



The Aga Khan Program for Islamic Architecture
at Harvard University and the
Massachusetts Institute of Technology

SAUDI ARABIA

Background Information Paper

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SAUDI ARABIA

Primary Information

Country:	Kingdom of Saudi Arabia
Capital:	Riyadh
Population:	8.2 million
Growth rate	3.5%
Density	3.8 persons/square kilometer
Urban	67%
Urban growth rate	6.5%
Area:	2,150,000 square kilometers
Geography:	Vast plateau, sloping gently down to the east. Predominantly desert.
Climate:	Hot and dry days, cool nights in desert areas. Hot and humid along coasts.
Language:	Arabic
Religion:	Islam
Currency:	Riyal (1 riyal = US\$.29)
Per Capita Income:	GNP/capita US \$ 7,690
Major Cities:	Riyadh, Jeddah, Dammam
Production:	Industry 76%, growth rate 12.0% Agriculture 1% Services 23%

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NATIONAL CONTEXT

The Royal Kingdom of Saudi Arabia occupies an officially estimated area of 2,150,000 square kilometers, roughly four-fifths of the Arabian Peninsula. Within the boundaries of this Islamic state live an estimated 8.2 million people. Saudi Arabia's northern neighbors are Jordan, Iraq, and Kuwait. The Arabian Gulf and the territories of Qatar and the United Arab Emirates define its eastern edge. Its southern and southeastern boundaries with Yemen, South Yemen, and Oman have not been precisely determined. Along its western side lies the Red Sea.

Geography

The Arabian Peninsula is a vast, sloping plateau, with an elevation of about 600 feet in the east rising to around 6,000 feet in the west. A line of rugged mountains runs parallel to the Red Sea coast and forms the watershed for the peninsula. The plateau surface is mainly desert with lava beds in the west-central portion and sand in most of the remaining areas. Some deserts are covered by comparatively stable sand sheets, while others consist of mobile sand dunes which move across with the prevailing wind. Sand mountains can attain heights of 800 feet.

There are no permanent rivers or bodies of water. Wadis (seasonal riverbeds) and springs provide water for the oases.

Except for the Asir Highlands in the southwest corner, the country has a desert climate characterized by extreme heat and minimal rainfall.

During the summer, temperatures in the shade frequently exceed 120°F. In the interior it is a dry heat. The air cools rapidly after the sun sets and the nights are cool. Along the coasts the humidity is high, often reaching 100% for extended periods. Winter temperatures drop below freezing in central and northern Arabia, and frosts are not uncommon.

Prevailing winds generally blow from the north quadrant. Occasionally, strong southerly winds come up with great suddenness, bringing bursts of rainfall and causing severe storms in the Arabian Gulf. A strong northwesterly wind blows for most of the summer months, particularly in the east, and frequently whips up violent sandstorms.

Rainfall is rare, averaging four inches or less annually everywhere except Asir. Often it comes in one or two sudden torrential outbursts which flood the wadis and are then rapidly soaked up by the sand. Several years may pass with almost no rain. The Asir Highlands, however, benefit from the seasonal monsoon winds from the Indian Ocean, and average 12 inches of rain annually.

Historical Background

The Arabian Peninsula has a long history that can be traced back to 3000 B.C. In the seventh century, the Arabian Peninsula experienced one of mankind's most important events: the birth, rise, and spread of Islam. The country's history was henceforth related to the evolution of the caliphate, and the rise and fall of sultans and local emirs. In the twentieth century it experienced Western intervention, but it was never colonized. Abd al-Aziz Ibn Saud consolidated the many tribes, villages, and towns and proclaimed the Kingdom of Saudi Arabia in September 1932.

Administration

The role of the King combines political and religious leadership. Legislation is by royal decree or ministerial regulation. Laws and procedure are according to the Sharia (Islamic law).

The country is divided into provinces, five major and 13 minor. These are further divided into districts and sub-districts, administered

respectively by governors-general, governors, and headmen, appointed by the King. Provincial councils, presided over by the governors-general, are responsible for large scale infrastructure projects. Municipal affairs are controlled by chief administrative officers, together with elected local councils.

Settlement Patterns. Saudi Arabia's nomadic population started to decrease sharply in the mid-1960's as a result of a prolonged drought. Since the mid-1970's, the government embarked on a forceful and ambitious development program initiating numerous large scale projects throughout the Kingdom. This rapid industrialization created a great demand for manpower at all skill levels, leading to an acceleration of migration to the urban areas and an influx of expatriate labor. Major programs to settle nomads in agricultural communities could not stem the migration to urban areas.

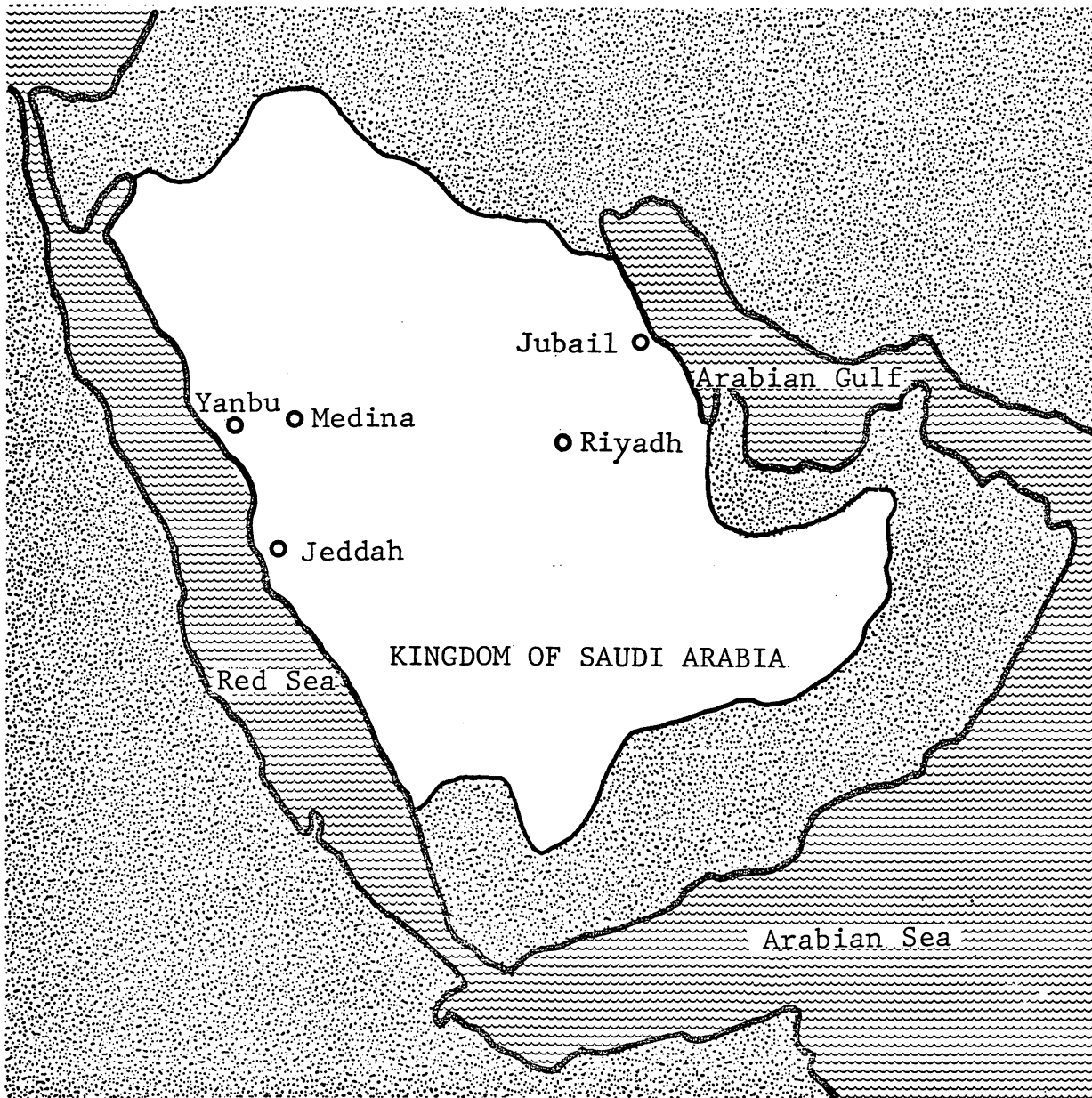
Distances between settlements are great, and thus the development of efficient communications and transportation systems is a priority. Several massive projects are currently in the implementation stage.

Riyadh is the country's capital and administrative center. Mecca and Medina are the holy cities of Islam. The commercial center and primary port is Jeddah. The metropolitan area encompassing Dammam, Khobar, and Dhahran, on the Arabian Gulf, is the service center of the oil industry.

Large scale expansion of existing urban areas and extensive modernization programs in the older cities are being carried out by central and local authorities. New urban centers are developing. Foremost among these are the two new industrial towns, Yanbu on the west coast and Jubayl on the east coast, both associated with the oil industry.

Traditional settlements display an urban fabric consisting of tightly-packed, low and medium-rise buildings and a network of narrow streets and alleys. Enclosed by a fortified perimeter, settlements are divided up into quarters which accommodate family, clan, or tribal groupings. Usually at the center is located the Friday mosque, with the Suq (market) close to it.

Village configurations consist of buildings in tight clusters or dispersed among small vegetable gardens and fruit orchards. Cereal crops,



LOCATION MAP

which require less water to grow, are located on the village outskirts, with the pasturelands beyond. Villages range in size from hamlets of a few households to settlements of several thousand people.

Economy

Saudi Arabia is the largest oil-producing nation in the world, and the oil industry is the mainstay of its booming economy. Oil makes up 90% of its exports and accounts for over 60% of the GDP. The construction industry is now the second largest income-generating sector of the economy. In recent years, the government has placed increasing emphasis on the development of other sources of income, particularly in the agriculture and manufacturing sectors.

The standard of living is rising sharply and the GNP/capita is estimated at close to US \$ 10,000.

Saudi Arabia's major trading partners are the United States, Western Europe, and Japan. Imports include most foodstuffs, machinery, equipment, and building materials.

Agriculture. Harsh topographical and climatic conditions limit agriculture's contribution to the economy to about 1% of GDP. The rural population engages in cultivation mostly at a subsistence level. Traditionally, herds and date palms have been the most important sources of agricultural income.

Although much of the soil is fertile when irrigated, less than 1% of the land is arable. It occurs in locations having adequate water supplies for irrigation, such as oases, along river-beds and catchment basins. Only the Asir Highlands in the southwest corner receive enough rain to permit a degree of non-irrigated cultivation. Large-scale programs are under way to tap all possible sources of water for irrigation, and farmers are being encouraged to grow fruits, vegetables, and grains.

Labor. Saudi Arabia's labor force consists of approximately one-third of the total population. 60% of all laborers are involved in agriculture. However, this figure is rapidly declining due to migration to

urban centers. Lack of Saudi manpower has led to a significant dependence on non-Saudi professional workers in both the public and private sectors, a trend that is expected to continue in the foreseeable future.

The bulk of foreign migrants come from the Arab countries - Yemen, Palestine, Jordan, Egypt, Sudan, Syria, and Lebanon - but there are substantial numbers of Asians, both Muslim and non-Muslim. A relatively small number of Westerners hold professional and skilled positions.

Although great changes are taking place in the education of women, there are still relatively few women in the labor force. Those who work have jobs most often in the fields of teaching and health.

Demography

Saudi Arabia's population is ethnically homogeneous, with most of its 8.2 million people being of Arab origin. 99% of the population is Muslim and speaks Arabic. A growing proportion of the population consists of non-Saudis who, with other foreigners, are generally concentrated in the major cities and the oil-producing eastern region.

The overall population has been gradually but steadily increasing. In the 1950's, the average annual growth rate was 2.0%, while in the 1970's it rose to 3.5%. The urban population has been growing much more sharply, and its average annual growth rate surpassed 7% in the 1970's.

The patrilineal extended family is the basic social and economic unit. Lineages and tribes are major determinants of social organization. Kinship ties and obligations operate strongly in social interaction. Privacy is highly respected and segregation of the sexes is predominant in public areas.

The first agent for the introduction of Western influences was the Arabian American Oil Company (Aramco). Recent industrialization and modernization programs, and in particular TV and mass communication media, are gradually introducing an ever-expanding array of Western cultural models.

Education and Health. Government-sponsored public education is free at all levels, with separate schools for boys and girls. Both secular and

religious subjects are emphasized in the curriculum. The government is currently giving special attention and allocating substantial funds to the development of university-level programs. Literacy in 1970 was still low at 15%, but it is rising sharply as a result of these sustained efforts.

Free medical care is provided by the government, but there is a shortage of trained medical personnel. The construction of vast sewer and water supply systems has considerably improved sanitation in the Kingdom.

URBAN CONTEXT: THE YANBU REGION

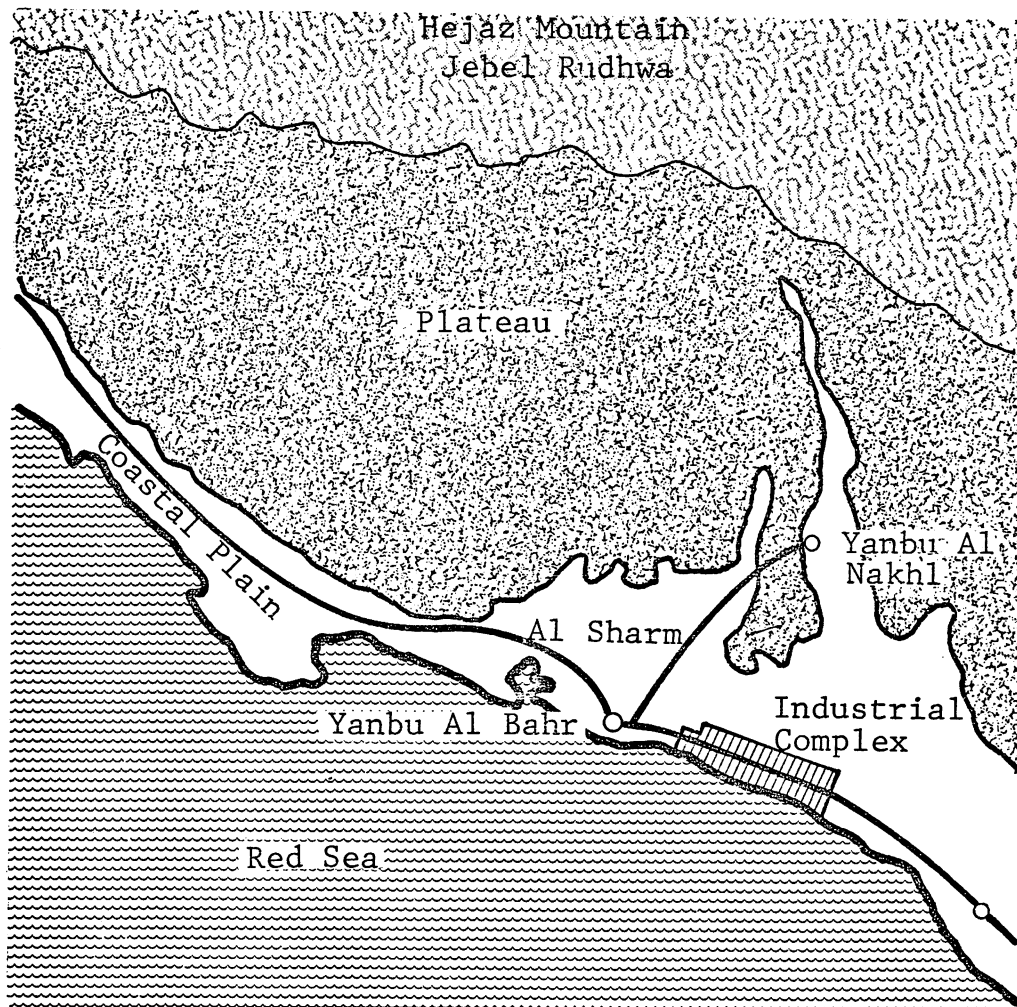
The region where the New Industrial City will be developed is located on the Red Sea coast about 350 kilometers northwest of Jeddah. It encompasses the ancient deep-sea port of Yanbu al Bahr, the surrounding coastal plain, the neighboring Jebel Rudhwa Mountains, and the Yanbu al Nakhl agricultural valley. The Yanbu emirate accommodates a population of about 25,000 to 30,000 inhabitants. It is within the region administered from Mecca, and its commercial ties are dominated by Jeddah.

As a historic crossroads for the Hadj traffic, Yanbu has been subjected to a wide variety of architectural influences. It is currently the focus of intense development activity which is modernizing it extremely rapidly.

The Yanbu region covers an area of 13,500 square kilometers, extending 150 kilometers along the east-west axis and 90 kilometers along the north-south axis.

Yanbu al Bahr is built on a coral outcrop with coastal marshlands on two sides. To the south, the shoreline consists of rolling tracts of gravel. To the north it is more abrupt, and 10 kilometers away is Rudhwa Bay and Al Sharm, a Y-shaped inlet extending about eight kilometers inland. To the east, behind the narrow, gently undulating coastal plain, rise the Hijaz Mountains. The highest elevation at Mt. Rudhwa is 1,814 meters.

In the coastal zone, the climate is characterized by mild winters and hot and humid summers. In August and September, temperatures of 40°C with humidity at 85% are common. In the mountains, summers are pleasant and winters relatively cold.



YANBU REGION

The depletion of aquifers is one of the region's most pressing problems. The government is preparing hydrological studies and investigating the feasibility of projects to raise the water table to alleviate the acute water shortage. The government has undertaken a major water supply project relying on a system of artesian wells, storage tanks, and pipelines.

Historical Background

Since pre-Islamic times, Yanbu Al Nakl was a prosperous agricultural valley along the route of trade caravans from the Far East and Yemen to the Eastern Mediterranean region. It was renowned for its abundance of water points from which it derives its name. Its prosperity grew from the sixth to the twelfth century, as it became the favored route for Hajj caravans from Syria and Egypt.

Yanbu Al Bahr grew to the north of the old port, "Al Jar," established in early Islam for trade with Egypt, Sudan, and Ethiopia. Yanbu Al Bahr was developed by the Ayoubids and prospered as the point of entry for convoys to Medina and Mecca, including Hajj caravans.

The general breakdown of law and order in Hijaz during the Ottoman Period adversely affected the Yanbu region. Its population declined and its economic base was undermined by changes in trade routes and the neglect of agriculture. Law and order were restored to the region by King Abdul Aziz Al Saud, but the depletion of aquifers led to large-scale out-migration to Jeddah and Mecca. Yanbu al Nakhil's decline was marked by its ceasing to form a separate emirate. It was annexed to and governed from Yanbu Al Bahr.

With the exception of rock inscriptions, the historic monuments of Yanbu have disappeared, including the walls and fortresses built during the Ottoman Period.

Economy

The economy of the subregion has traditionally been tied to trading and fishing in the port, agriculture in the valley, and pilgrims traveling to and from Mecca. The potential for revitalizing the agricultural sector

is dependent on the ability to find new sources of water supply. The government has built a pilgrim center of 18 residential clusters to accommodate 2,500 pilgrims. However, the shift to air travel and the decline of sea transport for the pilgrimage implies that Yanbu must look to industry as its future economic base.

The development of modern port facilities in Jeddah has adversely affected Yanbu, and its future viability will lie in the handling of bulk cargoes to relieve the pressure on Jeddah. In 1975, the existing port was expanded. A second expansion is now under way and the port will be provided with modern facilities to handle such cargo as cement, steel, lumber, and grain. Exemption from port duties is offered as an incentive to stimulate activity.

The small manufacturing sector is dominated by the construction industry. Products include aluminum door and window frames and a variety of pre-cast concrete items.

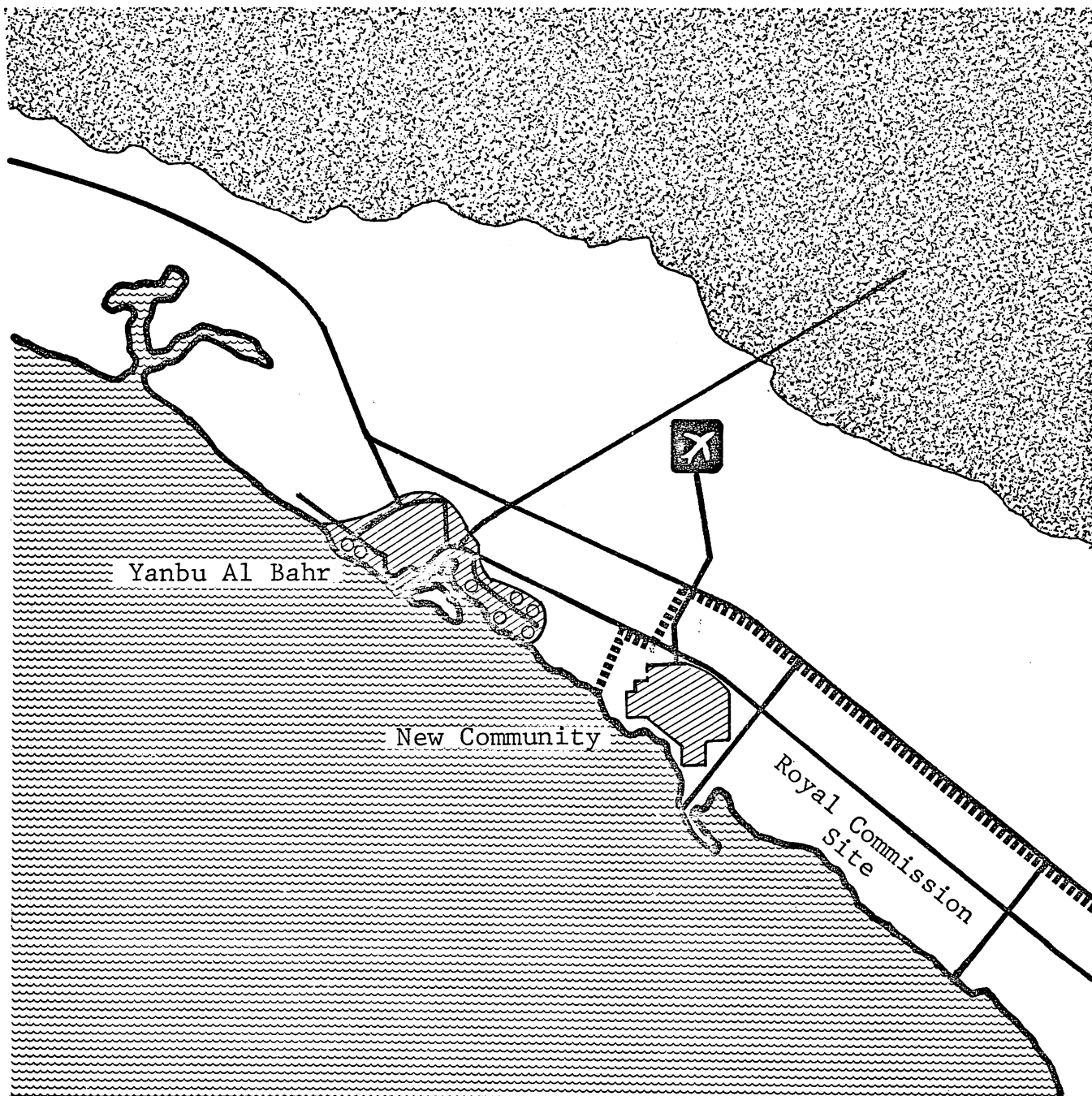
Demography

The inhabitants are concentrated in two areas: the Yanbu Al Bahr urban area and the Yanbu Al Nakhl agricultural valley. The urban area has an estimated population of about 20,000 to 24,000 people, while the agricultural area accommodates roughly 5,000 to 6,000 people distributed over 24 small village settlements.

In 1977, approximately 25% of the population in Yanbu Al Bahr consisted of non-Saudi migrants. The bulk of these were single Arab males. European and American workers and their families account for less than 5%. This sector of the population is expected to increase further and perhaps at a rapid rate as the new industrial city is developed.

Average household size is between five and ten persons. Non-Saudi households tend to be smaller, while Saudi households often comprise large extended families.

The growth rate of the Saudi and non-Saudi population in the region is directly dependent on the government's proposed development plans for the new industrial zone and new town. The cumulative impacts of these projects could lead to an influx of 5,000 to 10,000 people in Yanbu Al Bahr.



YANBU AREA

Traditional Urban Form

The most important influence on architectural form has been the Islamic way of life of the traditional community. The supreme importance of domestic privacy is evident in spatial organization. Traditional building materials include coral stone, sand and lime, mud and some timber from palm trees.

The contrast between urban and rural lifestyles is clearly expressed in the differences between the village settlements and the port area.

In Yanbu Al Bahr, building form and orientation were designed to minimize heat gain, provide shaded spaces, and take advantage of on-shore winds. The ground floor walls are generally solid, pierced only by small, essential openings. Upper storeys have larger windows, often covered with intricately carved wooden screens and projecting out over the street. Rooms are often differentiated according to climatic functions rather than social activities. These houses are now mostly vacant, abandoned by their owners in favor of modern accommodations.

Historically, Yanbu's architecture has been affected by Egyptian, Ottoman, Indian, and Persian influences. The more elaborate old buildings in Yanbu display the architectural and artistic richness which builders and craftsmen achieved by skillful manipulation of forms and patterns.

An important quality of the older urban fabric is the mixture of activities and the sensitive relationship between the buildings and the comfortably proportioned spaces between them.

Present Urban Conditions

The urban pattern consists of small-sized housing units in mixed-use configurations. Existing gross densities within the urbanized area vary from 60 to 140 persons per hectare.

The municipality's concern is focused on street layout and lighting, landscaping of open spaces and tree planting, and the construction of covered markets. It promotes urban development by subdividing and selling land for house plots at nominal prices. A comprehensive network of high quality primary roads is being constructed in order to open up the region for development. These roads are becoming important development spines.

Health, education, and social welfare facilities need to be expanded. Public recreational amenities are generally lacking.

Water supply relies on a single, rapidly-depleting, subterranean water source, and the existing distribution network is in poor condition. The lack of a sewerage system is a serious problem. Due to the light and sporadic rainfall, stormwater drainage is not needed.

Ample, inexpensive electricity is provided by a large generating plant. Existing telecommunications facilities are being upgraded.

Housing

The provision of adequate housing is an important government policy. This implies that sufficient housing must be built to accommodate both the permanent and temporary population. Government subsidies are provided to both developers and home owners.

Financial aid for building contractors is available in the form of short or medium term, interest-free loans for capital plant, materials, or other front-end expenditures. Land owners and house purchasers have access to interest-free loans repayable over a 25-year period.

Housing in the area has to date been provided almost entirely by the private sector. The role of the public sector has been limited to subdivision planning, land allocation, and providing subsidies and loans. This has been partly due to an overall surplus of housing stock, although a substantial portion of it is in poor condition.

Local building contractors generally have relatively limited capability and capacity. Skilled workers are scarce and wages are high. Construction plant and equipment are mostly obtained from Jeddah. Cement, timber, and reinforcing steel are all imported. Locally available materials include sand, crushed gravel, coral stone, bricks, and concrete blocks.

Given current population projections, about 500 housing units need to be constructed annually. Consequently, public sector involvement is expected to become important in the clearance and replacement of obsolete housing, in the enforcement of building standards, in the provision of housing for displaced persons, and in the assistance to the local building industry.

