules as well as giving the licensed investment project all privileges and guarantees granted to national projects.

One factor of industrial development in the Kingdom has been establishment of industrial cities which contributed to providing the basic infrastructure and

services needed for industries. Moreover, provision of roads and telecommunications network, seaports, air-ports support industrial activities and contributes to promotion of ties with the domestic and foreign markets.

One milestone of the Kingdom has been the establishment of the Saudi Basic Industries Corporation (SABIC). The total value of SABIC's sales amounted to about SR 17.22 billion in 1419/20 (1999), increased to SR 20.95 billion in 1420/21 (2000) and to SR 78.0 billion in 1425/26 (2005). SABIC has also contributed to increase Saudi exports. The value of SABIC's exports amounted to SR 11.1 billion in the last year of the Sixth Plan and increased to SR 15.77 billion in 1420/21 (2000) and to SR 18.08 billion in 1421/22 (2001). The value of exports rose to SR 44.8

billion in 1425/26 (2005).

A considerable progress has also been achieved in the field of oil refining industry, its production capacity increased from 512 thousand barrels per day in 1390/91 (1970) to about 1.47 mbd in 1410/11 (1990), and to 2.04 mbd in 1424/25 (2004). In general, oil refining processes grew at an average annual rate of 3.4% over the period 1390/91 -1425/26 (1970-2005).

Furthermore, many vital industries achieved significant growth, of which the foremost is cement production. It

increased from 667 thousand tons in 1390/91 (1970) to 26.1 million tons in 1425/26 (2005) i.e at an average annual growth rate of 11.0%; and chemical fertilizers which increased from 24.4 thousand tons to 5.4 million tons, or at an average annual growth rate of 16.7% during the same period.

The importance of industrial achievements is reflected in increased volume, value and variety of industrial exports, with increased competitiveness of these exports in both domestic and foreign markets.

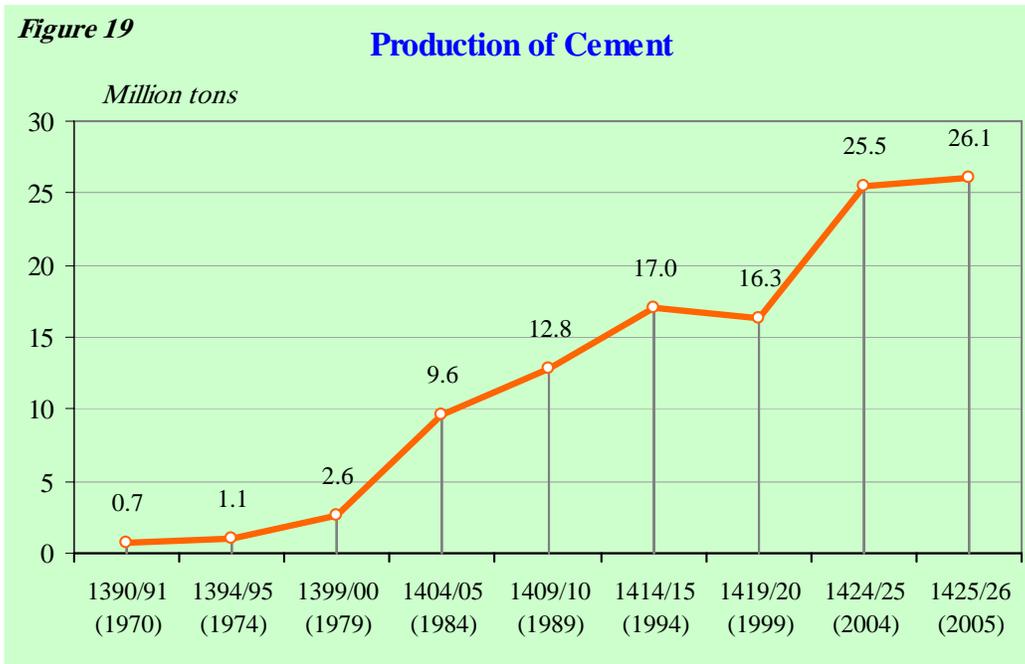
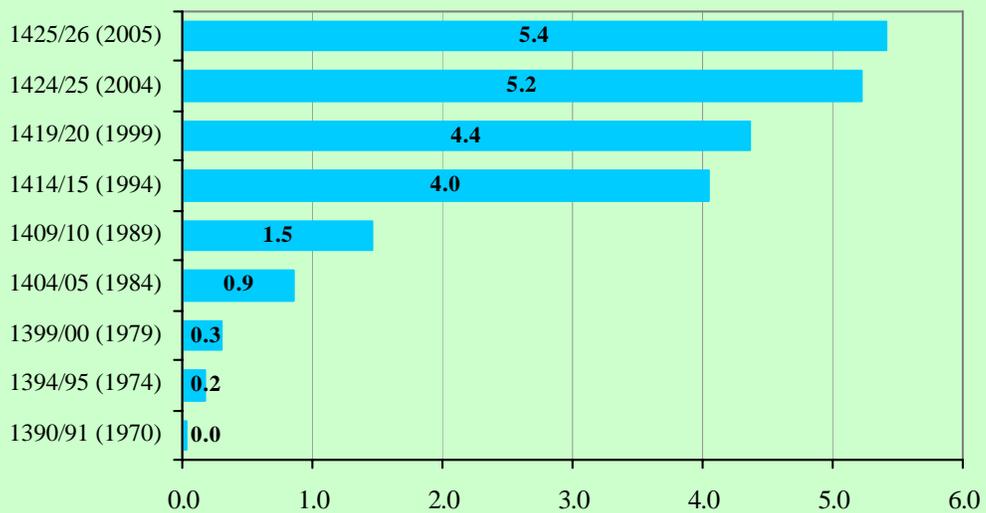


Figure 20

Production of Chemical Fertilizers

- Million tons -



4.1.2 Private Sector and Industrial Development

Through its policies and projects, the successive development plans have increasingly emphasized the support and stimulation of private sector as a cornerstone of economic development that the plan seek to achieve, based on market role and mechanism in mobilization and distribution of resources. By ensuring the principles of free market economy and enhancing the role of the private sector. This trend is further underlined by the country's need to diversity its goods and services production base, modernize and improve efficiency level; and to boost rationalization of the allocation of resources.

The positive contribution of the private

sector in industrial development is evident from the number of operating factories in the Kingdom and the rapid and significant growth of these factories over the past thirty-six years. The number of such factories reached 3748 in 1425/26 (2005) with a total capital of some SR 266.3 billion compared to 199 factories with a capital of SR 2.8 billion in 1390/91 (1970). This affirms the increased significance of the sector in the country's national economy, as can be seen by the increase in the share of private sector to 52.2% of the GDP in 1425/26 (2005) compared to 33.1% in 1390/91 (1970).

4.1.3 Industrial Infrastructure

The development plans have adopted a comprehensive and integrated vision to accelerate industrial growth rates and

transform the industrial sector into a leading player in the country's economic development process. Towards achievement of this strategic objective the government embarked on the establishment of integrated industrial cities within the context of a strategy that takes into account the matching between industrial diversification, the geographical distribution of industrial development hubs, and the extent of availability of material resources and sources of wealth. This strategic direction made available infrastructure and public service, at high standards, helped to encourage to provide industrial investment in the Kingdom and transformed the Kingdom's industrial cities into real centers of attraction for national and foreign industrial investments

Currently, work is under way on the completion of phase-three of the second industrial city in Riyadh, and the industrial cities in Qassim and Hafouf as well as phase-five of Jeddah industrial city. Work has also commenced on the development of five new industrial cities in Madinah, Assir, Jouf, Tabuk and Najran with an aim to complete the steps for creation of comprehensive industrial development in all regions of the Kingdom.

Large industrial cities were created in Jubail and Yanbu, cities over the last three decades. These cities provided the necessary infrastructure for hydro-carbon and basic industries, as well as related secondary and downstream industries which utilize outputs of basic industries such as primary and intermediate materials. The said industries utilize the primary and intermediate materials in their productive operations. As a result the foundations of a strong industrial sector have been established. Components of the industrial sector are thus strongly linked with the other sectors of the national economy through forward and backward relations to accelerate sustainable development.

Total investment expenditure for the establishment of industrial cities reached SR 2.1 billion by the beginning of 1424/25 (2004). The Ministry of Industry and Commerce has established 14 industrial cities with a total area of 92.1 million square meters, of which 47.4 million square meters were developed and equipped with core facilities and public services needed to establish factories. These industrial cities are located as follows: (2) in Riyadh, (1) Jeddah, (2) Damman, (1) Qassem, (1) Al-Hassa, (1) Makkah, (1) Madina, (1) Aseer, (1) Al-Jouf, (1)

Tabouk, (1) Hail, and (1) Najran. Utilization rates of the existing industrial cities are 100% in Riyadh, Jeddah Makkah and Dammam. Rates for Gassim and AlHasa are 64.7% and 91.4% respectively.

In the context of general policies of enhancing the private sector's contribution to the national economy, including privatization policies, the Council of Ministers' Resolution No. 57, dated 28/3/1420 (1999), has been issued stipulating the establishment of a Saudi Joint-Stock Company for Services in Jubail and Yanbu industrial cities, to undertake all works of operation, maintenance and management of expansion and construction works of the infrastructure facilities in the industrial cities of Jubail and Yanbu. The Council of Ministers has also issued Resolution No. 235 dated 27/8/1422 (2001) approving the regulations of "The Saudi Authority of Industrial Cities and Technology Zones" (SAICTZ) in order to encourage the private sector to establish, manage, operate and maintain industrial cities and to grant licenses to the developers and operators of such cities according to the Authority's regulations and by-laws.

Industrial development efforts in the

Kingdom have borne fruit. Key among these is the petrochemical industry established by the Saudi Arabian Basic Industries Corporation (SABIC), which have become a key source of GDP and exports. Equally significant has been the role of the Saudi Arabian Mining Company (MA'ADEN) which was created to utilize non-oil mineral resources as a source of national income, and to provide raw materials necessary for industrial projects, thus contributing to the establishment of new industries and utilization of resources comparative advantages and transforming them into competitive advantages in domestic and foreign markets.

The Saudi economy possesses a key pillar for industrial development represented by SAUDI ARAMCO, which is fully (100%) owned by the Kingdom as of 1400 (1980). Saudi ARAMCO replaced the Arabian American Oil Company which was established in 1940s to undertake concession works in the oil sector.

In order to enhance industrial development the Kingdom's educational, academic research and training institutions implemented several plans with the aim of providing the qualified and trained manpower

required for industrial development. King Abdul Aziz City for Science and Technology (KACST) stands as a landmark of such achievement. KACST was established as per the Royal Decree No. M/60 issued on 18/2/1397 (1977) as an autonomous scientific body reporting to the Prime Minister.

The Industrial Colleges at Jubail and Yanbu have been established to meet the industry's need for qualified and trained manpower. These colleges contribute to the transfer of advanced industrial technology and link the industrial and production facilities with these centers.

The development plans did not only emphasize the provision of the basic industrial infrastructure, but have also focused on ensuring financial resources necessary for industrial investment in an easy manner as a key for setting up new industrial projects owned by the private sector along with boosting this sector's ability to enhance its industrial investments. The Saudi Industrial Development Fund (SIDF) provided loans to industrial projects. Amounts allocated by SIDF for industrial projects totaled SR 150 million in 1394/95 (1974) and increased to SR 52.0 billion in 1425/26 (2005). These loans have contributed to the establish-

ment of 1942 projects in various industries over the period 1394/95-1425/26 (1974-2005).

The creation of the Saudi Arabian General Investment Authority (SAGIA), along with the issuance of the investment code which offers privileges, exemptions and incentives to encourage foreign investors, played a significant role in the development of the industrial sector and in boosting its competitiveness in domestic and foreign markets.

4.1.4 The Two Industrial Cities of Jubail and Yanbu

The twin industrial cities of Jubail and Yanbu are considered as strategic sites for hydrocarbon industries and energy intensive basic industries. They were set up to ensure utilization of the Kingdom's natural resources with maximum economic efficiency. As expected, the basic industries that were established have resulted in the development of a series of secondary and downstream industries that are linked to basic industries through the use of their products as raw and intermediate materials and as secondary feedstock. Production for these factories is targeted to meet 5-6% of world demand for petrochemicals.

Development of basic industries in Jubail and Yanbu is the responsibility of SABIC and SAUDI ARAMCO and some private companies.

Creation of the two industrial cities of Jubail and Yanbu is considered ideal in terms of time and costs and represents a successful example of modern technical and administrative performance. The task of management of implementation and development of the Two Cities was undertaken by the Royal Commission for Jubail and Yanbu which was established as per Royal Decree No M/75 in 1395 (1975) to plan and implement and develop the two cities.

4.1.4.1 Jubail Industrial City

The Jubail industrial city covers an area of 1016 square km and its population was estimated to be around 94.1 thousand by the end of 1425/26 (2005). It is envisaged that by beginning of 1430 (2010) the city will accommodate 290 thousand inhabitants.

By the end of 1425/26 (2005), Jubail industrial city had become ready to accommodate more basic, secondary and supporting industries. Vast areas of land were leveled, filled-in and compacted. Residential quarters provided with recreational facilities were established for employees and

workers. Moreover, 14,260 residential units have been built, of which about 9,021 housing units have been constructed by the private sector.

In order to provide the industrial city with self-sufficiency needs, particularly water, the required funds have been allocated to increase the productive capacity of water desalination plants to 250 thousand cubic meters per day. The length of the main water network is currently 866.3 km, and the capacity of sewerage and industrial wastewater reclamation network is 132,000 cubic meters per day. This includes the industrial wastewater reclamation plant and sewerage reclamation plant with capacities of 60,000 cubic meters per day and 72,000 cubic meters per day respectively. The length of the sewage network reached 864 km.

The Royal Commission has installed an electricity network with a length of 1721 km. and SCECO (Eastern province) is responsible for power supplies. A system of 60,000 telephone exchange lines with a total length of 386 km has also been completed and 24,425 telephone lines. Infrastructure has been completed with the construction of 882 km of main and express roads. An airport has been built which includes 4650 square meters of

terminals and other facilities. Currently, there are 23 berths at the industrial seaport.

With respect to provision of necessary health care to the population of the city, three hospitals been established in addition to 4 dispensaries and clinics, and 3 primary health care centers, which are now in operation. Furthermore, 40 mosques as well as 15 larger mosques have been constructed.

Within the context of manpower development and linkage of education and training with the requirements of industrial development, the number of students, and graduates at the Industrial College of Jubail has reached about 3686 by the end of 1425/26 (2005).

Furthermore, a wide variety of schools for boys and girls are operating including 19 kindergartens, 19 primary, 11 intermediate, 7 secondary schools and two schools for non-Saudis.

Many industrial achievements have been made where there are: 19 basic industrial complexes, 21 secondary industries and 136 support and light industries at the production stage. All these industries are capital-intensive. It is expected that by 1430 (2010) these industries will provide about 107

thousand new jobs. Currently, they utilize natural gas which was being flared-up without any economic return. The gas will continue to be utilized as fuel and as a primary input for production of steel, aluminum, plastics and fertilizers. Industries at Jubail Industrial City are as follows:

* **Basic Industries:**

These industries are undertaken by SABIC and SAUDI ARAMCO. and the private sector. Nineteen basic industries complexes have already been completed and are currently in operation. In addition, 2 projects are under construction, and 8 projects are in the stage of design and planning. While 8 plants are under extension.

* **Secondary Industries:**

These industries are established by the private sector and they depend on products of the basic industries. Currently 21 plants are in operation, 5 project are under construction and another 7 projects are in design and planning stage and 3 plants are under expansion.

* **Support and Light Industries:**

These plants produce materials which are needed by other industries or by housing projects during the construction stage or for

operation and maintenance activities. These are established and operated by the private sector. Currently, there are 136 plants in operation at Jubail.

4.1.4.2 Yanbu Industrial City

Plans for the construction of Yanbu Industrial City and its modern residential facilities have been completed on an area of 80 square km. By the end of 1425/26 (2005), the population of the city will reach 85,979 inhabitants. It is envisaged that by the year 1430 (2010), the city will have a population of 150 thousand. Construction work for the industrial city has been completed to establish the basic and secondary industries.

By the end of 1425/26 (2005), 19,390 housing units have been completed. The city has a storage capacity of 280 thousand cubic meters of water for drinking and industrial purposes; 547 km of water distribution network; 27 thousand cubic meters per day of sewerage treatment plant; 24 thousand cubic meters capacity per day of industrial wastewater treatment plant; 484 km of sewage network. The capacity of cooling water plants increased to 460 thousand cubic meters per hour. In addition, electricity generation capacity rose to 544 mega-

watts and the length of electricity distribution network reached 774 km.

An airport with a 3.2-km runway and 4000 square meters of terminals and facilities has also been completed. Furthermore, a road network of 485 km has also been laid.

As in Jubail, the industries in Yanbu city are divided into three categories:

* **Basic Industries:**

These industries are undertaken by SABIC and SAUDI ARAMCO and the private sector. 10 basic industrial plants have been established which are now in operation. Three projects are under construction.

* **Secondary Industries:**

These industries are established by the private sector and depend on the products of basic industries. There are 12 plants in operation, and 3 projects are under construction.

* **Support Industries:**

These plants produce materials which are needed by other industries or the housing sector during both the construction stage and the operation and maintenance stage. These plants are established

and operated by the private sector. Currently, there are 39 plants in operation.

4.1.5 Industrial Development Pillars in the Kingdom

Over the past thirty-six years, development plans' endeavor succeeded in establishing a firm base of promising industrial development in the Kingdom. This base has three major pillars that are represented in petrochemical, basic, mining and oil industries which produce good quality and competitive products that have made considerable contribution to increase production, and national exports. Management and development of these industries are undertaken by three giant national corporations, namely the Saudi Basic Industries Corporation (SABIC), the Saudi Aramco Oil Corporation (Saudi ARAMCO) and the Saudi Arabian Mining Corporation (Ma'aden). All of these corporations enjoy a prestigious position in the national economy, in terms of production volume, international reputation their quality products and the advanced level of the technology they use. In fact, these industries serve as an outstanding example of the success of the development plans and the policies they pursue to accelerate industrial development within the framework of

the country's strategy to diversify production base and to reduce reliance on crude oil production and exports.

4.1.5.1 Saudi Arabian Basic Industries Corporation (SABIC)

SABIC was established in 1396 (1976) with a paid up capital of SR 10 billion, which increased later to SR 15 billion, of which 70% is owned by the Saudi government and 30% by Saudi and GCC countries' citizens. SABIC's capital has been raised, as it currently stands at SR 25 billion.

The extensive industrialization program under-taken by SABIC is considered as a milestone in the Kingdom's industrial development process, especially in the basic, downstream and support industries which utilize the local resources of hydrocarbons and minerals, particularly the natural gas, with an aim to maximize the value added of these resources.

By the end of 1425/26 (2005), SABIC completed operation of 16 world-class industrial companies in Jubail and Yanbu, most of which are joint ventures with international companies such as Shell, Exxon/ Mobil, Mitsubishi Chemicals etc., with actual production of about 46.7 million metric

tons of basic chemicals, intermediate chemicals, fertilizers, metals and polymers. These products were manufactured by the following SABIC subsidiary companies: Saudi Iron and Steel Company (HADEED); Saudi Methanol Company (ARRAZI); Jubail Fertilizers Company (SAMAD); Saudi Yanbu Petrochemicals Company (YANPET); Jubail Petrochemicals Company (KEMYA); Saudi Petrochemicals Company (SADAF); National Methanol Company (IBN SINA); Arabian Petrochemicals Company (PETROKEMYA); Eastern Petrochemicals Company (SHARQ); Saudi Arabian Fertilizers Company (SAFCO); National Chemical Fertilizer Company (IBN AL BAYTAR); National Plastics Company (IBN HAYYAN); National Industrial Gases Company (GAS); Saudi European Petrochemical Company (IBN ZAHR); Arabian Synthetic Fibers Company (IBN RUSHD), and Ibn Hayyan Plastic Company (TAYF), SABIC Euro Petrochemicals and Jubail United Petrochemicals Company (UNITED).

Total manpower employed by SABIC and its subsidiary companies by the end of 1425/26 (2005) reached over 16 thousand of which Saudi nationals account for 85%.

In the domain of industrial and marketing cooperation, particularly with GCC countries, SABIC has a 20% share in the Bahrain Aluminum Company (ALBA) and has 31.3% share in Gulf Aluminum Rolling Mill Company (GARMCO) as well as 20.0% of the National Chemicals Transporting Company. It also owns one third of the Gulf Petrochemicals Industries Company (GPIC), and has a share of 25% in Energy Company for Jubail and Yanbu which supplies energy and water at the two industrial cities. In addition to 20% of Bettin Company and 16.67% of ARG Company.

By the end of 1425/26 (2005), SABIC ranked 10th among the world's largest petrochemical companies. Its production amounted 7% of world petrochemicals production. SABIC exports two-thirds of its production. This represents about SR 44.8 billion. SABIC total sales reached about 36.6 million metric tons at a value of SR 78.3 in 1425/26 (2005). SABIC consists of six strategic business units: Basic chemicals; intermediates; polyolefin's; PVC and polyester; fertilizers and metals. Its exports reach to more than 100 countries of the world as follows: 40% to Asia, 28% to Middle East, 28% to Europe and 10% to other countries.

4.1.5.2 Saudi Arabian Oil Company (SAUDI ARAMCO)

SAUDI ARAMCO constitutes a basic pillar of the national economy, which contributes significantly to increase of GDP and generation of public revenues and increased exports. The company is considered as a vital center for spreading advanced operation and management systems and as an organization having broad linkage with the outside world due to the substantial size of oil production and exports.

Oil Reserves:

In 1425/26 (2005), SAUDI ARAMCO was responsible for managing 92 oil fields and 13 gas fields throughout the Kingdom including the Red Sea area. Moreover, five oil fields and a gas field in the Partitioned Neutral Zone are under the responsibility of other oil companies while their production is shared between the Kingdom and Kuwait. The proven extractable crude oil reserves in the fields managed by SAUDI ARAMCO and the other companies amounted to 264.2 billion barrels in 1425/26 (2005). These reserves constitute about 23% of the world's total reserves making Saudi Arabia the country with the largest oil reserves in the world. Furthermore,

total reserves of gas, including associated gas (dissolved and cap) and non-associated gas totaled 243.6 trillion standard cubic feet by the end of 1425/26 (2005), thereby ranking the Kingdom as the fourth largest in terms of gas reserves.

Exploration:

During the period 1409 (1989) and 1421/22 (2001), SAUDI ARAMCO's exploration efforts achieved success in the Central, Western and Northern Provinces, where the first oil field was discovered in Hauta area in 1409, followed by discovering a number of oil and gas fields in the Central Province in 1410, which contain very sweet light crude oil. Further oil discoveries were made in 1416/17 (1996) at Usaylah, with a cap of associated gas at Shiblah, Abu Shidad and Mulayh. In the Eastern Province, non-associated sweet gas and condensates were discovered in 1414/15 (1994) in the pre-Khuff Jouf deposit in Hawiyah area of Ghawar field as well as sweet non-associated gas in the Uthmaniyah area of the Ghawar field. Shadin field of sweet non-associated gas was discovered in 1419/20 (1999).

The first non-associated gas discovery was made in 1413 (1993) when SAUDI

ARAMCO discovered gas on the Red Sea coastal plain, between Umluj and Al-Wajh, and also discovered oil in Midyan area on the northern part of the Red Sea coast. A year earlier, gas and condensates were discovered in the same area. In 1411 (1991), an exploratory well in Al-Jouf basin revealed the existence of natural gas, where SAUDI ARAMCO realized success in its first exploration effort in the north-western region.

The exploration program is designed to look for other reserves of premium oil and non-associated gas in the vicinity of the existing oil and gas facilities. As part of its strategy to achieve more profitable production, SAUDI ARAMCO significantly increased 3-D seismic surveying in 1412 (1992) to more effectively delineate the boundaries of known reservoirs. ARAMCO is still exerting intensified exploration efforts to realize further economically feasible discoveries.

Pipelines:

SAUDI ARAMCO is operating nearly 25,200 kilometers of crude oil and gas pipelines. The Company completed a very massive network of pipelines to transport crude oil, gas, natural gas liquids (NGL), condensates and refined products. The crude oil pipeline system

transports five types of crude oil from the fields located in the southern, northern and central producing areas to the plants for processing and then for export via the sea ports of Ju'aymah and Ras Tanura on the eastern coast and Yanbu on the western coast. The system also transports crude oil to domestic refineries. The Master Gas System consists of a network of secondary pipelines that transport sour gas to Uthmaneyah, Shedgum and Berri Gas Processing Plants, where sulfur is removed and gas is then delivered to local customers.

As part of its strategy to reduce dependence on the produced quantities of associated gas and to meet growing domestic demand for gas, SAUDI ARAMCO is implementing ambitious plans to boost its non-associated gas production through a project which involves construction of two gas processing plants and about 2000 kilometers of pipelines which are now in the design and construction phase. It is anticipated that this project will increase the existing capacity of the Master Gas System by about 3900 million standard cubic feet per day (MSCFD).

Refining:

SAUDI ARAMCO operates five

domestic refineries at Jeddah, Rabigh, Yanbu, Riyadh and Ras Tanura, in addition to the Kingdom's share in Jubail SASRE refinery and Yanbu SAMREF refinery with a combined production capacity of 2.05 MBPD. Royal Decree No. M/1, of Muharram 11, 1414 (July 1, 1993) transferred to SAUDI ARAMCO the responsibility of operating Yanbu, Jeddah and Riyadh refineries and the refined petroleum products distribution network which serves millions of consumers across the Kingdom. SAUDI ARAMCO also became responsible for operating the marine terminals at Jizan, Rabigh, Duba and Jeddah, in addition to Yanbu on the Red Sea coast, and Ras Tanura and Ju'aymah on the Gulf coast. These terminals load and receive crude oil, NGL and refined petroleum products. As per the above decree, Petromin's 50% stake in joint-venture refineries in the Kingdom was also transferred to SAUDI ARAMCO. These refineries are SAUDI ARAMCO Mobil Refinery (SAMREF) at Yanbu, SAUDI ARAMCO Shell Refinery (SASREF) at Jubail, in addition to Rabigh refinery.

It is worth mentioning that SAUDI ARAMCO has taken full possession of Rabigh Refinery dated Muharram 3, 1416 (June 1, 1995). In 1417 (1996), and by a decision of the Council of

Ministers, SAUDI ARAMCO acquired Petromin's interest in two joint-venture lubricating oil companies at Jeddah; viz; Petromin Lubricating Oil Refining Company (Luberef) and Petromin Lubricating Oil Company (Petrolube). The two companies are jointly owned with Exxon-Mobil. This completed the integration of all of Kingdom's petroleum refining and distribution facilities as well as Petromin's joint-venture domestic refining interests into SAUDI ARAMCO. In 1420/21 (2000), the production of unleaded gasoline started for the first time in the Kingdom.

In view of the significance of oil refining industry in the Kingdom, a brief profile is hereunder about each domestic refinery:

* ***Ras Tanura Refinery:***

The Refinery went on stream in 1360 (1941) with a capacity of 30,000 BPD of crude oil, while the production capacity currently stands at 325,000 BPD in addition to 200 thousand barrels of condensates.

The new units which came as part of the refinery expansion project went on stream in 1418 (1998) thereby achieving the main

objective of the refinery upgrade, i.e. converting the refinery from a hydro-skimming facility into a conversion facility for increased production flexibility in terms of gasoline and diesel output as well as product quality, and consequently increased financial returns of the refining processes.

* ***Jeddah Refinery:***

This refinery went on stream in 1388 (1968), with a production capacity of 12,000 BPD of crude oil. It underwent several expansion processes to boost production to its current capacity of 84,000 BPD.

* ***Riyadh Refinery:***

Production commenced in 1394 (1974) with a capacity of 15,000 BPD. The refinery has undergone several expansion works, thereby bringing the production capacity to 122,000 BPD. The refinery obtains its crude oil feedstock from the East-West Pipeline.

* ***Yanbu Refinery:***

Production started in 1403 (1983). Its currently production capacity is 235,000 BPD.

* ***Rabigh Refinery:***

The refinery went on stream in 1410 (1989) as a joint-venture. The foreign partner's 50% share was acquired in 1416 (1995). Its current production capacity is 370,000 BPD.

The Domestic Joint-Venture

Refineries:

* ***SAUDI ARAMCO and Exxon/Mobil Refinery Company Ltd. (SAMREF):***

The refinery, located at Yanbu on the Red Sea coast, is a 50/50 joint-venture with SAUDI ARAMCO and Exxon/Mobil, and has commenced operation in 1404 (1984) with a production capacity of 260,000 BPD that has been raised to its current level of 400,000 BPD. SAMREF refines petroleum products primarily for export.

* ***SAUDI ARAMCO/Shell Refinery Company (SASREF):***

The refinery, located at Jubail on the Arabian Gulf coast, is a 50/50 joint-venture with Shell, and commenced operations in 1405 (1985) with a production capacity of 305,000 BPD. SASREF produces refined petroleum products and chemical plants'

feedstock primarily for sale at international markets.

* ***SAUDI ARAMCO Lubricating Oil Refining Co. (Luberef):***

SAUDI ARAMCO has a 70% stake in Luberef while Exxon/Mobil owns a 30% share. This joint-venture was established in 1394 (1974) and commenced its Jeddah lube oil refinery operations in 1398 (1978). A second lube oil refinery, located at Yanbu, commenced operations in 1419/20 (1999).

Luberef receives fuel oil from SAUDI ARAMCO's Jeddah and Yanbu refineries and refines it into what is known as base oils, which are exported. Petrolube and other companies in the Kingdom blend such oils into motor oil products. The combined capacity of both refineries is 4.2 million barrels per year, a quantity sufficient to cover the local demand and export the rest to the regional markets.

* ***SAUDI ARAMCO Lubricating Oil Co. (Petrolube):***

The company was established in 1388 (1968) and has refineries at Jeddah, Riyadh and Jubail. Jeddah

and Riyadh refineries are jointly owned by SAUDI ARAMCO and Exxon/Mobil sharing 71% and 29% respectively. It produces motor oil products from its three blending plants with a total capacity of 6.5 million barrels per year. It markets 130 products under the trademark "Petromin Oils" brand name and its products are used by 25% of Saudi market. Petrolube blends and packs products for third-party companies. Its products are marketed in more than 33 countries and the company has blending and licensing agreements abroad.

* ***SAUDI ARAMCO Gulf Works Co.:***

This company was established in February, 1420 (2000), to undertake management and operation of the Kingdom's share in the submerged area of the partitioned zone northwest of the Arabian Gulf.

Distribution:

The sales of SAUDI ARAMCO from refined products in the domestic market reached 434.1 million barrels and 53.2 million per year of crude oil in 1425/26 (2005).

SAUDI ARAMCO owns 20 main

distribution points in addition to 17 jet fueling units. These points and units supply refined products to the domestic land, air and marine transportation means, as well as to private, public and industrial sectors.

International Joint Ventures:

Since the establishment of SAUDI ARAMCO in 1409 (1988), one of the company’s main objectives has been to increase crude oil sales through international joint ventures, to provide greater market and price stability, and to realize additional income for the Kingdom from refining and marketing operations abroad.

In implementation of this objective ARAMCO owns shares in each of Petron Company, S-Oil Corporation, Motiva Enterprise, Motor Oil (Hellas) and Avin Oil Company, and the Arab Petroleum Pipelines Company (Sumed). ARAMCO’s shares in these companies are 40%, 50.1%, 50% and 15% respectively. ARAMCO committed itself to provide three of these companies with about 90%-100% of their needs for crude oil. Table No (4.1).

ARAMCO has achieved substantial gains as a result of benefiting from the

distribution capacities of these companies in different regions of the World. This has secured greater accessibility to Saudi oil and oil-related products and has thus enhanced the position of Saudi oil in world markets. In addition, this policy has also raised the efficiency of ARAMCO’s foreign investments and has increased the realized revenues.

Table (4.1): Aramco's Most Important Integrated Ventures

Company	Country	Aramco's Share	Date of Share Ownership	Coverage Share of Saudi Crude Oil for Refineries Needs'
Petron	Philippines	40%	1994	90%
S. Oil Corporation	South Korea	35% raised to 50.1%	1991 1999	90%
Motiva Enterprise	USA	50%	--	--
Motor Oil and Avin Oil	Greece	50%	1996	100%
Arab Petroleum Pipelines Company	Egypt	15%	1997	--

International Marketing and Transportation:

In 1425/26 (2005), SAUDI ARAMCO

continued to undertake all of the Kingdom's international sales of refined products, NGL and sulfur, excluding output from the partitioned Neutral Zone. The Company produced and marketed LPG, consisting of propane and butane, produced by domestic and joint refineries as well as sulfur and SAUDI ARAMCO marketed all quantities of refined products that were in excess of domestic needs amounting to 434.5 MB in 1425/26 (2005), in addition to 53.2 million barrels of crude oil.

It is worth mentioning that Vella International Marine Company Limited, an ARAMCO's subsidiary, owns a fleet consisting of giant oil tankers. Out of the twenty five tankers owned by the company, four are operating within the coastal range of the Kingdom. This fleet is supported by other tankers chartered by Vella on very stringent standards. Accordingly, SAUDI ARAMCO obtained "ISO 9002" certificate for management and operation of ships in a safe manner that protects environment against pollution. Vella Company transports crude oil exports estimated to reach 1.9 million barrels per day. It had also transported 293 million barrels of refined products.

Gas Collection Program:

The most significant achievements realized during 2005 are the issuing of licenses for five industrial and services projects, which are dependent upon natural gas and liquefied petroleum gas. The capital investment of these projects is estimated at around US\$ 6 billion. These projects will contribute to increasing the productive capacity to petrochemicals, in addition to the production of iron and electricity in the Kingdom.

Fuel Gas and Natural Gas Liquids:

SAUDI ARAMCO is committed to the provision and development of associated natural gas supplies. The gas is produced in the Eastern Province for use in water desalination, power generation and provision of energy for oil production. Fuel gas and natural gas liquids (NGL) are considered to be very important in supporting industrial development and petrochemicals production in the industrial cities of Jubail and Yanbu. LPG is also produced from natural gas for export. In processing natural gas, toxic hydrogen sulfide is removed and converted to yield sulfur for export. Greater quantities of propane, butane and natural gasoline – the main components of NGL – are used as feedstock for the Kingdom's

petrochemical industries. Surplus quantities of NGL continue to be exported.

During 1419/20 (1999), propane production totaled 120.8 million barrels, butane production around 79.1 million barrels and natural gasoline production 59.8 million barrels.

The company designed the Kingdom's Master Gas System (MGS), which has the capacity to process nearly 130 million cubic meters (4.5 billion cubic feet) per day of natural gas. The MGS collects associated gas from onshore and offshore fields, and non-associated gas from deep fields in the Company's southern prospection area.

MGS components include nearly 42 gas-oil separator plants, three gas-processing plants, four NGL fractionalization facilities – at Yanbu, Ju'aymah, Abqaiq and Ras Tanura – and the East-West NGL pipeline. The 1,170 kilometers (726 miles) pipeline, which begins at Shedgum and runs parallel to the East-West Crude Oil Pipeline system to Yanbu, has a capacity of 290,000 bpd of NGL. In 1416/17 (1996), the Company began the construction of a new gas-processing plant and associated facilities at Hawiyah area of the Ghawar field. The

project is the most significant expansion of the MGS since its inception more than 15 years ago. The gas-collection program currently collects and processes about 4.67 billion standard cubic feet of associated and non-associated gas per day from oil and gas fields and produces the following products:

- * 2.9 billion cubic feet, mostly of fuel gas, per day (mainly methane) used as feed stock for the water desalination and power generation plants. It is also used as feedstock and fuel for SABIC projects and other domestic industries in the Eastern Region.
- * 551 million cubic feet of ethane per day, used as feedstock or fuel for petrochemical industries at Jubail and Yanbu.
- * 805,000 barrels of NGLs per day, primarily for export.
- * 4,600 tons of sulfur per day for export.

In 1389/1390 (1969), only 11% or 2.3 billion cubic meters of produced natural gas was utilized, the rest was either re-injected or flared. Since 1404 (1984), nearly all natural gas produced began to be utilized. Supplies of non-associated gas from the Kuff formation were tapped as of 1404 (1984) due to decline in the production of gas associated with

crude oil and increased seasonal demand for gas. The production of natural gas reached 81.3 billion cubic meters in 1425/26 (2005). While amount of gas utilized reached 71.2 billion cubic meters.

Staffing and Training:

SAUDI ARAMCO's work force by the end of 1425/26 (2005) totaled 54.5 thousand employees, the majority of whom are Saudis.

SAUDI ARAMCO's training program, one of the largest of its kind in the world, aims at transferring technology to the Saudi manpower. This program is implemented by a permanent group of training staff at Industrial Training Centers, Job Skills Training Centers and Training Center's branches. The main training centers contain classrooms and workshops. SAUDI ARAMCO provides training to thousands of Saudi employees each year. Training programs include study courses, on-the-job training, university grants, courses in developing professional excellence and post-graduate studies. The company continues its program to enhance productivity and to improve work performance and follow up through supervisory staff training.

During 1424/25 (2004) there were

about 3588 participants in job-related academic courses, and almost 1756 enrolled in Job skills and on-the-job training programs.

SAUDI ARAMCO established eight government schools, in 1425/26 (2005), thereby bringing the total number of schools established by ARAMCO to 139 schools since 1953.

4.1.5.3 Saudi Arabian Mining Company (MA'ADEN)

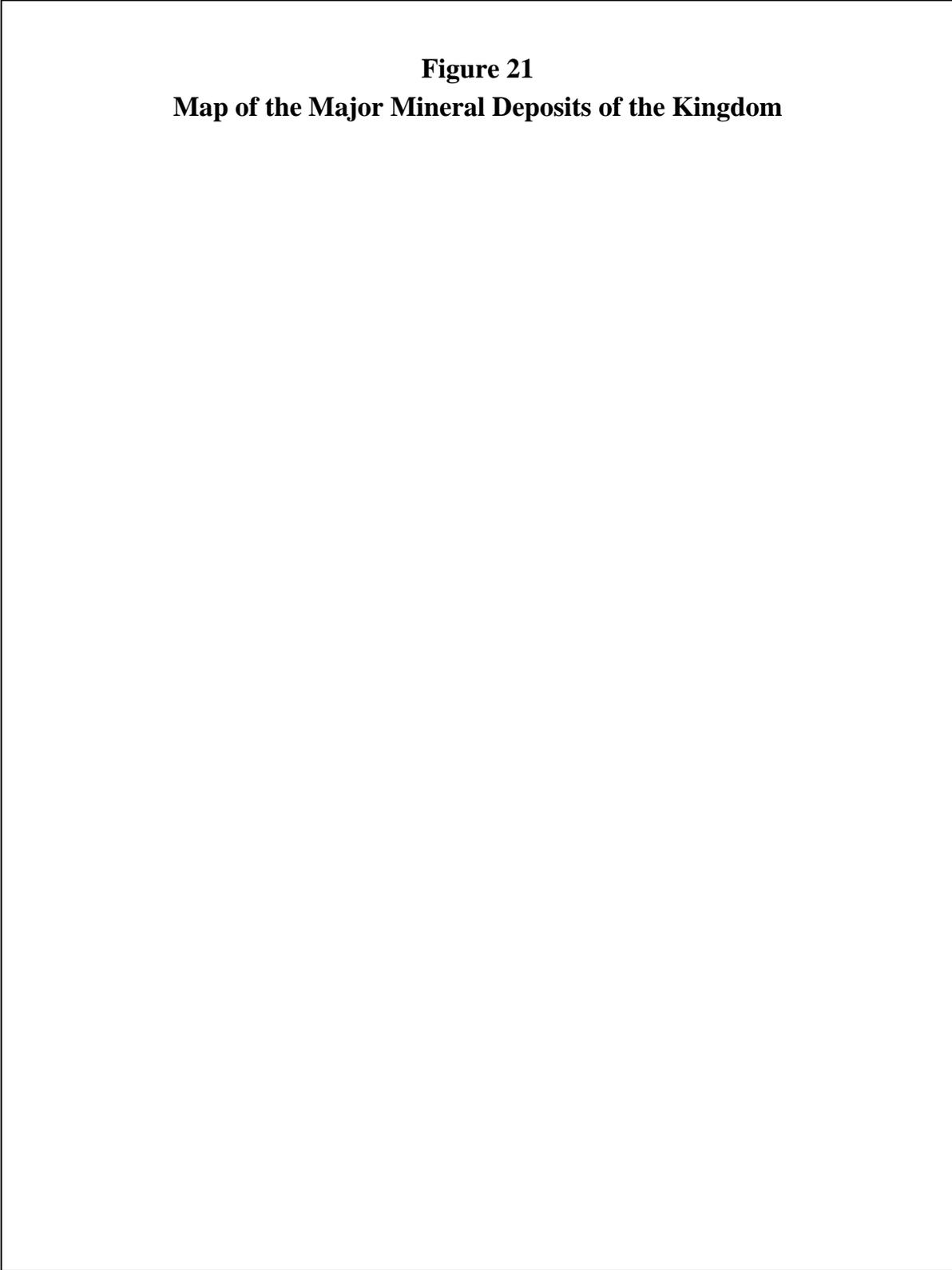
The Saudi Arabian Mining Company (MA'ADEN) has been established as per the Royal Decree No. M/17 dated 14/11/1417 (1997) as an autonomous joint stock company fully owned by the government with a capital of SR 4.0 billion. The Company undertakes several mining activities related to all stages of mining industry, including development and improvement of mining industry and products as well as related industries. The Company operates on commercial basis to realize profit. As per Council of Ministers' Resolution No. 109 dated 5/4/1425 (2004) approved the establishment of MA'ADEN Company and its privatization within the privatization strategy. Furthermore, the Company owns Mahd Adh-Dahab Mine and the Saudi Precious Metals Company (Sukhaybrat Mine). MA'ADEN also

obtained exploration licenses for gold ore in Wadi Bidah, Samran, Sheban, Al Duwaihi and Dulum, AlJardhawiyah, Wurshah and Shabah; for phosphate ore in Wadi Al Sarhan and Turaif; for magnesite in Zarghat, Jabal Abt and Jabal Al Rukham; for zinc in Al Khnaiquiyah; for Kainite in Jabal Karsh as well as licenses for exploration of non-metallic industrial minerals in Jabal Sodah.

MA'ADEN Company has invested more than SR 638 million in developing five gold mines in Mad Adh-Dahab, Sukyayabarat, Al-Hajar, and Bulgha. The Company's current total production of gold reached 239.7

thousand ounces plus 434 thousand ounces of silver in addition to other metals such as copper and zinc. Ma'aden is planning to increase its production capacity for metals in general and gold in particular, to around 300 thousand ounces of gold per year as of the beginning of 2007. The company is planning to achieve a huge jump in the area of mining activity and the related industries through making large-scale investments to the value of SR 35 billion, during the coming five years. This is expected to raise the contribution of the mining and manufacturing sector, related to the National Economy, to four fold of its current contribution.

Figure 21
Map of the Major Mineral Deposits of the Kingdom



4.2 KING ABDUL AZIZ CITY FOR SCIENCE AND TECHNOLOGY (KACST)

Along with industrial progress in the Kingdom, considerable attention was paid to development of production technologies, with an aim to improve the country's products and to develop new spin-offs of existing industries. The development plans implemented several programs and projects that sought to develop technologies, such as setting up of educational and academic institutions as well as training and research centers. One key achievement that stands out among these projects is King Abdul Aziz City for Science and Technology (KACST) which has made several achievements.

Box (4.2): KACST Objectives

KACST was established as per Royal Decree No. M/60 dated 18/12/1397 as an autonomous scientific body reporting to the Prime Minister. Its main objectives are to support, encourage and implement scientific research for applied purposes. It is expected to coordinate various activities of research centers and institutions as well as set national priorities and policies pertaining to science and technology. The process of industrial development is thus supported with adequate means and mechanisms to help in keeping abreast of the

accelerating pace of technological advancement, as well as to find practical solutions to production problems and to create a conducive climate for modernization and advancement.

During 1425/26 (2005) KACST accomplished a series of remarkable achievements in the fields of research, post-graduate studies, patents, as well as space, astronomy and geophysics research. It also conducted several researches on natural resources, environment and protection against radioactive materials. Furthermore, KACST directed part of its efforts towards manpower development. Following is a brief review of KACST's achievements:

Research Grants:

KACST provided grants to researchers at the Kingdom's various institutions and scientific centers through six major grant programs:

- **Annual Grants Program:** KACST supported 39 research projects at a cost of SR 23.47 million, thus bringing the total number of grants by 1425/26 (2005) to 638 research projects in various scientific fields with a total cost of SR 508.16 million.

- ***Small Grants Program:*** The KACST supported 23 research projects at the cost of SR 1.82 million, thus bringing the total number to 387 research projects with a total cost of about SR 30.81 million by 1425/26 (2005).
- ***National Grants Program:*** With respect to national grants, KACST supported research projects at the cost of SR 10.65 million, thus bringing the total number of such grants to 91 research projects with a total cost of about SR 210.06 million by 1425/26 (2005).
- ***Post Graduate Studies Grants Program:*** KACST supported 112 research projects at the cost of SR 3.008 million, thus raising the total number of supported research projects by 1425/26 (2005) to 657 at a total cost of about SR 19.338 million.
- ***Humanities Grants Program:*** KACST supported four research projects at a cost of SR 1.1 million, thus bringing the total number of these projects to 18 by 1425/26 (2005) at a cost of about SR 16.28 million.
- ***Production Sectors Research Grants Program:*** Two research projects at the cost of SR 1.05 million have been supported within the context of the production sectors'

second program.

Preparation of the National Plan for Science and Technology:

The Council of Ministers Resolution No. 112 dated 27/4/1423 (2002) approved the preparation of the National Plan for science and technology.

In collaboration with the Ministry of Economy and Planning and concerned agencies, KACST has completed the fourth phase of the long-term national plan for science and technology. Presently KACST is undertaking the preparation of the fifth phase of the Plan.

Patents:

KACST protects the patent rights of inventors in the Kingdom according to the patent law issued as per the Royal Degree No. M/38 dated 10/6/1409 (1989). The total number of patents reached 213 by the end of 1425/26 (2005). Work has commenced on reviewing of 3164 more patent applications.

Research on Space and Aviation Sciences:

KACST is conducting research on space and aviation sciences as well as on remote sensing. Foremost of KACST's Achievements was the implementation

of applied programs in the areas of space physics technology, the atmosphere, the earth magnetic field, and promotion of skills of national cadres in using plasma propulsion in small satellites. A small experiment was also conducted on a Saudi satellite, in addition to a study on the effect of plasma on space to earth and space to space communications. Moreover, a national code was developed for space physics applications.

Research on Natural Resources and the Environment:

During 1425/26 (2005) KACST conducted several studies and related to natural resources and the environment. Some examples are: A study to evaluate pollution of ground water reservoirs at Wadi AlHamsa by wastewater in Madina, a study of the mechanisms by which some local plants resist salinity, a study of tolerance to salinity and the mechanisms of resenting salinity by some local and domesticated warm-climate plant varieties, the national project for combating palm trees red licorice (the first stage: early detection), breaking the genetic code of the Arabian camel (the first stage), the project for the extraction and utilization of proteins, associated with cancer disease, the inherited glad cancer project, the insulin gene, the production of genetically

altered plants, and the CGD project “chronic granuloma”.

Research on Petroleum and Petrochemicals:

During 1425/26 (2005) KACST conducted a number of studies and activities related to petroleum and petrochemicals. Examples are: A study of the geomechanics of oil wells, improving the production of natural gas found in lime rocks, conversion of methane into olefinic compounds, preparation of catalysts to remove sulphur from diesel fuel by hydrogenation, a study of the thermal and mechanical properties of PS and PET mixtures, the developing of a type of product from polymeric silica through the utilization of ultra-sound waves.

Research on Computers and Electronics:

KACST is going ahead with conducting research and studies in the areas of computer softwares and electronics industry. Most significant achievements made in these areas during 1425/26 (2005) are: Accreditation of four research projects on electronics and communications, accreditation of five research projects on languages and systems handlings, developing the technical specifications for establishing the national center for open-source

programming, conducting research and studies on sounds and completed the establishing of the telephone sounds base for Saudi users.

International and Regional Cooperation:

In the area of receiving information from satellites, KACST is in continuous cooperation with French (Spot), American (Land sat, Icons), and Canadian (Radar sat) satellites. KACST is also participating in 31 international organizations engaged in the domains of science and technology.

Information Services:

During 1425/26 (2005) KACST made the following achievements: Documentation (entering and updating) of 5748 terminologies, according to the Saudi automatic bank for terminologies, in the area of visual disability and in the educational sciences, review and careful investigation of 2305 terminologies in statistics and the science of communications, Arabization of 218 terminologies of the internet, increasing the number of government agencies and universities which benefit from research and scientific articles from outside sources and scientific information data bases. The number of scientific researches obtained reached 15,108 and 18 data bases were involved to cover the

scientific and technological sector and some other specializations.

Internet Services:

In 1425/26 (2005), KACST increased the number of international lines, leased from the Saudi Telecom Company. Reinforcement of the basic infrastructure of the internet unit through the development of soft-wares and hard-wares, the following systems have been installed: the backup system, new security and finger print system, remote access system, network conferencing system between Riyadh and Jeddah, as well as reducing the internet subscription fees. The total used domestic bands from (SA) have reached about 5981 bands, and the number of listed internet protocol addresses shot up to 51,968, distributed among 37 agencies.

Manpower Development:

KACST has sent abroad 21 employees on scholarship: 12 to obtain doctorate degree, and 6 to obtain Master's degree by the end of 1425/26 (2005). The number of employees who have received advanced training within and outside the Kingdom has reached 603 trainees. KACST also achieved Saudization up to 98.3% of the total manpower working for KACST.