BALOCHISTAN AREA DEVELOPMENT PROJECT

(Contract No. 391-0479-C-5031-00)

REGIONAL PLAN FOR COASTAL MAKRAN

Prepared by Louis Berger International, Inc.

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EXECUTIVE SUMMARY

One of the objectives of the Balochistan Area Development Project (BALAD) is to promote decentralized planning in the Makran District of Balochistan. The present Regional Plan for Coastal Makran is an example of such planning for an important and growing part of the Makran: the Gwadar District. The Plan contains recommendations that merit serious and prompt attention from the Government of Balochistan (GOB) and from other organizations, Pakistani and foreign, that wish to support the development of the Makran.

The Regional Plan for the Gwadar District pursues four specific objectives:

1) To compile cross-sectoral data from multiple sources on the Gwadar District;

2) To present recommendations for Coastal Makran's development;

3) To lay a foundation for future regional plans for the Makran Coast and for the entire Makran Division; and

4) To illustrate the practical application of regional planning methodologies.

Given the two principal regional objectives of economic development and improved distribution of resources, and the importance of the relationship between the Gwadar District and the outside world, Economic Base Analysis is a particularly apt methodology. Economic base theory proposes that regional economic growth is largely dependent on the external demand for products generated by the so-called ***basic sector***. The production of exported goods and services in turn is supported by the ***nonbasic sector***. Farmers' crops feed the workers in the export industries. Electricity that is supplied to a hotel which "exports" its services to visitors from outside the region, is part of the nonbasic sector.

There are presently two major exports from the Gwadar District to other parts of Pakistan and to other countries: fish and labor services. Sales of fish to Karachi from Gwadar fishermen are clearly regional exports. A man who goes to Oman to work is essentially exporting his labor services, as he sends or brings his earnings back home.

This regional plan tempers its reliance on Economic Base Analysis by using common sense. It is proper to take vigorous steps to provide qualified manpower to support the growth of exports, but broad educational programs must also be supported. Economic Base Analysis has the virtue of helping decision-makers take steps to promote economic growth. They can then, in a well-informed

fashion, weigh those benefits against other benefits that may accrue from expenditures in other sectors. In the present regional plan, emphasis is given to interventions which support economic growth, in part because such interventions have probably been neglected in the past. But the regional plan recognizes that in all sectors a proper balance must be sought. Ultimately, the trade-offs between different investments go beyond technical judgments and require political decisions.

According to the Census Report of 1981, the total district population was 112,385. The rural population was 69,133, while urban population was 43,245 (Table III-1). The estimated 1990 population, assuming a 2.5% average annual population growth rate, is 140,891. There has been considerable migration from rural to urban areas in the district due to better availability of economic opportunities in the urban areas, especially during the last five to six years.

There is a wide gap between the urban and rural locations of the district in the extent of services and facilities provided. Almost half of the district population lacks ready access to important urban services and facilities, being scattered in small and isolated interior settlements. **The GOB should support the provision of essential services (like potable water) to villages, and improve the roads, as it is impractical to provide a wide range of services to villages that average only 532 people** (Table III-6).

Marine fisheries is a vital source of livelihood, directly or indirectly, for most residents of Gwadar District. important fishing settlements include Gwadar, Surbandar, Pishukan, Jiwani, Gunz, Pasni, Kalmat, Churbandar, and Ormara. At 88,000 metric tons, fish and shellfish production of the Makran Coast in 1990-91 is at about the level reached in 1987 and below the peak of 94,000 metric tons in 1985 (Table 2, Annex 1). There are an estimated 15,547 full-time and 3,836 part-time fishermen working out of the major fishing towns of Gwadar, Pasni, Ormara, and Jiwani (Table IV-3). For several years, efforts have been underway to modernize the fishing industry in the Makran. Although most boats are small and of traditional designs, more fishermen now use engines (Table IV-5). A modern fish harbor at Pasni has been completed and is now in use, and a fish harbor is nearing completion at Gwadar.

A significant portion of the catch from Coastal Makran is sold in Karachi, either fresh or frozen, or it is exported frozen or dried to other countries. Middlemen often finance fishing enterprises in the Makran. The GOB should promote the fisheries of Coastal Makran to produce higher value-added in the region, so that more of the income is retained by local residents. The GOB should also give high priority to the provision of an adequate water supply to the Gwadar Fish Harbor by promptly implementing the pertinent recommendations concerning Supporting Physical Infrastructure (Chapter V). The GOB, in cooperation with the private sector,

should give priority to supporting small-scale fishermen and groupings of such fishermen in order to increase the fish catch and the share of final value of that catch that they receive. The GOB should assist in disseminating information on fish prices and volumes bought and sold in key markets in the Gwadar District and elsewhere in Pakistan, including in Turbat and Karachi. Operations of the Pasni and Gwadar Fish Harbors should enable small fishing enterprises to share fully in the use of the harbors and to avoid unnecessary pollution. In addition, the GOB should undertake a detailed study, as recommended in Annex 1, to identify the opportunities for improving existing fisheries activities and to estimate the potential for large pelagic fisheries.

For years the Gwadar District has benefitted from significant inflow of remittances from its residents who work overseas, especially in the Middle East. Such work was sharply curtailed by the Gulf War in early 1991. Employment of Pakistanis in the Middle East has recently begun to rise but is still far below pre-war levels. These remittances constitute an important inflow of money into the district, some of which traditionally has been used to build houses and to start businesses. Unfortunately, detailed information is not available on the level of these inflows broken down by district. Qualified residents of the region should continue to take advantage of employment opportunities outside of Pakistan, and the GOB should investigate ways in which information about overseas jobs could better reach its citizens. To the extent that administrative requirements (exit visas, for example) make it difficult for residents of the Gwadar District to accept overseas jobs, the GOB should investigate how it could reduce these requirements.

Opportunities for development of tourism along the Coast should be explored in more detail before investments are considered. In promoting tourism in the Gwadar District, the GOB should cooperate with the other public organizations interested in tourism, such as the Pakistan Tourism Development Corporation and Pakistan International Airlines, and with the private sector (hotels and travel agencies in particular). The GOB should proceed carefully, bearing in mind the constraints perceived by the private sector, avoiding investments in tourism development which are not justified by the anticipated economic payoff. The GOB should consider tourism on the Coast in the context of province-wide efforts, which should start with a Balochistan Tourism Demand Study. If there appears to be a potential demand for tourist facilities on the coast, the GOB in concert with appropriate public and private sector organizations, should prepare a Makrani Coast Tourism Development Plan.

Public and private sector decision-makers should recognize that provision of adequate water in the Gwadar District will be a complicated and costly undertaking. The following actions are recommended to accomplish the rational development and management

of critical water resources in the Gwadar District:

- A single regional agency for developing water resources is needed.

- A Gwadar District Master Plan for the Development and Management of Water Resources should be prepared by a team of water resource specialists under the direction of the GOB.

- Should a District-wide approach be difficult to undertake quickly, the GOB should give priority to preparation of a Master Plan for the Tehsils of Gwadar and Jiwani, due to their long-standing needs for potable water and the projected demand from the Gwadar Fish Harbor.

- The GOB should implement the recommendations in the final report on the Gwadar District Electro-Resistivity Study concerning possible additional sources of potable water.

The following major recommendations regarding the roads infrastructure are made in the report:

- For all road construction and maintenance work in the Gwadar District, C & W should adhere to the road standards for different classes of roads developed by BALAD.

- C & W should implement in the Gwadar District the Makran-wide recommendations made by BALAD concerning establishing and operating a data collection system for traffic counts and road conditions.

- The GOB should establish priorities for rehabilitation and upgrading work for segments of the 815 kilometers of primary roads in the region.

- C & W should provide maintenance, at least once a year, to each of the 661 kilometers of rural roads, focussing on increasing access to centers with urban functions (as discussed in Chapter III).

The Government of Balochistan should make projections of the communication needs of fisheries-related industries, as these are essential to the economic growth of the region. An assessment should also be made of the potential communications needs of the tourism industry, should interventions be undertaken to improve the tourism sector. The Government of Balochistan should develop a plan to meet anticipated communications services and facility requirements in order that poor communications do not become obstacles to the growth in the production of exportable goods and services. The plan should cover such forms of communication as telephones, facsimile and telex services both for intra-Pakistan and international communication.

WAPDA should estimate the actual and potential future demands for electricity arising from expansion and development of the fishing industry, its suppliers and fish processors, as well as from the possible development of tourism. In its program to increase capacity and extend its network, WAPDA should give high priority to those demands which are related to regional exports.

The Government of Balochistan should investigate impacts that health problems may have on the output and efficiency of exporters in the Gwadar District. Some of the health care budget of the GOB should be targeted to overcome health care obstacles to increasing regional exports. Simply from the perspective of human welfare, the GOB needs to take many vigorous steps to improve the health of the people of the Gwadar District. A host of measures are necessary to improve primary health care, hospital care, potable water supply, and environmental sanitation. The measures should include better health facilities, supplies, and staffing; improved potable water supply; and health education for the general public, including hygiene and nutrition.

To promote economic development as well as the general welfare of the people of the Gwadar District, the GOB should vigorously support public education, including efforts targeted to manpower requirements of the region's employers. The GOB in cooperation with the private sector should undertake a Gwadar District Manpower Study.

The GOB should implement a set of actions to increase the supply, training, and wide distribution of qualified teachers. The GOB should consider the actions recommended for the primary level in the Teacher Supply and Training Plan, Balochistan, Balochistan Primary Education Project, draft, October 19, 1991. In order to advance the education of girls, the GOB should give consideration to the recommendations prepared by the Balochistan Primary Education Programme.

In general, agriculture and livestock development should be given low priority. Other sources of foodstuffs are readily available and development of this sector appears to be costly. If the coconut demonstration project in Pasni is an agronomic success, further studies should be carried out to examine the commercial feasibility of coconuts as an export crop. In scheduling the maintenance of rural roads (discussed in Chapter V), consideration should be given to the need for inputs to be transported to farms and ranches and their outputs transported to the settlements of Gwadar, Pasni, Jiwani, and Ormara.

Our recommendation is that regional planning capability be developed at the level of the Makran, following the specific recommendations for institutionalization of a Makran Planning and Development Unit (MPDU) made in the BALAD December 1991 "Planning in Makran" Report. Coastal Makran should be one of the sub regions

to be addressed by the Makran Planning and Development Unit. For the time being it is premature, in our judgement, for the GOB to decentralize to the level of the Gwadar District.

Whether or not the GOB Planning and Development Department decentralizes and creates an effective Makran-level planning unit, we recommend that this Department undertake further regional planning work for Coastal Makran in two important respects: improved regional plans and promotion of regional investment.

The present Regional Plan for Coastal Makran represents a first step toward proper regional planning for this sub-region of the Makran. The regional planning data on social and physical infrastructure and the economics of export development will need to be refined and updated. Such work should focus on the sectors and types of data that are most relevant and important for decision makers.

Plans do not implement themselves. It is recommended that the GOB Planning and Development Department adopt an activist Investment Promotion posture with respect to vital recommended investments identified in the present Regional Plan for Coastal Makran.

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CHAPTER I

INTRODUCTION

A. BACKGROUND

One of the objectives of the Balochistan Area Development Project (BALAD) is to promote decentralized planning in the Makran District of Balochistan. The present Regional Plan for Coastal Makran is an example of such planning for an important and growing part of the Makran: the Gwadar District.[1] The Plan contains recommendations that merit serious and prompt attention from the Government of Balochistan (GOB) and from other organizations, Pakistani and foreign, that wish to support the development of the Makran.

Planning by the GOB is carried out predominantly at the provincial level. There are province-wide plans which make recommendations for the various parts of the province, but regional, cross-sectoral plan are scarce. In December 1991, BALAD will issue a report, **"Planning in the Makran,"** which explains how planning can be conducted and implemented at the division level in the Makran Division of Balochistan Province. The present **Regional Plan for Coastal Makran** covers planning at the district level for the Gwadwar District, one of the three districts of the Makran Division. Ideally, implementation of the district-level plan would be accompanied by vigorous action at the provincial level, as well as implementation of BALAD's recommendations concerning Makran-level planning.

B. APPROACH FOLLOWED IN THE PLAN

The Regional Plan for the Gwadar District pursues four specific objectives:

1) To compile cross-sectoral data from multiple sources on the Gwadar District;

2) To present recommendations for Coastal Makran's development;

3) To lay a foundation for future regional plans for the Makran Coast and for the entire Makran Division; and

4) To illustrate the practical application of regional planning methodologies.

To accomplish these objectives, this report provides data,

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[1] This report uses the terms "Coastal Makran" and "Gwadar District" interchangeably.

analysis, and recommendations. Following this introductory chapter, Chapter II outlines Economic Base Analysis, the principal methodology applied in the Plan. This methodology centers on exports as the driving force of regional development. Chapter III of the report provides descriptive information on the people, geography, governmental structure, and settlements of the region; this is the context for the Plan. Regional exports -- the fishing industry being far and away the most important -- are then examined and recommendations for export development are presented in Chapter IV. The last three chapters analyze and make recommendations concerning three major sectors which support regional growth: physical infrastructure (Chapter V), social infrastructure (Chapter VI), and agriculture and livestock (Chapter VII). Chapter VIII concludes the report with recommendations for institutionalization of regional planning and investment promotion.

C. ACKNOWLEDGEMENTS

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CHAPTER II

REGIONAL PLANNING METHODOLOGIES

A. INTRODUCTION

In developing a regional plan, it is important to select and apply planning methodologies which are suitable for the region's circumstances and useful for its objectives. There are many potential methodologies available, each with different characteristics and approaches to helping meet regional development objectives. Because of data limitations for the Gwadar District, it would be impossible at present to apply fully any one major methodology. Rather, the challenge was to identify methodologies most suitable for the major objectives and kinds of available data, apply the methodologies as the data permit, and indicate next steps in the use of the methodologies.

There is no dearth of objectives which have been set forth for Pakistan, Balochistan, the Makran Division, and the Gwadar District by both the Government of Pakistan and the Government of Balochistan. Such regional objectives include, for example, improved health, more jobs, and better communication. Proposed strategies for achieving these objectives include improved delivery of services by governments and an increased role for the private sector.

The scarcity of available public and private sector resources for the Gwadar District suggested that, among objectives, great weight should be placed on the objective of a faster and more self-sustaining economic growth process in the region. Over time, higher incomes, received by households as personal income or as taxes and fees by governments, could finance the pursuit of other objectives, such as better health care. In the long run, successful economic development permits the achievement of a host of economic and non-economic objectives. A stagnant economy frustrates the enjoyment of a wide range of benefits by the people.

As a matter of justice and fairness, the benefits of economic growth should be widely shared by the people. In short, the selected regional planning methodology should be well-suited to the attainment of increased economic development of the Gwadar District, and wide distribution of the benefits of economic development among the people of the Gwadar District.

Another consideration in choosing methodologies is the remote and economically lagging nature of the Gwadar District. The region is part of the Makran Division, which is itself a remote and underdeveloped part of Balochistan, a province which has not been well integrated into the national economy of Pakistan. This

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regional circumstance implies that the planning methodologies utilized should address the problems of the relationships between the Gwadar District, Balochistan Province, Pakistan as a whole, and the outside world.

B. ECONOMIC BASE ANALYSIS

Given the two principal regional objectives of economic development and improved distribution of resources, and the importance of the relationship between the Gwadar District and the outside world, Economic Base Analysis is a particularly apt methodology.

> The heart of economic base theory is the proposition that the economic growth of a region ultimately depends on outside demand for its products. More precisely, whether a region grows or declines and at what rate is determined by how it performs as an exporter to the rest of the world. Exports to the rest of the world may be in the form of goods and services, including labor, that flow out of the region to buyers, or in the form of purchases inside the region by buyers who normally reside elsewhere. In the parlance of economic base theory, export industries constitute the ***economic base***, or ***basic sector***, of the region.[2]

The production of exported goods and services in turn is supported by the ***nonbasic sector***. Farmers' crops feed the workers in the export industries. Electricity that is supplied to a hotel which "exports" its services to visitors from outside the region, is part of the nonbasic sector.

As exports from the region increase, so does the demand for nonbasic goods and services. In this fashion, an additional Rs 100 worth of (basic) exports creates secondary demands for goods and services, which result in income to the region's other (nonbasic) businesses and households. Out of this increased income, these entities may buy more regionally produced goods and services, resulting in more income to their producers, and so on. Regional exports thus have a multiplier effect. The income of a region may be considered to be "earnings generated in the basic sector and multiplied through purchases in the nonbasic sector"[3]. Figure II-1 illustrates key aspects of Economic Base Analysis.

Regional income, in simplified terms, can be increased by increasing exports and by decreasing imports of goods and services

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[2] **Regional and Local Economic Analysis for Practitioners**, fourth edition, by Avrom Bendavid-Val, Praeger, 1991, p. 77.

[3] Ibid., p. 82.

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necessary to supply the basic sector. If farmers buy their seeds from a regional merchant rather than an external supplier, increases in the export of the crop will have a greater expansionary effect on the regional economy. This suggests that opportunities should be sought for the region to substitute its own production for imports, subject, however, to the stipulation that such new production be consistent with the long term comparative advantage of the region.

There are presently two major exports from the Gwadar District to other parts of Pakistan and to other countries: fish and labor services. Sales of fish to Karachi from Gwadar fishermen are clearly regional exports. A man who goes to Oman to work is essentially exporting his labor services, as he sends or brings his earnings back home. Although meager at present, there is some scope for tourism in the Gwadar region, which, to the extent the tourists come from outside the region, are exports of services from the Gwadar District.

Nonbasic sector activities can be grouped as follows:

- Supporting Physical Infrastructure: water supply, transportation, electricity, and communications;

- Supporting Social Infrastructure: health and education; and

- Non-exported Production: Agriculture and Livestock.

The word "supporting" is key. Inadequate infrastructure may limit production of exportable goods and services. Insufficient regional agricultural production results in increased need for imports of foodstuffs and reduced economic benefits to the region.

Economic Base Analysis often leads to three categories of development interventions: export promotion; assistance to physical and social infrastructure in support of export production to eliminate potential development bottlenecks; and import substitution consistent with the region's comparative advantage.

"Investment packages" can be developed which provide practical details on the interventions best suited to strengthening the region's economic base and thereby increasing its income. It is particularly important in identifying and designing interventions that the objective of wide distribution of benefits is adhered to, together with the objective of increased aggregate economic activity.

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C. OTHER METHODOLOGIES

The present plan relies for the most part on the Economic Base Analysis methodology. To a much lesser extent, the Urban Functions in Rural Development (UFRD) approach and sectoral approaches to regional planning have been employed.

UFRD is an approach to regional planning which is:

> ...based primarily in the functional integration concept of spatial development. It is based on the assumption that settlements of various sizes and functional characteristics--and especially smaller rural service and market centers--can and do play important roles in regional and rural development, but that in most developing countries the settlement system may not be well enough articulated and integrated to allow these centers to perform their potential functions effectively.[1]

The use of UFRD in conjunction with other approaches, including sectoral ones, can lead to interventions which permit a cost effective plan of spatially targeted investments that can achieve a variety of economic and other objectives.

For the Gwadar District, UFRD suggests the importance of evaluating the goods and services presently being provided by the four major settlements to their residents and the surrounding hinterlands. The reasoning of UFRD would imply that duplication of all services in all four towns would be inefficient. A regional plan should place certain functions in certain locations and improve transportation and communications so more people have access to those functions wherever they are located. UFRD is well suited to examining the geographical distribution of the benefits of growth.

In addition to Economic Base Analysis and UFRD, which are cross-sectoral, the study makes limited use of methodologies which are sector-specific. For roads, for example, the use of roads and an approximation of their benefit are indicated by traffic counts for types of vehicles on different road segments. The cost of road improvements can be estimated on a preliminary basis by using BALAD's road condition survey. Thus even with the present limited data, a start on cost-benefit analysis for Gwadar District roads can be made.

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[1] Applied Methods of Regional Analysis, The Spatial Dimensions of Development Policy, by Dennis A. Rondinelli, Westview Special Studies, 1985, p. 12.

D. APPLICATION OF METHODOLOGIES TO THE PLAN

In the present regional plan, sectors are classified as being either basic or nonbasic; the chapters of the report are organized accordingly. After the introductory chapter and the present chapter on methodologies, Chapter III provides descriptive information on the people, settlements and governmental structure of the Gwadar District. This chapter uses UFRD to analyze the distribution of functions in settlements. The fourth chapter analyzes the basic sector -- regional exports -- giving particular emphasis to the fisheries, labor services and tourism industries. The next three chapters cover the nonbasic sector: physical infrastructure, social infrastructure, and agriculture and livestock. As individual sectors are examined, sector specific approaches are applied.

Finally, an important implication of the application of Economic Base Analysis merits emphasis. Taken in a very strict sense, the methodology, especially in the short-run, could lead to interventions which may be narrowly focused, and may not directly address perceived human needs. Thus, some of the implications may be politically unacceptable.

In education, for example, Economic Base Analysis would lead to the identification of the types and degrees of literacy and technical training needed for the production of exports and intermediate outputs for exports. Narrowly viewed, the methodology is unconcerned with literacy or the general level of education of the population. Obviously, this is a limited view of the value of education, which fails to encompass the many important non-economic roles for and value of education. Economic Base Analysis is geared toward the long-term growth of exports, rather than other types of development objectives. Export growth, however, will provide future tax revenues to be used for broad-based education programs. The emphasis on exports in the short and medium terms does not mean that other investment programs should be curtailed in the short run.

This regional plan tempers its reliance on Economic Base Analysis by using common sense. It is proper to take vigorous steps to provide qualified manpower to support the growth of exports, but broad educational programs must also be supported. Economic Base Analysis has the virtue of helping decision-makers take steps to promote economic growth. They can then, in a well-informed fashion, weigh those benefits against other benefits that may accrue from expenditures in other sectors. In the present regional plan, emphasis is given to interventions which support economic growth, in part because such interventions have probably been neglected in the past. But the regional plan recognizes that in all sectors a proper balance must be sought. Ultimately, the trade-offs between different investments go beyond technical judgments and require political decisions.

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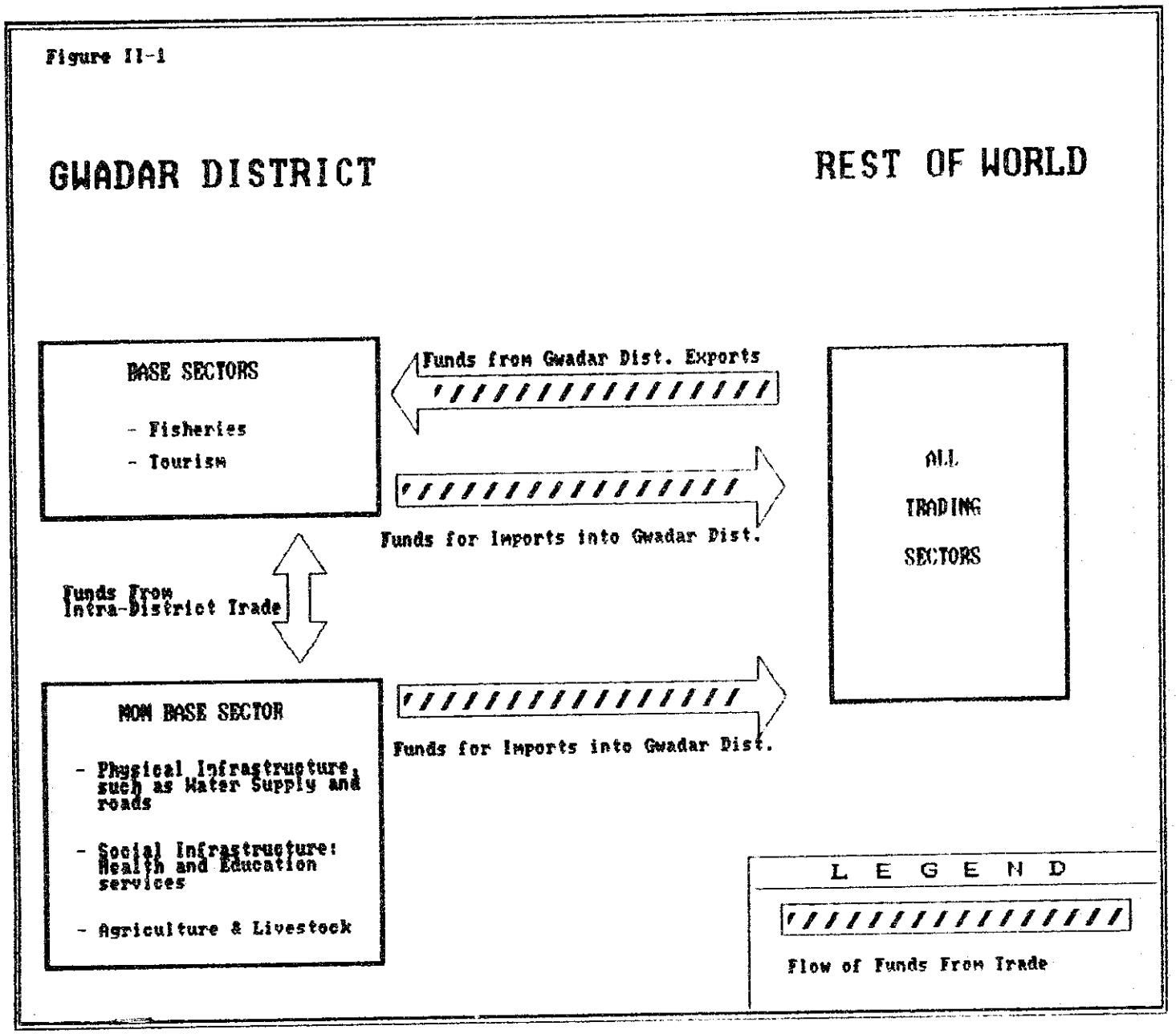
Figure II-1


GWADAR DISTRICT
REST OF WORLD
BASE SECTORS
- Fisheries
- Tourism
Funds from Gwadar Dist. Exports
Funds for Imports into Gwadar Dist.
ALL
TRADING
SECTORS
Funds From
Intra-District Trade
NON BASE SECTOR
- Physical Infrastructure, such as Water Supply and roads
- Social Infrastructure: Health and Education services
- Agriculture & Livestock
Funds for Imports into Gwadar Dist.
L E G E N D
Flow of Funds From Trade

CHAPTER III

SOCIOECONOMICS, SETTLEMENTS AND SERVICES

Socioeconomic characteristics, settlement patterns, availability of public services, and the government structure of the district are described in this chapter. Urban functions are analyzed according to the UFRD methodology outlined in Chapter II. These functions are described and presented in tabular format for the region's towns and villages.

A. SOCIOECONOMIC CHARACTERISTICS

The major castes of the Gwadar district are Kalmati, Gorgish, Med, Khojas, Mehdizai, Zanozai, Bunds, Jadjal and Posh. The Posh, Bunds and Jadgal are the main castes of the rural Kulanch valley; the others are castes of the coastal settlements. The Meds have traditionally been fishermen for hundreds of years. Now members of other castes who are involved in fishing are perceived to be Meds. The Meds are also traditionally involved in boat repair and construction and weaving fishing nets. An estimated 70% of the population of the coastal villages are engaged in fishing enterprises; fishing is the major source of livelihood of the area's populace. The agro-pastoral people of the rural Basol, Kulanch, Suntsar and Nigwar of Gwadar district, are engaged in rainfed agriculture, flock-owning and small business activities.

The social structure of the coastal town of Gwadar is somewhat different from that of the rural areas of the district, as the coastal area engages in trade with the neighboring Gulf countries and with other cities of Pakistan. Society in urban Gwadar appears to be more independent socially, economically and politically. In the rural areas, the socially influential class is the dominating force over the lower strata of the rural population.

Traditionally, the people of Gwadar town have strong cultural and economic ties with the people and government of Oman. A considerable percentage of the town's people are of Omani nationality, and work in Oman in a variety of jobs. Gwadar also serves as the area's only port for incoming goods from Dubai. The port provides substantial economic opportunities to the inhabitants of the area.

A significant number of Gwadar Sub-division's inhabitants generate a substantial part of their income by working in the Gulf countries. The people working overseas send remittances home to their families, due to the strong family affiliation which characterizes Makrani society. Family members reciprocate by taking care of the family and the home. The socioeconomic milieu

of the area underwent a drastic change during the early 1970s, due to the large segment of the work force employed in different types of white and blue collar jobs in the Gulf countries, particularly in Oman. An estimated 60% of the Omani army were from Makran until the late 1970s, but the number has been reduced because the Oman government has stopped recruiting in Makran. Economic conditions had improved in the urban areas of the district due to availability of well-paying employment opportunities. With improved economic conditions, the literacy rate of the area showed some improvement, but the literacy level of the area remains low compared to other districts of Balochistan and the national average.

Illegal trade with Iran and other Gulf countries is a substantial source of income for the district's inhabitants, particularly for those living adjacent to the Iranian borders in the extreme west. There is a significant flow of smuggled goods to the market of Gwadar town. These goods are also marketed onward to Karachi from Gwadar.

The fishing industry is the base economy of the coastal settlements of the district. The fishermen of the coastal villages are living at almost subsistence level, as they are always indebted to middlemen. The fishermen become obligated to sell their catches at lower prices to the middlemen. The middlemen have almost monopolized the fishing business in the district.

B. RELIGIOUS GROUPS

There are two predominant religious sects in the Gwadar district: Zikri and Sunni Muslims. More than 70% of the Zikri live in the Pasni sub-division, in Pasni, Kulanch, Kalmat, Ormara and other villages. Professionally, the Zikris are involved in fishing activities in the coastal villages, and livestock raising and rainfed agriculture in the interior. A considerable number of Zikri are nomadic in villages of the Pasni sub-tehsil. Some Zikris live in Gwadar Town. Surbandar is the only fishing village in the Gwadar Sub-division where Zikri outnumber the Sunnis in population. More than 60% of the population of Surbandar are Zikri. Surbandar is a sizable fishing village 20 km. east of Gwadar. Sunnis are mostly concentrated around Pasni town and some of the villages in the proximity of Pasni. According to a rough estimate more than 80 percent of the population in the Gwadar sub-division are Sunni Muslims.

There are also some "khojas" of the Shia Muslim sect settled in Gwadar, Pasni and Ormara towns, who are mostly involved in businesses in Gwadar. Their number has recently been reduced to a minimum through migration to Karachi. Hindus were a dominating force in the retail business of the coast before 1947, but now there are a negligible number of Hindu families living in Gwadar Town.

C. POPULATION

According to the Census Report of 1981, the total district population was 112,385. The rural population was 69,133, while urban population was 43,245 (Table III-1). The estimated 1990 population, assuming a 2.5% average annual population growth rate, is 140,891. In 1981, the male population of the district was 59,361 and the female population was 53,024. The sex ratio was 112 males per 100 females. The estimated 1990 population of the Gwadar Sub-division, calculated with a 1.9% average annual growth rate, is 68,258. The estimated population of the Pasni Sub-division calculated with a 3.2% annual growth rate is 72,633 as of 1990.

There has been considerable growth in the district population during the nine years since the last census. The calculation of the growth rate was based on the available data in the district Census Report of 1981. The reliability of some of the census data is questionable, because the census data mostly rely on information received from political and other interest groups. It is also noted that data for a number of villages are missing from the Census Report of 1981.

There has been considerable migration from rural to urban areas in the district due to better availability of economic opportunities in the urban areas, especially during the last five to six years. There has also been migration from Iran to Gwadar district after the revolution in the Iran. Many people migrated from Iran and settled mostly in the urban locations of the district.

D. SETTLEMENTS

The Gwadar and Pasni Towns perform the wide variety of social, economic and service functions. The interior population of the district still lacks most of the functions that are available in the urban towns.

Gwadar town is the main market and center of socioeconomic activities for the people of the Gwadar Sub-division and the Kulanch valley of the Pasni sub-division. Gwadar town also serves as the weekly and monthly market place for the adjoining interior population of the Sub-division. Most of the urban functions are available in Gwadar town.

Jiwani, located in the extreme west of the Gwadar district, is one of the important local centers of socioeconomic activities for inhabitants adjacent to the Iranian border. The people of the area have strong ties with the people of Iran living across the border. The illegal border trade with Iran and other Gulf countries is the major source of income for the area's people. Jiwani is a

relatively large fishing village which provides services to its population and the surrounding interior settlements.

There are some rural centers in the district which serve as smaller market places for the nearby population; among the most important are Jiwani, Pishukan, Surbandar and Ormara. There are also some fairly small rural centers such as Nalaint and Suntsar, centrally located on the Turbat/Gwadar roads, which serve nearby villages with very limited urban functions. These villages lack most facilities and services.

Pasni is the biggest town of the district, followed by Gwadar, in terms of population. Pasni and Ormara towns are the main socioeconomic centers of the Pasni Sub-division. Ormara is the only town in the area; located 180 km. east of Pasni in an isolated area, it serves as a low order local center. It also serves as a small center of socioeconomic activities for the isolated settlements of Basol and other scattered villages in the vicinity. Ormara is the weekly and monthly market place for the surrounding area. The major source of income is fishing in Ormara and some of the other ancient fishing villages along the coast, and herding and rainfed farming in very small scale in the interior. Historically, Ormara Town has strong socioeconomic linkages with Lasbela district and Karachi. People in the interior of Basol and surrounding villages in Ormara Tehsil live on a mixed economy of animal raising and some rainfed agriculture.

The land in the Basol area is very fertile. Underground water sources appear to be abundant in the vicinity of the Basol Kaur. The potable water requirements of Ormara town are met from the Basol through installation of tubewells near Basol Stream. There is a cluster of agro-pastoral villages in the Basol area. The bulk of population in the Basol and other areas of Ormara tehsil area are nomadic herders. Animal raising is the major source of income, supplemented by rainfed agriculture.

Kalmat, another ancient fishing village situated between Pasni and Ormara along the coast, is famous for its shrimp and lobster. Kalmat is closer to Pasni, and has greater socioeconomic linkages with Pasni town.

E. SETTLEMENT SIZES AND PATTERNS

Settlement sizes and patterns have a direct influence on the provision of essential services and facilities. Gwadar district has a low population density, and villages are isolated from one another. According to the 1981 Census Report, there are a total of 107 settlements in the district (103 rural villages and 4 towns). In 1981, the district population was 112,385, of which 43,252 (38.5%) were urban, and 69,133 (61.5%) rural (Table III-2).

Rural settlements were classified into three categories according to population: small -- less than 500 people; medium -- 500 to 1,999; large -- 2,000 to 4,999 people. Out of the total of 103 villages, there are 74 small settlements in the district, 20 medium and nine large settlements (Table III-3). Approximately 24% of the district's rural population live in small settlements. The majority of the population live in medium or large settlements; medium size settlements account for 39% of the rural population and about 36% live in large settlements.

F. AVAILABILITY OF SERVICES AND FACILITIES IN SETTLEMENTS

Using the Urban Functions in Rural Development methodology, the availability of urban functions was analyzed for the following categories of functions:

CATEGORIES OF FUNCTIONS	FUNCTIONS
Economic Activities	Market center, bank, fish processing industry
Social Services and Facilities	Primary, middle, high and technical schools and colleges; government and private hospitals, clinics
Communication Services and Facilities	Airport, bus station, telephone exchange, telegraph and post office
Extension Services	Agricultural and animal husbandry extension offices, community development and local government department
Community Organizations	Cooperatives, sports associations, community club.

The availability of 38 individual urban functions in 107 settlements was determined. The results are displayed in a matrix in Table III-4. The 38 functions are column headings, starting with Link Roads and ending with Colleges. The rows are 87 settlements; not shown are 20 villages for which the only urban function is a Link Road. A black square indicates that the settlement shown on that row has the function named in the heading of the square's column. The sequence of settlements is a ranking in descending order of number of services available. The Town of Gwadar comes first with 36 functions, followed by Pasni with 33.

The information from the matrix is summarized in Table III-5, which groups functions according to the percentage of settlements which provide them. The right column lists urban functions in descending order of frequency, from Link Road (100%) to Hospital (.91%). The .91% means that one settlement (the Town of Gwadar) has a hospital. The ranges for the percentages are shown in the first column and the number of functions within a given range is shown in the middle column. For example, in the 60 to 79% bracket, there are two functions: primary schools and retail stores. In other words, 60 to 79% of the settlements have primary schools and retail stores, as well of course as a link road.

A clear picture emerges from the matrix and summary table. **There is a wide gap between the urban and rural locations of the district in the extent of services and facilities provided.** Most settlements have only three functions: link roads, primary schools, and retail stores. Only four settlements -- Gwadar, Pasni, Ormara, and Jiwani -- have 15 or more urban functions.

The poor state of many of the roads means that many people lack ready access to important facilities and services. In fact, "Link Road" was defined to include dirt roads and tracks, some of which are only fair weather roads.

The information on availability of functions is further examined by placing the settlements in a hierarchy of Central Services Places, Local Services Centers, and Non-Central Places/Villages (Table III-6). Gwadar and Pasni provide the greatest number of functions; though they represent only two percent of the district's settlements, they account for 31% of the population. Another 21% of the population lives in settlements with eight to 20 functions.

The 101 villages which have one to seven functions, which are 94% of all settlements, account for 48% of the population. **In other words, about half the population lacks ready access to important urban services and facilities, being scattered in small and isolated interior settlements.** This plight of the villagers can be addressed in three ways:

1. provision of more services and facilities in outlying villages;

2. improved roads connecting the villages to centers with more urban functions; and

3. rural to urban migration.

In fact, some migration is already occurring and some roads have been improved. **The GOB should support the provision of essential services (like potable water) to villages, and improve the roads, as it is impractical to provide a wide range of services to villages that average only 532 people** (Table III-6).

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G. GOVERNMENT STRUCTURE

In the late 17th century, part of the Gwadar district covering an area of 300 square miles was ruled by a deputy of the Sultan of Muscat, from a base in Gwadar. The ruler of the Kalat and of Balochistan, Nasir Khan I, handed over Gwadar to the Sultan Saaid of Oman, who was later overthrown by his brother. A share of the Gwadar revenue was given to the Sultan of Oman by the Khan of Kalat for his maintenance. Gwadar and adjoining areas remained part of Oman until 1958. The rest of the Gwadar district was controlled by the Khan of Kalat, whose deputy was stationed at Pasni.

The Gwadar district, which covers an area of 15,216 km., was formed after the 1972 census. Ormara, previously a part of Lasbela district, was included in the Gwadar district after 1972. The Gwadar district has been divided into two sub-divisions for administrative purposes, with two tehsils in each sub- division. There is a one smaller tehsil in the Gwadar sub-division, Suntsar, known as a sub-tehsil. The administration of the district is divided into (1) Gwadar Sub-Division, which includes the Tehsils of Gwadar and Jiwani, and (2) Pasni Subdivision, divided into Pasni and Ormara Tehsils. Each sub-division is headed by an Assistant Commissioner. There is a Tehsildar in charge of each Tehsil.

The Deputy Commissioner is the head of administration for the entire district, stationed at the district headquarters in the town of Gwadar. The Deputy Commissioner is assisted by a Superintendent and several support staff.

Politically, the district is divided into six Union Councils and one District Council. The members of the Union and District Councils are democratically elected under the local government system. Local disputes and controversies are settled and local development priorities are fixed by the Union Councils. Each Union Council is allocated limited funds from the provincial government to spend for small scale local development programs.

There are two Town Committees and one Municipal Committee in the district, Gwadar, Pasni and Ormara respectively. Each Town Committee has a council of popularly elected members which is headed by a chairman. The members of the Town and Municipal Committees are elected by the townspeople, and the chairman is elected by the members of the council. The Gwadar Municipality is the biggest in terms of revenue sources and generation, followed by Pasni Town Committee. Town Committee affairs are run by the elected council. The council is assisted in administrative matters by a designated government officer called the chief officer.

TABLE III-1

POPULATION BY SEXES, SEX RATIO, AND AVERAGE ANNUAL PERCENT GROWTH RATE OF GWADAR DISTRICT, 1981

GWADAR DISTRICT	BOTH SEXES	MALE	FEMALE	SEX RATIO	PROJECTED POPULATION AS OF 1990	AVERAGE ANNUAL GROWTH RATE PERCENT
GWADAR SUB-DIVISION	57,360	29,587	27,773	107:100	68,258	1.9
PASNI SUB-DIVISION	55,025	29,774	25,251	118:100	72,633	3.2
TOTAL	112,385	59,361	53,024	112:100	140,891	2.5

POP/TM/GDRPLNG3

TABLE 111-2

POPULATION OF THE GWADAR DISTRICT BY URBAN AND RURAL

1981

GWADAR DISTRICT	URBAN	RURAL	TOTAL
GWADAR SUB-DIVISION	17,000	40,358	57,358
GWADAR TEHSIL	17,000	16,404	
JIWANI TEHSIL	0	23,954	
PASNI SUB-DIVISION	26,252	28,775	55,027
PASNI TEHSIL	17,987	21,822	
ORMARA THESIL	8,265	6,953	
TOTAL	43,252	69,133	112,385
PERCENT	(38.5%)	(61.5%)	(100%)

Souce: Census Report, 1981.

POPL/SA/GP05

TABLE III-3

RURAL POPULATION AND SETTLEMENT PATTERNS OF GWADAR DISTRICT
1988

TOTAL RURAL POPULATION	TOTAL # OF VILLAGES	TOTAL # OF SETTLEMENTS IN 1988			POPULATION IN SETTLEMENT 1988			ESTIMATED POPULATION 1990 *
		SMALL (0–400)	MEDIUM (500–1999)	LARGE (2000 4999)	SMALL	MEDIUM	LARGE	
74,000	103	74	20	9	18,000	29,000	27,000	76,598

* Estimate based on 1.2% average annual rural population growth rate.

Source: Strategic Provincincial Investment Plan
and Project Preparation for Rural Water Supply,
sanitation and health, Balochistan.
A World Bank – Sponsored study (Sep. 1989)

GDRPLNC7/SA/GDRPLND3

TABLE III-5

DISTRIBUTION OF FUNCTIONS AMONG SETTLEMENTS

RANGE OF SETTLEMENTS	NUMBER OF FUNCTIONS	TYPICAL FUNCTIONS (PERCENT OF SETTLEMENTS)
80-100%	1	Link Road (100%)
60-79%	2	Primary School (78.89%) Retail Store (79.81%)
40-59%	-	-
20-39%	-	-
10-19%	2	Basic Health Units (12.84%) Drinking Water Supply Scheme (11%)
5-9%	4	Bus station (9%) Middle School (8.25%) Telephone Exchange (8.25%) Secondary School (5.50%)
2-4.9%	14	Provincial Government Office (4.58%) Medical Store (4.50%) Bank (4.58%) Restaurant (4.58%) Boat Construction (4.58%) Fish Market (3.66%) Air Port (3.66%) Poultry Farm (2.75%) Gas Station (2.75%) Civil Dispensary (2.75%) Central Government Office (2.75%) Rural Health Center (2.75%) Private Health Clinic (2.75%) Physician or Medic: (2.75%)
1-1.9%	11	Vehicle Repair Shop (1.83%) Vegetable Market (1.83%) Market Place (1.83%) Telegraph Office (1.83%) Wholesale Food Distributer (1.83%) Hotel Lodging Place (1.83%) Veterinary Service (1.83%) Fish Harbour (1.83%) Custom Office (1.83%) Community Center (1.83%) Cinema House (1.83%)
Less than 1.0%	4	College (0.91%) Agriculture Extension Office (0.91%) Public Call Office (0.91%) Hospital (0.91%)

DISFUN/SA/PG05

TABLE III-6

FUNCTIONAL COMPLEXITY OF SETTLEMENTS
IN GWADAR DISTRICT

SETTLEMENT HIERARCHY		SETTLEMENTS			RANGE OF FUNCTIONS	1981 POPULATION		AVERAGE 1981 POPULATION PER SETTLEMENT
LEVEL	FUNCTION	NAME	NO	%		NUMBER	PERCENTAGE	
I	Central Services Places	Gwadar, Pasni	2	2	33 to 36	34,986	31	17,493
II	Local Services Centers	Ormara, Jiwani, Pishukan & Sur-Bandar	4	4	8 to 20	23,556	21	5,889
III	Non-Central Places/Villages	Others	101	94	1 to 7	53,732	48	532
TOTAL			107	100	1 to 36	112,274	100	1,049

SETBIII6/TM/GP05

CHAPTER IV

REGIONAL EXPORTS

A. INTRODUCTION

This chapter discusses the major exports of the Gwadar District: the fishing industry and labor services provided by Gwadar workers abroad (particularly in the Middle East). Tourism, which appears to have some potential, is also discussed. The potential for export of coconuts, now at a very preliminary stage of investigation, is discussed in Chapter VII.

B. FISHING INDUSTRY

1. Current Situation

Fishing is the major economic activity of the Gwadar District. The BALAD project analyzed the fishing industry and its potential for development and made recommendations in the report, "A Preliminary Review of the Fisheries Potential Off the Balochistan Coast," which is included as Annex 1 to this report. This plan makes use of the findings of the fisheries study, and includes information on the current situation of production, marketing, and port facilities in Coastal Makran. The major fishing villages of the district are shown in Figure IV-1; marketing networks for fisheries products and equipment are schematically represented in Figure IV-2.

a. Production

Marine fisheries is a vital source of livelihood, directly or indirectly, for most residents of Gwadar District. Important fishing settlements include Gwadar, Surbandar, Pishukan, Jiwani, Gunz, Pasni, Kalmat, Churbandar, and Ormara. As shown in Table IV-1, fish and shellfish catches are split about equally between the Gwadar and Pasni Sub-divisions of the Gwadar District.

At 88,000 metric tons, fish and shellfish production of the Makran Coast in 1990-91 is at about the level reached in 1987 and below the peak of 94,000 metric tons in 1985 (Table 2, Annex 1). The estimated 1990-91 value of the fish harvest was Rs. 397 million. Although not all of that value is captured as income to the region's residents, the sales volume indicates the importance of this sector to Coastal Makran. The marine fisheries of the Gwadar District contribute about twice as much to Balochistan's economy as that of the fishing villages in the rest of Balochistan (Table IV-2).

The total harvest for the entire coast of Pakistan in 1984 totalled 308,000 metric tons (mt) of the following types of fish: small pelagics, 131,000 mt; demersal, 128,000 mt; shrimp, 29,000 mt; and large pelagics, 20,000 mt (Table 1, Annex 1). Pelagic fish are those that live in the upper layers of the sea. Demersal (fish living near the sea bottom) and small pelagics harvests are probably approaching their maximum sustainable yields. Shrimp harvests are exceeding maximum sustainable yield. There remains a potentially sizeable, unexploited large pelagic stock in the Arabian Sea (Annex 1, Section 2).

There are an estimated 15,547 full-time and 3,836 part-time fishermen working out of the major fishing towns of Gwadar, Pasni, Ormara, and Jiwani (Table IV-3). (Part-time fishermen typically do not work from June through August when the seas are rougher.) Another 1,959 people are so-called occasional fishermen, who catch fish primarily for the consumption of their families. An estimated 2,260 people are employed in such fishery-related activities as constructing boats, maintaining boat engines, cleaning and drying fish, and providing cold storage.

The estimated total of 23,602 workers employed directly and indirectly in the Gwadar fishing industry understates the direct employment by excluding some of the workers involved in transporting and marketing fish. It also excludes workers in the nonbasic sector (farmers and merchants, for example) whose jobs depend on the purchasing power of the fishermen.

In many fishing enterprises, only family members are involved in the operations. In some cases, labor is hired on a daily basis. In most cases labor is, following tradition, paid a share of the catch. Traditional fishing techniques are used and the income the fishermen receive is often low.

The value of loans to the fishing sector from the Agriculture Development Bank of Pakistan (ADBP) is small in comparison with the value of the catch. However, ADBP loans show an upward trend in recent years, more than doubling from 1986-87 levels to Rs. 16.4 million in 1990-91 (Table IV-4).

b. Boats and Port Facilities

For several years, efforts have been underway to modernize the fishing industry in the Makran. Although most boats remain small and of traditional designs, more fishermen now use engines (Table IV-5). Only 593 of the registered boats have inboard engines; 3,047 have outboard engines. Of the 3,822 registered boats, 2,575, or 67%, are five tons or less.

According to the Gwadar manager of the Agriculture Development Bank of Pakistan, most of the small motors for fishing boats in the

Gwadar Sub-division are either provided on a loan basis by the bank or donated by a political representative of the area. Motorized boats have notably increased the productivity of the fishermen and raised their incomes.

A modern fish harbor at Pasni has been completed and is now in use, and a fish harbor is nearing completion at Gwadar. The Pasni fisheries harbor project was financed by the Asian Development Bank and built by a German contractor. The harbor approach channel and basin has been dredged to a minimum depth of two meters, and breakwaters and coast protection structures have been constructed. The port includes 720 meters total length of berths (four berths for unloading fish and a cargo berth), a boat landing beach and slipway, a boat repair shop and workshop, and a fish market hall. There are plans to install an ice plant and cold storage facility in the future.

The Gwadar port includes a jetty 500 meters long and 65 meters wide. The Government of Japan financed the feasibility study; the Government of Belgium and the Asian Development Bank financed the construction, which is currently being carried out by Besix, a Belgian firm. Major dredging is being done to attain three and one half meter depth at the average mean tide or 1.8 meters at low tide. Completion of the most of the Gwadar fish harbor is expected in mid-1992, with other facilities, such as the proposed 500 ton cold storage plant, to be built with the participation of the private sector.

Both harbors provide docks where fish can be unloaded, and equipment and supplies loaded and unloaded. Without modern facilities, fishermen must continue to off-load fish under difficult circumstances. One commonly used technique is to drive donkey carts into the surf. The long-suffering donkeys try to keep their heads above water as the waves go by and the fish are off-loaded. Investments in fishing port facilities will permit increased production of fish for export by allowing more fishing boats to operate year round, proper handling, as well as improved processing, storage, and forward shipping of the fish and fish products.

At present, pollution from the fishing industry is not a major problem, but the situation could change with the expected growth from the full utilization of the Pasni and Gwadar Fish Harbors. Water supply is a major obstacle to the full utilization of the Pasni and Gwadar Fish Harbors. When fully operational, the Gwadar harbor is expected to use 150,000 gallons per day. That supply is not available at present, giving urgency to the water-related recommendations on investments in supporting physical infrastructure, made in Chapter V.

c. Marketing and Processing

The fishermen of the Gwadar District have a tradition of exporting fish that goes back almost 100 years. According to the Makran Gazetteer, in 1906 shark fins and salt fish maws were exported to India, China, Zanzibar, and other countries. Today, fish are even more widely exported. Ninety percent of the fish and shellfish of the Gwadar District are exported outside the region, as shown in Table VI-6. Fish are sold to Karachi, other parts of the Makran, and to Iran. Fish is transported inland by road on trucks with cooling facilities.

A significant portion of the catch from Coastal Makran is sold in Karachi, either fresh or frozen, or it is exported frozen or dried to other countries. Some of the catch is purchased by launches which come from Karachi equipped with curing and cooling facilities. The launches take the fish to Karachi by sea, where most are sold by open auction in the fish market.

Middlemen often finance fishing enterprises in the Makran. In some cases, local businessmen provide boat nets and other equipment to fishermen and share the daily catch with the fishermen as compensation. Some businessmen from Karachi lend money to the fishermen thus obligating the fishermen to sell their catch to them at lower than market prices. Most local fishermen do not sell their fish directly to buyers in Karachi or to foreign buyers, but rely instead on middlemen.

Fish and shellfish prices are much lower in Gwadar and Pasni than in Turbat and Karachi (Table IV-7). Many fishermen believe that they receive too low a share of the final market price because they are price-takers, dependent on middlemen. A probable barrier to the fishermen receiving higher prices is their lack of information on market prices in key Makran cities, other cities in Pakistan, and overseas markets.

Other than limited cleaning and drying of fish, there is little fish processing in the Gwadar District. A factory producing fishmeal for chicken feed from sardines was operating in Pasni but is currently not operating. There are simple drying facilities for fish in Pasni and Gwadar and very limited facilities for cold storage.

2. Recommendations

- The GOB should promote the fisheries of Coastal Makran to produce higher value-added in the region, so that more of the income is retained by local residents.

- The GOB should give high priority to the provision of an adequate water supply to the Gwadar Fish Harbor by promptly

implementing the pertinent recommendations concerning Supporting Physical Infrastructure (Chapter V).

- The GOB, in cooperation with the private sector, should give priority to supporting small-scale fishermen and groupings of such fishermen in order to increase the fish catch and the share of final value of that catch that they receive.

- The GOB should assist in disseminating information on fish prices and volumes bought and sold in key markets in the Gwadar District and elsewhere in Pakistan, including in Turbat and Karachi.

- The GOB should promote operations of the Pasni and Gwadar Fish Harbors to enable small fishing enterprises to share fully in the use of the harbors and to avoid unnecessary pollution.

- The GOB should undertake a detailed study, as recommended in Annex 1, to identify the opportunities for improving existing fisheries activities and to estimate the potential for large pelagic fisheries. The study should include the following tasks:

  - **Data Development.** Further define the extent of knowledge of Balochistan fisheries, especially of stocks and their relationship to contiguous area (i.e. continental shelf, deep sea/off-shelf). Large pelagic fish stocks (i.e. tuna) can be a focus of special interest. Two weeks of effort on the part of a Natural Resources Planner can be expended on data collection, including three days at FAO, Rome, and ten days in Karachi and Balochistan.

  - **Field Study Design.** Determine specific needs and appropriate methods to conduct trophic studies (stomach analyses), and studies to correlate landing size and stock size, focusing on existing large pelagics (especially tuna). One week of effort on the part of a Senior Fisheries Expert should be spent along the Makran Coast and the Karachi/Korangi ports.

  - **Stock Assessment Design.** Initiate the determination of the productivity and sustainable yield of Balochistan Fisheries, with emphasis on the large pelagics (tuna). The following studies will be needed for selected stocks: sex ratios, age composition, growth rates, reproduction rates, and food/feeding relationships.

  - **Review Existing Fishery Infrastructures.** Review and develop a database on existing Balochistan/Karachi-Korangi Fishery Infrastructure, as well as relevant socioeconomic, climatic, transportation, and marketing/distribution systems. One week in Pakistan by

a Natural Resource Planner will be required.

- **Identify Possible Investments.** Review needs for investments in fisheries, including port harvest services, processing, storage, port and other transport facilities, marketing systems, etc. One week of an Industrial Planner will be required.

- **Identify Interested Investors.** Contact firms who have invested in fisheries, or have expressed interest in the past. Determine their willingness to pursue opportunities, including participation in further studies. Identify complementary public sector investment needs. One week of an Industrial Planner is needed.

- **Contact Potential Financial Sources.** Meet with banks and other funding agencies to determine interest in financing further studies and in investments. This activity will be carried out in one week by an Industrial Planner.

- **Final Report Preparation and Follow-up.** Report on findings and conclusions will be prepared, submitted to GOB and USAID, and discussed. Final report will incorporate comments on the draft report.

C. REMITTANCES FROM ABROAD

1. Current Situation

For years the Gwadar District has benefitted from significant inflow of remittances from its residents who work overseas, especially in the Middle East. Such work was sharply curtailed by the Gulf War in early 1991. Employment of Pakistanis in the Middle East has recently begun to rise but is still far below pre-war levels.

These remittances constitute an important inflow of money into the district, some of which traditionally has been used to build houses and to start businesses. Unfortunately, detailed information is not available on the level of these inflows broken down by district.

2. Recommendations

- Qualified residents of the region should continue to take advantage of employment opportunities outside of Pakistan.

- The GOB should investigate ways in which information about overseas jobs could better reach its citizens.

- To the extent to which administrative requirements (exit visas, for example) make it difficult for residents of the Gwadar District to accept overseas jobs, the GOB should investigate how it could reduce these requirements.

D. TOURISM

1. Current Situation

The current situation of tourism in Coastal Makran and recommendations for tourism development are presented in the report "Opportunities for Tourism in Balochistan: Preliminary Review," which is attached as Annex 2 to this report.

In summary, there is little tourist activity in the Gwadar District at present. The development of tourism is impeded by security restrictions, limited utilities, distance from major international airports, and competition from other international beach destinations, such as the Maldive Islands. On the other hand, the coast is beautiful and potentially appealing to some categories of tourists. On balance, a selective and careful approach to tourism is indicated.

2. Recommendations

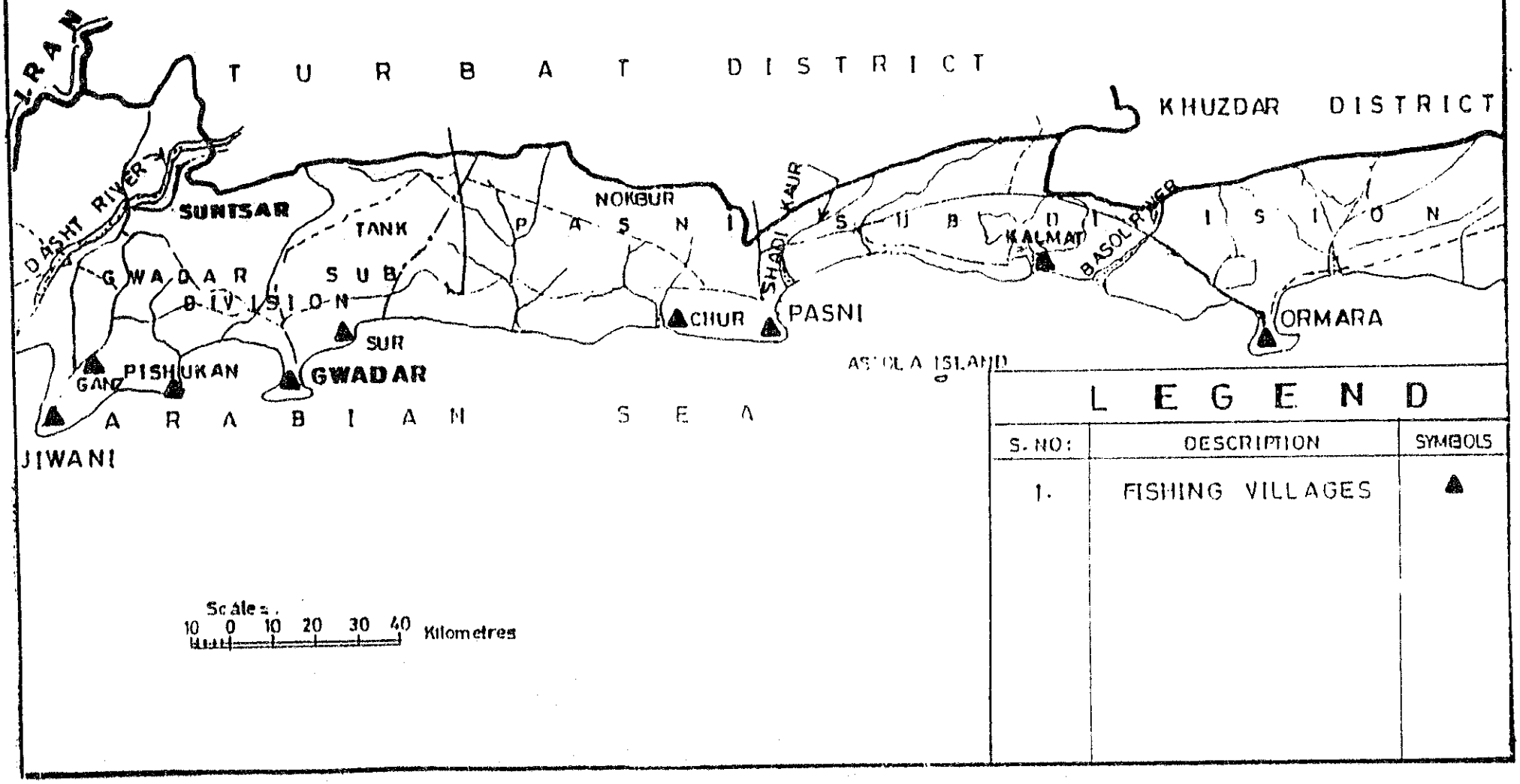
- In promoting tourism in the Gwadar District, the GOB should cooperate with the other public organizations interested in tourism, such as the Pakistan Tourism Development Corporation and Pakistan International Airlines, and with the private sector (hotels and travel agencies in particular).

- The GOB should proceed carefully, bearing in mind the constraints perceived by the private sector, avoiding investments in tourism development which are not justified by the anticipated economic payoff.

- The GOB should consider tourism on the coast in the context of province-wide efforts, which should start with a Balochistan Tourism Demand Study.

- If there appears to be a potential demand for tourist facilities on the coast, the GOB in concert with appropriate public and private sector organizations, should prepare a Makrani Coast Tourism Development Plan.

FISHING VILLAGES OF GWADAR DISTRICT



LEGEND

S. NO:	DESCRIPTION	SYMBOLS
1.	FISHING VILLAGES	▲

FIGURE IV-2

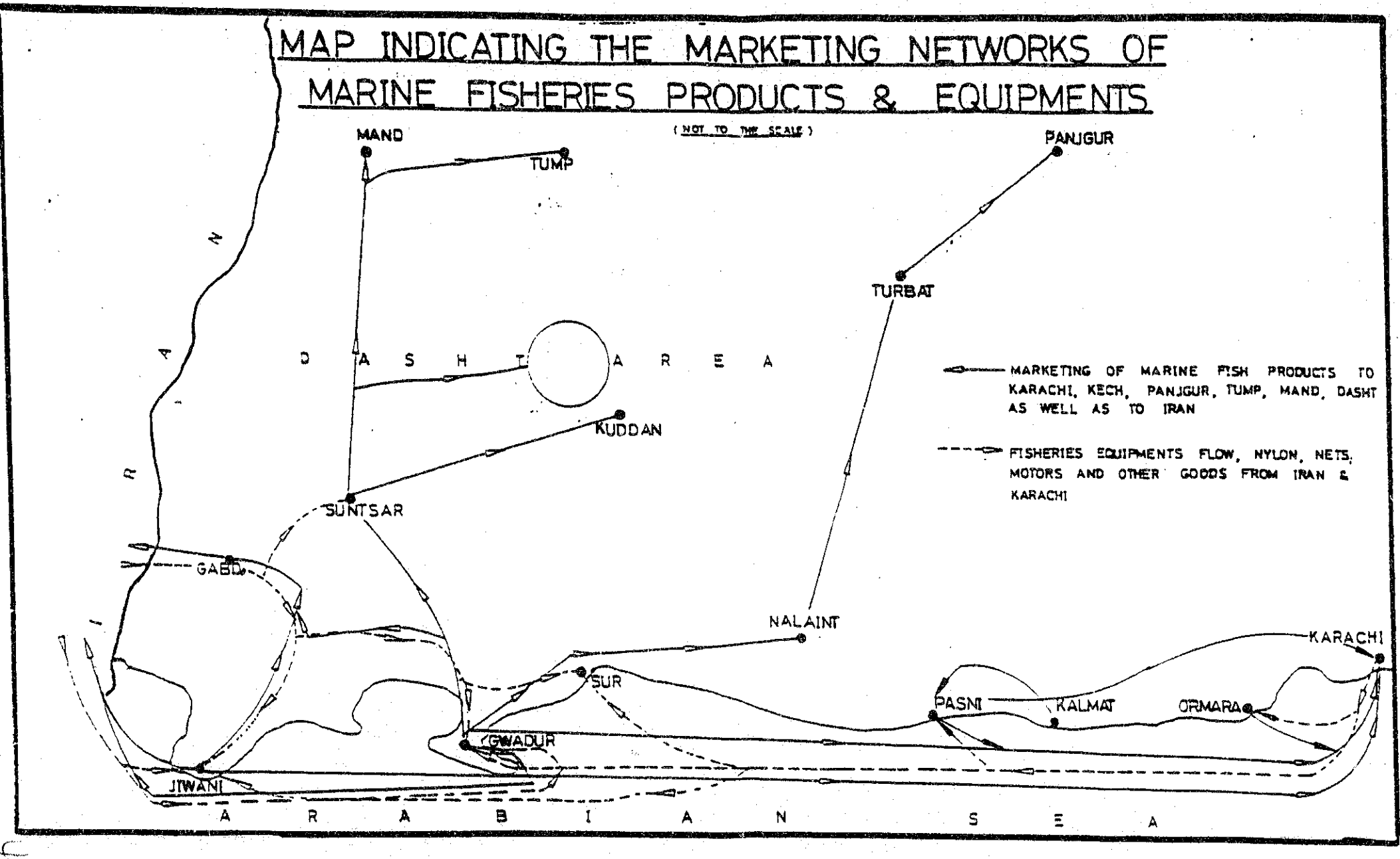

MAP INDICATING THE MARKETING NETWORKS OF MARINE FISHERIES PRODUCTS & EQUIPMENTS
(NOT TO THE SCALE)
MAND
TUMP
PANJGUR
TURBAT
DASHT AREA
KUDDAN
SUNTSAR
GABD
NALAINT
KARACHI
SUR
PASNI
KALMAT
ORMARA
GWADUR
JIWANI
ARABIAN SEA
IRAN
MARKETING OF MARINE FISH PRODUCTS TO KARACHI, KECH, PANJGUR, TUMP, MAND, DASHT AS WELL AS TO IRAN
FISHERIES EQUIPMENTS FLOW, NYLON, NETS, MOTORS AND OTHER GOODS FROM IRAN & KARACHI

TABLE IV-1

FISH AND SHELL FISH PRODUCTION AND VALUE

OF THE MAKRAN COAST FOR 1990-91

GWADAR DISTRICT	PRODUCTION		VALUE	
	THOUSANDS OF TONS	%	MILLIONS OF RS.	%
GWADAR SUB-DIVISION	45	51	207	52
Gwadar Tehsil	35	40	165	42
Jiwani Tehsil	10	11	42	10
PASNI SUB-DIVISION	43	49	190	48
Pasni Tehsil	28	32	139	35
Ormara Tehsil	15	17	51	13
TOTAL:	88	100	397	100

Sources:- Fisheries Department, Government of Balochistan

FISHVA1/SA/GDRPLNG3/3

TABLE IV-2

MARINE FISH AND SHELL FISH PRODUCTION AND VALUE OF MAKRAN COAST AND REST OF BALOCHISTAN, 1990-91

	PRODUCTION		VALUE	
	IN THOUSANDS OF TONS	%	MILLIONS OF RS.	%
Makran	88	86	397	68
Rest of Balochistan	14	14	186	32
TOTAL:	102	100	583	100

Sources:- Fisheries Department, Government of Balochitan.

FISHVA2/SA/GDRPLNG3/3

TABLE IV-3

DIRECT EMPLOYMENT RELATED TO THE FISHING INDUSTRY
ON THE MAKRAN COAST, 1991.

AREA	FULL TIME FISHERMEN	PART TIME FISHERMEN	NON-COMMERCIAL FISHERMEN	FISHING RELATED EMPLOYMENT	TOTAL
GWADAR	5,925	1,406	735	722	8,788
PASNI	5,220	1,360	700	612	7,892
ORMARA	2,500	700	300	850	4,350
JIWANI	1,902	370	224	76	2,572
TOTAL	15,547	3,836	1,959	2,260	23,602

Source: Fisheries Department, Govt. of Balochistan.

GDR3/SA/GP05

TABLE IV-4

LOAN DISBURSMENTS BY AGRICULTURE DEVELOPMENT BANK OF PAKISTAN FOR FISHERIES PURPOSES BY SUB-DIVISION, 1986-90

(MILLIONS OF RS.)

SUB-DIVISION	1986-87	1987-88	1988-89	1989-90	1990-91
GWADAR	2.188	3.387	4.183	5.171	7.64
PASNI	4.574	5.011	3.428	4.807	8.775
TOTAL	6.762	8.398	7.611	9.978	16.415

Source: Agriculture Development Bank Of Pakistan (ADBP)

GDR13/SA/GP05

TABLE IV-5

REGISTERED FISHING CRAFTS, 1991

TONNAGE	MECHANIZED WITH IN-BOARD ENGINE			MOTORIZED OUT-BOARD ENGINE		NON MECHANIZED SAIL DRIVEN		TOTAL
	TRAWLERS	GILLNETTER	LIFE BOAT GILLNETTER	GILLNETTER MOTORIZED	LIFE BOAT	GILLNETTER	LIFE BOAT	
nder 1 Ton	0	0	0	286	25	0	3	314
nder 1-5 Ton	0	49	0	2,116	0	96	0	2,261
nder 5-15 Ton	0	231	0	449	0	45	0	725
nder 15-25 Ton	0	275	0	196	0	13	0	484
nder 25 Ton	0	38	0	0	0	0	0	38
OTAL:	0	593	0	3,047	25	154	3	3,822

ources: Fisheries Department, Government of Balochistan.

EGFISH/SA/GDRPLNG3

TABLE VI-6

MARINE FISH AND SHELL FISH PRODUCTION,
CONSUMPTION AND EXPORTS OF THE GWADAR DISTRICT
(1990-1991)

UNITS	CONSUMED IN GWADAR DISTRICT	EXPORTED	TOTAL
QUANTITY			
Thousands of Metric Tons	9	79	88
Percentage of Total	10%	90%	100
VALUE			
Millions of Rs.	36	361	397
Percentage of Total	9%	91%	100

TBVI6/SA/GP0S

TABLE IV-7

RETAIL FISH PRICES IN TURBAT, PASNI, GWADAR AND KARACHI
(1990)

S. NO	NAME OF MARINE PROJECT	TURBAT	PASNI	GWADAR	KARACHI
1	Mackeral (GOR)	35	20	25	60
2	Large croaker				
3	Kire	35	18	20	45
4	Sooli				
5	Southern Meager	30	15	20	–
6	Pomfret Black	30	10	15	36
7	Pomfret White	35	12	15	96
8	Saram	25	10	15	24
9	Hilsashad (Palber)	20	8	10	–
10	King Soldier (Sohro)	28	20	20	–
11	Shark Fish	–	10	10	19
12	Cat Fish (Gallo)	–	6	8	12
13	Grunts (Kumpo)	25	12	15	30
14	Shrimp (Madag)	–	70	100	200

TABVI7/SA/GP05

CHAPTER V

SUPPORTING PHYSICAL INFRASTRUCTURE

A. INTRODUCTION

Adequate physical infrastructure is needed to support the production of exportable goods and services as well as to meet the needs of the growing population of the Gwadar District. This chapter reviews the current situation and makes recommendations concerning water resources, roads, communication, electricity, and air travel, focussing the recommendations on those steps that would eliminate potential physical infrastructure barriers to the growth of regional exports.

B. WATER RESOURCES

1. Introduction

At present there is an acute shortage of water throughout the Makran District. Groundwater tends to be brackish except in the vicinity of major streams. Many proposals to meet water demands have been made, but an overall master plan for water management is lacking. After providing an overview of the supply and demand for agricultural, industrial and potable water, this section includes a discussion of the preliminary results of the BALAD-sponsored electro-resistivity study, and concludes with a list of recommendations to improve supporting physical infrastructure.

2. Agriculture

Scanty rainfall, presently the main source of water, is utilized through bunding for agriculture. Wherever a green patch is seen, it is usually dependent on rainfall provided through an artificial tank which collects the rain water directly from bunding. Some tube well irrigation is seen along the Dasht River. Wells in the Kulanch and Nigwar plains are very deep and unsuitable for irrigation. Irrigation by diverting flood flows from streams and the use of storage dams is not practiced. Two dams which were constructed in the district, on Saji Kaur in Suntsar area and at Kannero Kaur in Kulanch area, are reserved for potable water use. The third dam, under construction at Akra Kaur, will supply only 0.5 cubic feet per second for agriculture use for the Nigore Sharif area.

Flood water of major rivers entering the district and flowing into the sea are described in the following sub-sections.

a. Dasht River

The Dasht River, shown in Figure V-1, is the major river of the Makran. Its main tributaries, the Nihing River and the Kech Kaur, drain 7,874 square miles in the Makran and in Iran, before joining near Nasirabad, the origin of the Dasht River. Thereafter, the Dasht River itself drains 2,850 square miles before flowing into the sea near Jiwani. The River in its lower region enters the Gwadar District. The lower catchment area of 2,850 square miles offers the prospect of supplying water to potential dam sites on the river. A dam at Mirani and alternatives have been proposed.

A storage dam at Bakri seems a viable proposition for recharge of groundwater, which is the only potable water source for the area around Suntsar, Gwadar, and Jiwani. Such a dam would also be helpful for agriculture in the Nigwar Dasht plain.

b. Savar Kaur

As shown in Figure V-2, Savar Kaur receives water from three main tributaries before entering the Chillari plain: Belar Kaur with a catchment area of 160 square miles; Chillar Kaur, 108 square miles; and the Kannaro Kaur, 26 square miles.

Kannero Kaur has already been dammed for potable water by the Public Health Engineering Department of the GOB. If the other two kaurs are also dammed by simple flood diversion work, the flat Chillari plain can be irrigated utilizing the prevailing pattern of agriculture through bunding.

By construction of a low height, overflow structure on the Savar River, the residual water from the upper three tributaries can be spread to the upstream side of the gorge; this is flat land with a minor slope. By means of a conduit in the main body of the dam and construction of a simple diversion weir at the downstream end of the gorge, water can also be spread, simultaneously, to the fields on the seashore.

c. Shadi Kaur

This kaur is one of the biggest rivers in the District, draining 1,367 square miles, as shown in Figure V-2. Shadi Kaur is the only source of potable water for the Town of Pasni; a pipeline connects the town with a tubewell sunk along its course about 10 km upstream of its outfall into the sea. Unfortunately, the land in its valley is not suitable for flood irrigation. Cultivation depends on tubewells sunk along the banks of the kaur.

There are two promising potential dam sites, one at Talosunt, 20 km from Pasni, and one at Joran, 32 km from Pasni. Joran is ideal for large water storage by diversion of the flood water to the Chillari-Kullanch plain on the west of the kaur. The diversion can be accomplished by tunnelling, or tunnelling and lifting, through the soft rock in between the source and the area for cultivation. This diversion can annually irrigate approximately 50,000 acres on the Chillany-Kullanch plain.

Similarly, by diversion of the flood flows to the Shinzani Kaur on the west side, a dam on the Talosunt site can irrigate vast areas along the coast.

d. Basol Kaur

Basol River, shown in Figure V-3, is located at the eastern end of the district, 42 km from the Town of Ormara. The river drains 1,017 square miles, most of which is in the Khuzdar District. Groundwater around Ormara is brackish except along the banks of the Basol Kaur, which is the only source of water for domestic use for the Town of Ormara and surrounding villages. There are nine wells dug along the left bank of the kaur. Water is being pumped from only one well, as the existing pipeline does not have adequate capacity. Coastal winds blow continuously in this region, which suggests the possibility of using windmills for pumping water. This could help to alleviate the shortage of potable water and contribute to agricultural development in the vicinity, where good agricultural land is available.

A storage dam a few kilometers upstream of the existing pumping site could serve a dual purpose: recharge the aquifer which supplies potable water, and provide water for irrigating agricultural land on both banks of the kaur.

3. Industrial Demand for Water

The Gwadar Fish Harbor is projected to require water supply of 150,000 gallons per day. The Pasni Fish Harbor will also require significant water resources.

4. Potable Water

a. Water Supply Proposals

Demand for potable water far exceeds the available supply in the Gwadar District. Supply is presently being provided from damming runoff in the local streams and pumping groundwater along the south-western part of the Dasht River, near Suntsar, for Gwadar town and surrounding villages. Similarly, demands of the Towns of

Pasni and Ormara and surrounding villages are being met from the groundwater resources along Shadi Kaur and Basol Kaur, respectively. The gravity of the potable water supply situation will be partially relieved by the construction of Akra Kaur dam 37 miles east of Gwadar town.

There are at present some 32 actual and proposed water supply schemes of different magnitude and nature (Figure V-4). There are three major networks in the district, servicing the Towns of Gwadar, Pasni, and Ormara and their respective surrounding villages. With the exception of Pasni, they have excessive demands relative to their design capacity, and the pipelines are not meeting their designed flow due to faulty construction or improper design.

The Gwadar water supply network, which extends from Suntsar to Gwadar and surrounding villages, is in the worst position. The Public Health Engineering Department proposes to run a second pipeline 64 km in length from Suntsar to Gwadar, parallel to the existing pipeline, although the present system will mostly be replaced by Akra Kaur dam water supply system currently under construction. According to the Public Health Engineering Department, the pattern of rainfall in the Makran, especially around the Town of Gwadar, justifies the maintenance of both systems to cover all eventualities. The difficulty of the situation and the complexity and high cost of the GOB's proposals justify a detailed and comprehensive study of the Town's water situation and a full analysis of alternative solutions, including the likely impacts of the Akra Kaur Dam.

The Ormara water supply system is not functioning properly. The pipeline is not meeting its designed capacity. This system also needs detailed study, and is likely to require remodelling.

The Government of Pakistan, with assistance from the World Bank and CIDA, has planned to spend Rs. 2,861 million on water supply, sanitation and health improvements in the rural areas of Balochistan from 1990 to 1998, of which Rs. 15.4 million is allotted to the Gwadar District. According to the plan, the Government of Pakistan is trying to meet 100% of domestic water use requirements by 1998.

b. BALAD's Electro-Resistivity Survey

In mid-1989, the BALAD Water Engineer visited Kulanch valley to assess the feasibility of laying pipe worth approximately Rs. 10 million to supply potable water for numerous villages in the valley. Water would be brought from an existing dam on the Konnaro Kaur. During the visit, traces of groundwater were found in the valley; it was therefore considered advisable to search for available groundwater in the valley for domestic use, instead of incurring the high costs of piping and boosting stations.

BALAD commissioned an electro-resistivity survey of key coastal areas. With the financial support of BALAD, the Geological Survey of Pakistan (GSP) recently completed the field work portion of an Electro-Resistivity Survey of the Gwadar District. Using electro-resistivity technology, sources of potable water were sought. The survey was initiated in early September 1991, and completed at the end of October. Preliminary results of the survey are provided in this report; the final report is anticipated in December 1991.

Before starting the survey in the field, a team of experts from GSP and BALAD carried out a reconnaissance survey of the Gwadar District. Six areas of interest for groundwater probing by electro-resistivity were identified: Jiwani, Gwadar, Nalaint, Kalag and Ormara. During the selection of the areas of interest, due consideration was given to the centers of population for which potable water was required.

Some of the groundwater sources identified show promise. Preliminary information from the survey suggests that there are two water-bearing strata at almost all sites. The upper one is at a depth ranging from 50 to 100 feet, and the lower one lies at 150 to 250 feet. Positive results were observed at the following sites:

1. South-west of Suntsar along Dasht Kaur
2. Dahran area in Jiwani
3. Usman Bazar in Gwadar
4. Kapper Kaur area near Nalaint
5. Kandosol in Kulanch Valley
6. Kajero Kaur in Kulanch Valley
7. Tolgi, north of Ormara
8. Basol Kaur west of Ormara

GSP's final report will present and analyze the survey results in detail.

5. Overview of Water Needs and Institutions Currently Involved in Water Development and Management

At present, several departments of the GOB are involved in water development and management, including the Irrigation Department, On-Farm Water Management, and Public Health Engineering. No single agency provides guidance to achieve the rational use of the region's scarce supply of water.

Future needs of the district could be great, as the need to reduce the pressure of cargo ships on the port at Karachi and increased naval requirements will lead to new ports development on the Makran Coast. This will also encourage industrialization of the existing towns and the new ports areas. These factors should be accounted for in a water resources planning study.

In summary, the existing shortage of water in the Gwadar District is growing more acute as population and economic activity increase. Many proposed solutions need to be analyzed to determine their compatibility. There may be competing demands for the same supply of water in a number of cases. The various agencies involved in the development and management of water are not fully coordinated.

6. Recommendations

The following actions are recommended to accomplish the rational development and management of water resources in the Gwadar District:

- Public and private sector decision-makers should recognize that provision of adequate water in the Gwadar District will be a complicated and costly undertaking.

- A single regional agency for developing water resources is needed. The agency need not manage all water resources, but it should have broad powers to coordinate the exploitation of scare water resources by multiple organizations. The GOB should consider establishing a Gwadar District Water Management Advisory Committee (WMAC), which would be chaired by the Deputy Commission for the Gwadar District. The functions and structure of the Committee would be similar to those set forth in the BALAD report **"Water Management Advisory Committee: A Concept Paper,"** Louis Berger International, Inc., March 1991.

- A Gwadar District Master Plan for the Development and Management of Water Resources should be prepared by a team of water resource specialists. The scope of work for the study should include:

  - An assessment of present as well as future water requirements of the district for agriculture, industrial and domestic uses.

  - An evaluation of existing water resources, potential strategies for harnessing them, and the time period up to which the present resources can be utilized. Clearly spell out required additional resources for the anticipated future requirement of water.

  - The design of the required network of water supply for domestic as well as agricultural uses, to meet anticipated future needs for all parts of the district. The implementation and construction of the proposed infrastructure in each region should be phased according to the time lag between present uses and anticipated future demands.

- The Master Plan should be prepared under the direction of the GOB. To assist it with the Master Plan, the GOB should constitute a group of experts consisting of appropriate technical specialists from the water-related line agencies. If the Gwadar District WMAC is formed, the group of experts would be drawn from its membership; guidance to the Master Plan would be a function of the WMAC. Work on the Gwadar District Master Plan should take place in the first months of 1992, given the urgent shortage of water throughout the District.

- Should a District-wide approach be difficult to undertake quickly, the GOB should give priority to preparation of a Master Plan for the Tehsils of Gwadar and Jiwani, due to their long-standing needs for potable water and the projected demand from the Gwadar Fish Harbor.

- The GOB should implement the recommendations in the final report on the Gwadar District Electro-Resistivity Study concerning possible additional sources of potable water. The report will propose test boring at a number of sites to assess the quantity and quality of existing groundwater reserves.

C. ROADS

1. Description and Traffic Counts for Major Roads

There are 815 kilometers of primary roads and 661 kilometers of rural roads in the Gwadar District. Figure V-5 shows the road network in Makran Division including Gwadar District. Table V-1 lists the Primary and Rural Roads in Gwadar District. There are no Secondary Roads in the district. Moreover, except in towns and their vicinity, there are no paved roads.

The main entrance to the district is through Turbat, the divisional headquarters. The distance from Turbat to Gwadar town (district headquarters) is 184 km. The road is in fair condition and it takes about 4.5 hours to drive from Turbat to Gwadar. One can also enter the district through Ormara from Karachi, however, this road is in poor condition. From the border town of Mand in Turbat district, one can also come to Gwadar District via the Mand-Jiwani Road.

The main artery in the district linking the major district towns is Jiwani-Gwadar-Pasni-Ormara Road. The entire link from Jiwani to Ormara is in fair condition, except a stretch near Ormara which is in poor condition. From Jiwani to Gwadar the distance is 85 km and it takes about two hours to drive. From Gwadar via Nalaint to Pasni the distance is 73 km and the driving time is about 1.5 hours. From Pasni to Ormara the distance is 163 km and the travel time is about four hours.

To prioritize any road system for rehabilitation and upgrading, many factors are involved. These important factors include traffic counts, road inventories, road condition, population served, and commercial activities. Unfortunately, sufficient data related to these factors for Gwadar district roads is not available. The data available related to road inventories, traffic counts and road condition is for 1990 and 1991 only. This data was collected by the BALAD Project team. The summary of the average daily traffic (ADT), road condition ratings and inventories of all the primary roads leading to and within Gwadar district are listed in Tables V-2, V-3, and V-4, respectively. Annex 3 to this report presents the detailed road inventory. Traffic counts and road condition ratings are also shown in Figures V-6 and V-7, respectively.

The Communication and Works Department (C & W) is responsible for the improvement and maintenance of the entire road network. Currently, a stretch of about 20 km at Gwadar end of Turbat-Gwadar Road is under construction, including drainage structures and black topping. After the construction of this stretch, a single-lane blacktopped road will be available from Km 155 of the Turbat-Gwadar Road to Gwadar town.

USAID has also funded the improvement/rehabilitation and maintenance of the road network in the Makran Division under the BALAD Project. The Turbat-Gwadar Road and Turbat-Pasni Road have been rehabilitated/maintained under the program.

In view of the expected increase in commercial activities in Gwadar and Pasni towns due to the construction of fish harbors and their planned extensions, and the Akra Dam, most of the primary roads in the district need rehabilitation/upgrading.

2. Recommendations

a. Summary

The following major recommendations are made:

- For all road construction and maintenance work in the Gwadar District, C & W should adhere to the road standards for different classes of roads developed by BALAD and adopted by C & W.

- C & W should implement in the Gwadar District the Makran-wide recommendations made by BALAD concerning establishing and operating a data collection system for traffic counts and road conditions.

- The GOB should establish priorities for rehabilitation and upgrading work for segments of the 815 kilometers of primary

roads in the region. Based on preliminary information and analysis, the priorities shown in Table V-5 are recommended. The total capital cost would be Rs. 5,660 million.

- C & W should provide maintenance, at least once a year, to each of the 661 kilometers of rural roads at an estimated operational cost of approximately Rs. 330,500 per year, focussing on increasing access to centers with urban functions (as discussed in Chapter III).

b. Upgrading Primary Roads and Maintaining Rural Roads

The balance of this sub-section provides more detailed recommendations for upgrading Primary Roads and maintenance of Rural Roads. The primary roads of the district were prioritized for rehabilitation/upgrading on the basis of available data. The priority of any road may change if indicated by new data that becomes available. Only sections of many of these roads are located in Gwadar district, but any improvement program taken up should be planned for the entire road to achieve the expected objectives. In other words, planning should take into account that the roads of the Gwadar District are linked to the rest of the Makran, which in turn is linked to the rest of Pakistan.

- Turbat-Gwadar Road (PR-3)

This road starts from the intersection of Airport VIP Road and the Main Bazaar Road in Turbat, then proceeds south to the intersection of the Turbat-Pasni Road near Jamewang, then west to Berichah, near Talar Gap, then south to Nalaint/Kappar, east to the intersection of the Gwadar-Suntsar Road, and south to the Gwadar City boundary line, a distance of approximately 184 kms.

From the data presented in Tables V-2, 3 and 4, it can be concluded that though this road is rated as in fairly good shape, with reference to traffic and inventory (nullah crossings and terrain) this road becomes a top priority for improvement and upgrading. Further to this, it should also be a priority because presently it is the major road which links the Gwadar city not only with the Divisional Headquarters (Turbat), but also to other parts of the country. In view of the construction of fish harbor and mini-port at Gwadar, this road attains more importance. It appears that because of anticipated major commercial activities in the near future, the Government of Pakistan (with the assistance of the Japanese Government) has not only taken up this road for design and construction to international standards, but has also decided to link it with Indus Highway (alternate artery from north to south Pakistan).

- **Coastal Link**

The coastal link (Jiwani-Gwadar Road, Gwadar {Nalaint}-Pasni Road, Pasni-Ormara Road and Ormara-Karachi Road) is also important, not only with reference to the data presented in Tables V-2, 3 and 4, but also because of the fishing and other commercial activities at Gwadar and Pasni, as well as from strategic and defense points of view.

The Jiwani-Gwadar Road (PR-10) starts at the intersection with the Gwadar-Suntsar Road near Akra, and proceeds west and south to the intersection with the Jiwani-Mand Road near Bandi, a total distance of approximately 65 kilometers.

The Gwadar (Nalaint)-Pasni Road (PR-7) starts from the intersection with PR-3 (Turbat-Gwadar Road) north of Nalaint, and proceeds east to the Pasni city boundary, a distance of approximately 73 kilometers.

The Pasni-Ormara Road (PR-6) starts at the intersection with PR-4 (Turbat-Pasni Road) approximately 15 kilometers north of Pasni, and proceeding east to Ras Ormara, then northeast to Makran Division boundary line near Ghaz-ab, a total distance of approximately 163 kilometers.

Beyond Ghaz-ab though the road leading towards Karachi is not within the district boundary, it is important to improve this section to have a through access to Karachi, the main commercial center of the country.

- **Pasni-Hoshab Road (PR-5)**

This road begins at the intersection with PR-4 (Turbat-Pasni Road) approximately 35 kilometers north of Pasni, near Ghulaman-e-Bent, then north and east to Hoshab, a distance of approximately 95 kilometers. Presently only a camel track exists here. No data is available on counts, condition and inventory. Nevertheless, this road should be a high priority for upgrading and improvement to link it with other parts of the country and facilitate the transportation of fish from Pasni.

- Turbat-Pasni Road (PR-4)

The Turbat-Pasni road starts at the intersection with PR-3 (Turbat-Gwadar Road) near Jamewang, then travels east to Pidarak, south and east to Ghulaman-e-Bent, then south to the Pasni boundary line, a distance of approximately 103 kilometers. Given the road condition, traffic volume and nullah crossings, this road has lower priority for improvement and upgrading than the above-mentioned roads. The improvement will facilitate linkage of Pasni with

Turbat, as well as other western and northern parts of the Makran Division.

- **Gwadar-Suntsar Road (PR-9)**

The entire **Gwadar-Suntsar** road is located in Gwadar District. It starts at the intersection with PR-3 (Turbat-Gwadar Road), approximately five kilometers north of Gwadar, then north and west to the intersection with the Jiwani-Mand Road near Suntsar, a distance of approximately 70 kilometers. Although the traffic volume on this road is higher than all the other primary roads in the district except Turbat-Gwadar Road, the priority for improvement work on this road is low. Most of the traffic on this road does not traverse through the entire road, and the road is not important for commercial activities.

- **Rural Roads**

Routine maintenance of rural roads should continue on a year round basis to facilitate the transportation of people and goods to and from district towns. The estimated cost of such maintenance is approximately Rs. 500 per kilometer. Assuming each of the 661 kilometers is maintained once per year, the total annual cost for rural road maintenance would be Rs. 330,500.

D. COMMUNICATIONS

1. Existing Facilities

Telephone services are available to only about six percent of the households in the Gwadar District, as shown in Table V-6. There are only about 300 commercial connections in the District as a whole. Figure V-15 shows the communications services available in the district.

2. Recommendations

- The Government of Balochistan should make projections of the communication needs of fisheries-related industries, as these are essential to the economic growth of the region. An assessment should also be made of the potential communications needs of the tourism industry, should interventions be undertaken to improve the tourism sector.

- The Government of Balochistan should develop a plan to meet anticipated communications services and facility requirements in order that poor communications do not become obstacles to

the growth in the production of exportable goods and services. The plan should cover such forms of communication as telephones, facsimile and telex services both for intra-Pakistan and international communication.

- The Government of Balochistan, in coordination with the private sector, should begin to implement its plan for the improvement of coastal communication.

E. ELECTRICITY

1. Existing Situation

With the exception of Pasni, most parts of the Gwadar District have either no electricity or electricity supplied for only part of each day. As shown in Table V-7, the Water and Power Development Authority (WAPDA) operates generators in each of the four Tehsils, but over 80% of the total capacity is in the new power generation station near Pasni. Electricity in the other Tehsils is supplied only for a portion of each day. About one third of the urban population has access to electricity, but only two percent of the rural population enjoy such access. WAPDA's current plans call for the present surplus power of the Pasni plant to be utilized by extending the distribution network to other parts the District, including the Town of Gwadar, as well as by extending the line westward from the existing sub-station in Turbat.

2. Recommendations

- WAPDA should estimate the actual and potential future demands for electricity arising from expansion and development of the fishing industry, its suppliers and fish processors, as well as from the possible development of tourism.

- In its program to increase capacity and extend its network, WAPDA should give high priority to those demands which are related to regional exports.

F. AIR TRAVEL

1. Existing Situation

Commercial airline service in the Gwadar District is provided by Pakistan International Airlines (PIA) to airports in Gwadar, Pasni, Ormara, and Jiwani. As shown in Table V-8, there are 40 scheduled flights per week to those four airports and thus a total of 80

scheduled flights per week into and out of the district.

Of the four airports, only Pasni's has a long enough runway to accommodate jet aircraft; the rest can handle propeller aircraft. PIA relies heavily in the region on its propeller-driven Fokkers, most of which have many years of service. Compared to PIA's jet service, for example flights between Karachi and Quetta, the Fokker flights to the Gwadar District are less pleasant.

Of the 40 weekly flights to the region, 18, or almost half, go to the airport serving the Town of Gwadar; followed by Pasni's airport with 16. Most of the flights to Gwadar and Pasni are from other cities in Pakistan, notably, Turbat and Karachi. Gwadar's airport is an international airport with three flights weekly from Oman. Ormara and Jiwani have only three incoming flights per week.

2. Recommendations

- The Government of Balochistan, in coordination with the private sector, should project the air travel demands of existing and potential regional exporters of goods and services. Tourism in particular would be dependent on the frequency, convenience and comfort characteristics of airline service provided. Some tourists and even some business people could be dissatisfied by the present level of service provided by the older Fokker aircraft. PIA may need to obtain newer aircraft to provide service that is fully responsive to future tourism and business demands.

- In its investment promotion efforts, the Government of Balochistan should take appropriate steps so that inadequate air transportation services do not become an obstacle to the region's development.

TABLE V-1

GWADAR DISTRICT ROAD NETWORK

SUMMARY SHEET

ROAD CLASS	TOTAL NO.	TOTAL KMS.
PRIMARY	7	815
RURAL	10	661
	GRAND TOTAL	1476

PRIMARY ROADS

NO.	NAME	LENGTH IN KMS
PR-03	TURBAT-GWADAR ROAD	184
PR-04	TURBAT-PASNI ROAD	103
PR-06	PASNI-ORMARA ROAD	163
PR-07	NALAINT-PASNI ROAD	73
PR-09	GWADAR-SUNTSAR ROAD	70
PR-10	GWADAR-JIWANI ROAD	65
PR-11	JIWANI-MAND ROAD	157
PR-05	PASNI-HOSHAB ROAD	95
	TOTAL	910

SECONDARY ROADS

NO SECONDARY ROAD IN THE DISTRICT

RURAL ROADS

NO.	NAME	LENGTH IN KMS
RR-05	BALNIGORE-KULMIR SUNT ROAD	65
RR-06	GWAR MANZIL-SUNTSAR ROAD	35
RR-07	BAKRI-GABD ROAD	60
RR-08	KULDAN-OKAR ROAD	100
RR-09	BALOR-GWADAR ROAD	65
RR-10	CHHABBAWARI-PASNI ROAD	83
RR-13	NALAINT-GHULAMAN-E-BENT ROAD	75
RR-14	KANDASOL-PASNI ROAD	48
RR-17	RAMBRA-ORMARA ROAD	85
RR-18	GADAG-I-BENT-ORMARA ROAD	45
	TOTAL	661

GPRDSYDX/QH-RM06.

TABLE V-2

SUMMARY

TRAFFIC COUNTS

(GWADAR DISTRICT PRIMARY ROADS)

PRIMARY ROAD NO.	ROAD NAME	1983 *	1990				1991			
			MB	LV	HV	TOTAL	MB	LV	HV	TOTAL
3	TURBAT-GWADAR	65	74	87	69	230	87	134	52	273
9	GWADAR-SUNTSAR	-	32	30	21	82	58	90	4	152
4	TURBAT-PASNI	20	21	48	35	104	32	61	27	120
10	GWADAR-JIWANI	50	-	-	-	-	23	17	22	62
6	PASNI-ORMARA	25	6	21	15	41	16	30	10	56
11	JIWANI-MAND	30	-	-	-	-	25	21	5	51
7	NAILANT-PASNI	25	10	18	10	37	25	18	5	48
5	HOSHAB-PASNI				CAMEL TRACK					

*Source: BALAD Project Paper

MB = Motor Bikes
LV = Light Vehicles
HV = Heavy Vehicles

TCGWDSUM/OH-RM10

TABLE V-3

SUMMARY OF
ROAD RATING CONDITION SURVEY

(GWADAR DISTRICT PRIMARY ROADS)

ROAD NO.	ROAD NAME	RATING (%)
PR-7	NALAINT-PASNI	73
PR-3	TURBAT-GWADAR	73
PR-9	GWADAR-SUNTSAR	72
PR-4	TURBAT-PASNI	67
PR-10	GWADAR-JIWANI	67
PR-6	PASNI-ORMARA	61
PR-11	JIWANI-MAND	55
PR-5	HOSHAB-PASNI	N/A

NOTE: RATING > 80% Good Road
" < 80% Requires Rehabilitation.

GPSUM/QH-RM09.

TABLE V-4

SUMMARY OF

ROAD INVENTORY

(GWADAR DISTRICT PRIMARY ROADS)

S.NO	ROAD NAME	AVERAGE ROAD WIDTH (m)	GENERAL TYPE OF TERRAIN	GENERAL TYPE OF SOIL	NO. OF NULLAH CROSSINGS	
					MAJOR NULLAH	MINOR NULLAH
1.	TURBAT-PASNI	8.5	R	Silty Soil	71	86
2.	TURBAT-GWADAR	8.5	P/R	Silty Soil	77	226
3.	GWADAR-JIWANI	7.5	P	Silty and Sandy clay	5	19
4.	NALAINT-PASNI	8.0	P	Silty Soil	19	79
5.	PASNI-ORMARA	7.0	P	Silty Soil	50	162
6.	GWADAR-SUNTSAR		) Road Inventory not done			
7.	JIWANI-MAND		)			
8.	HOSHAB-PASNI		CAMEL TRACK			

NOTE:

Major: width > 20 m
Minor: width < 20 m
P: Plain
R: Rolling
P/R: Plain to Rolling

SUMRDINV/IMT-RM10.

TABLE V-5

ESTIMATED COST FOR REHABILITATION/UPGRADING OF GWADAR DISTRICT PRIMARY ROADS

PRIORITY NO.	NAME OF ROADS	LENGTH (km)	ESTIMATED COST AS OF 1991 (in million rupees)
1.	* Turbat-Gwadar Road	184	1,100
2.	Coastal Link		
	* i) Nalaint (Gwadar)-Pasni Road	73	440
	$ ii) Jiwani-Gwadar Road	65	260
	$ iii) Pasni-Ormara Road	163	650
	$ iv) Ormara-Karachi Road	325	1,300
3.	$ Pasni-Hoshab Road	95	380
4.	* Turbat-Pasni Road	103	620
5.	# Gwadar-Suntsar Road	70	280
6.	# Jiwani-Mand Road	157	630

* Black-topped two-lane standard highway with adequate drainage structures.

$ Two-lane shingle road (10 meters wide) with necessary drainage structures. Black-topped road will be necessary by the end of year 2000.

\# Two-lane shingle road (10 meters wide) with adequate drainage structures.

RDGWPLTB5/QH-RM10

TABLE V-6

URBAN AND RURAL HOUSEHOLD UNITS WITH ACCESS TO TELEPHONE IN GWADAR DISTRICT

1991

GWADAR DISTRICT	HOUSEHOLD UNITS 1981 CENSUS	HOUSEHOLD UNITS WITH ACCESS TO TELEPHONE	
	NUMBER	NUMBER	%
URBAN	6,806	740	11
RURAL	10,371	272	3
TOTAL	17,177	1,012	6

Source: Telephone and Telegraph Department, Gwadar District.

T&T/SA/GP05

TABLE V-2

WAPDA GENERATOR CAPACITY AND
WORKING HOURS OF GWADAR DISTRICT

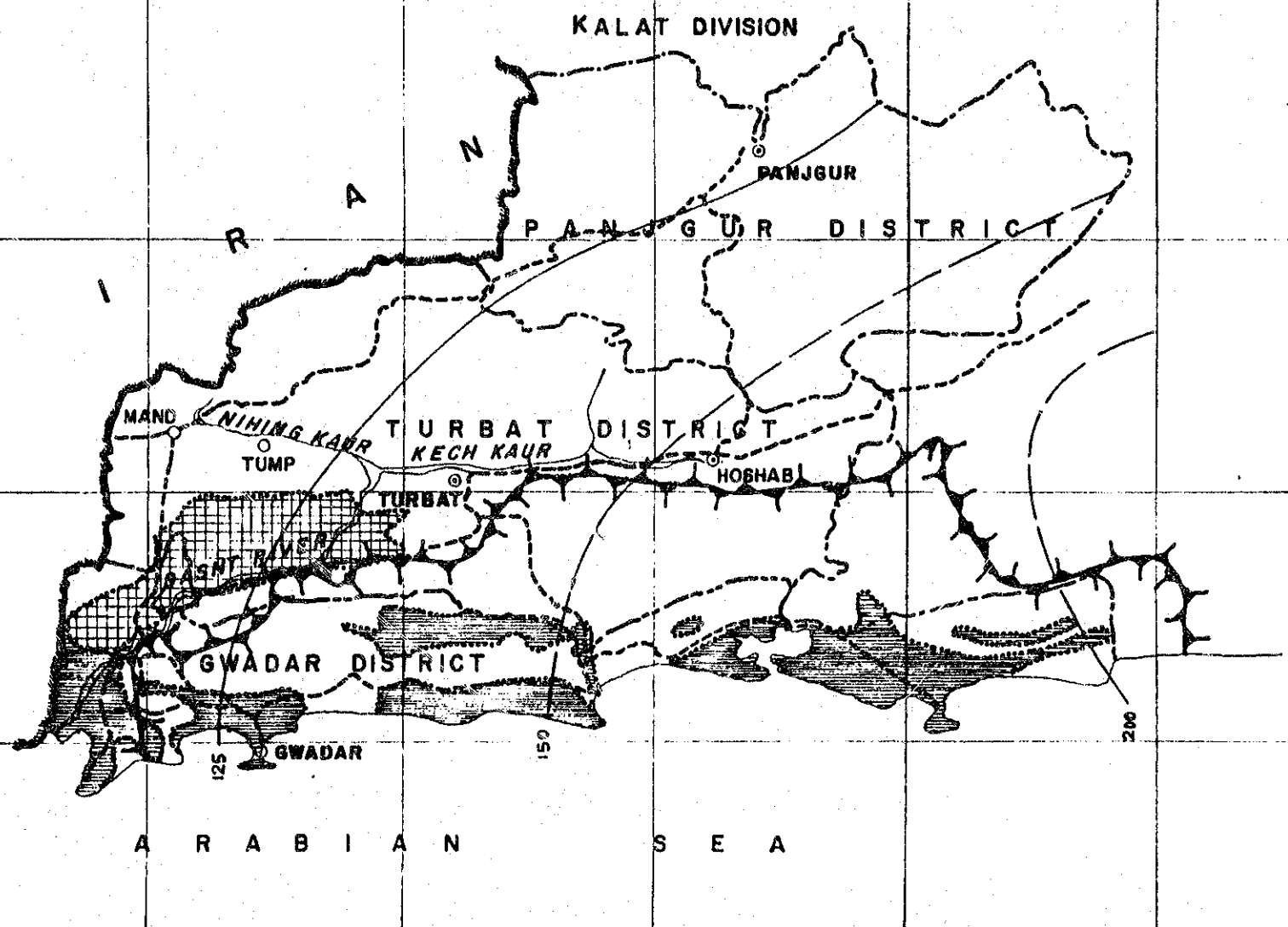
	GWADAR TEHSIL	JIWANI TEHSIL	PASNI TEHSIL	ORMARA TEHSIL	TOTAL
GENERATOR CAPACITY	2,220 KW 2.220 MW	657 KW 0.657 MW	18,000 KW 18.000 MW	720 KW 0.720 MW	21,597 KW 21.597 MW
PERCENT OF TOTAL CAPACITY	10.4	3%	84.3%	3.3%	
WORKING HOURS	12 HOURS DAILY (DAY OR NIGHT)	12 HOURS DAILY (DAY OR NIGHT)	24 HOURS	8 HRS DAILY = SUMMER 6 HRS DAILY = WINTER	

NOTES : KW = Kilowatt
MW = Megawatt

WAPDA2CO/TM/C:LR2

FIG-V-1

GROUND WATER RESOURCES OF GWADER DISTRICT



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LEGEND

- MAIN SURFACE WATER DIVIDE
- SHALLOW GROUND WATER DEPTH RANGES FROM 15 To 30m WITH 1000 PPM
- DEEP GROUND WATER RESOURCE WITH YIELD LESSER THAN 10m³/hr.
- ROADS
- DISTT. BOUNDARY
- INTERNATIONAL BOUNDARY
- ISOHYETAL CONTOUR(mm) INTERPOLATED/ EXTRAPOLATED ISOHYETAL CONTOUR(mm) (150, 200)

TABLE V-8

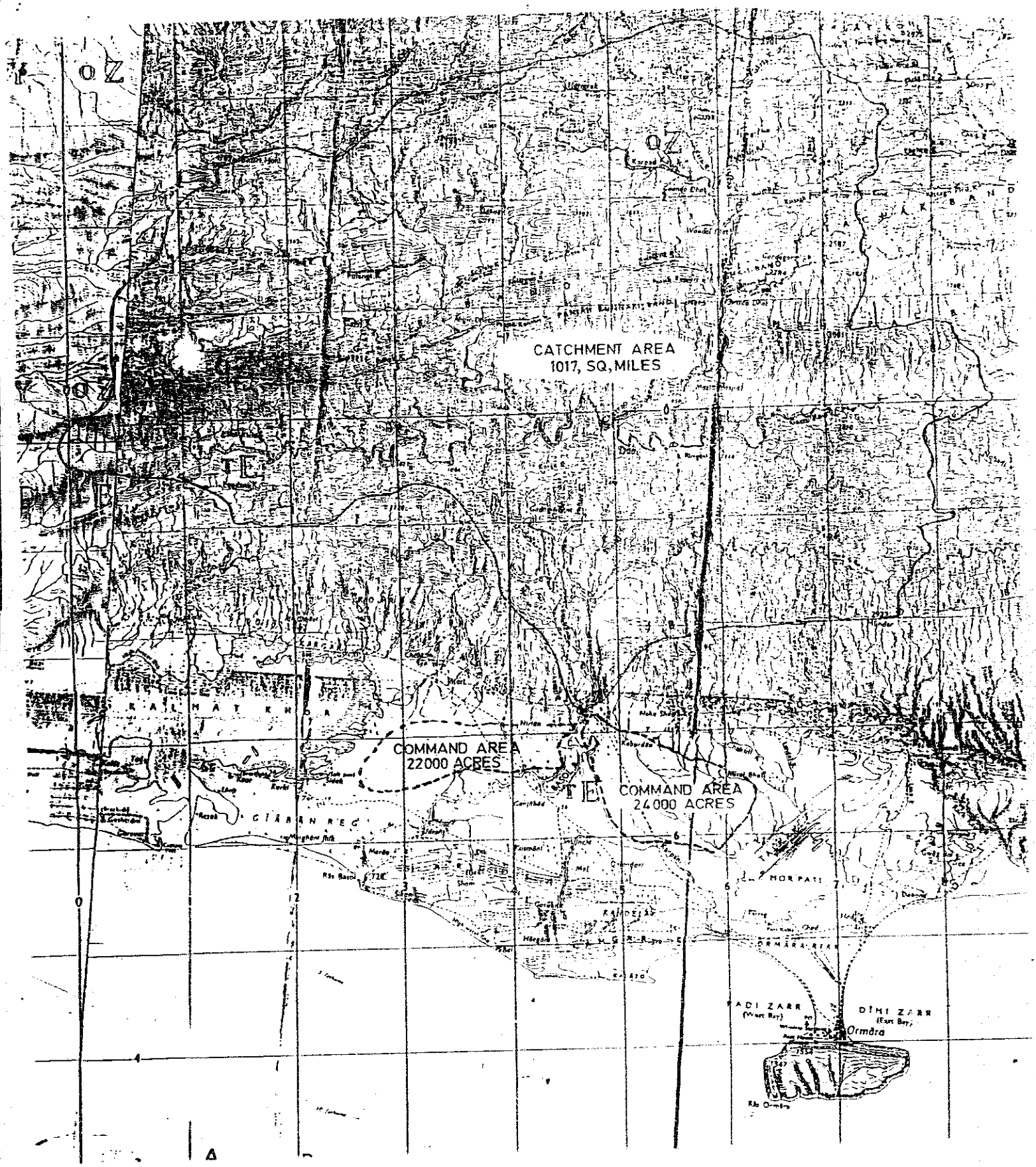
PIA FLIGHTS PER WEEK

FROM / TO	GWADAR	PASNI	ORMARA	JIWANI	OTHER CITIES IN PAKISTAN	OUTSIDE PAKISTAN	TOTAL
GWADAR	x	2	-	1	12	3	18
PASNI	2	x	1	-	13	-	16
ORMARA	-	1	x	-	2	-	3
JIWANI	1	-	-	x	2	-	3
OTHER CITIES IN PAKSITAN	12	13	2	2	x	x	29
OUTSIDE PAKISTAN	3	-	-	-	x	x	3
TOTAL	18	16	3	3	29	3	72

Note: Gwadar-Turbat-Karachi flight = 1 flight

Source: Pakistan International Airlines

PIAPRWK/SA/GP05



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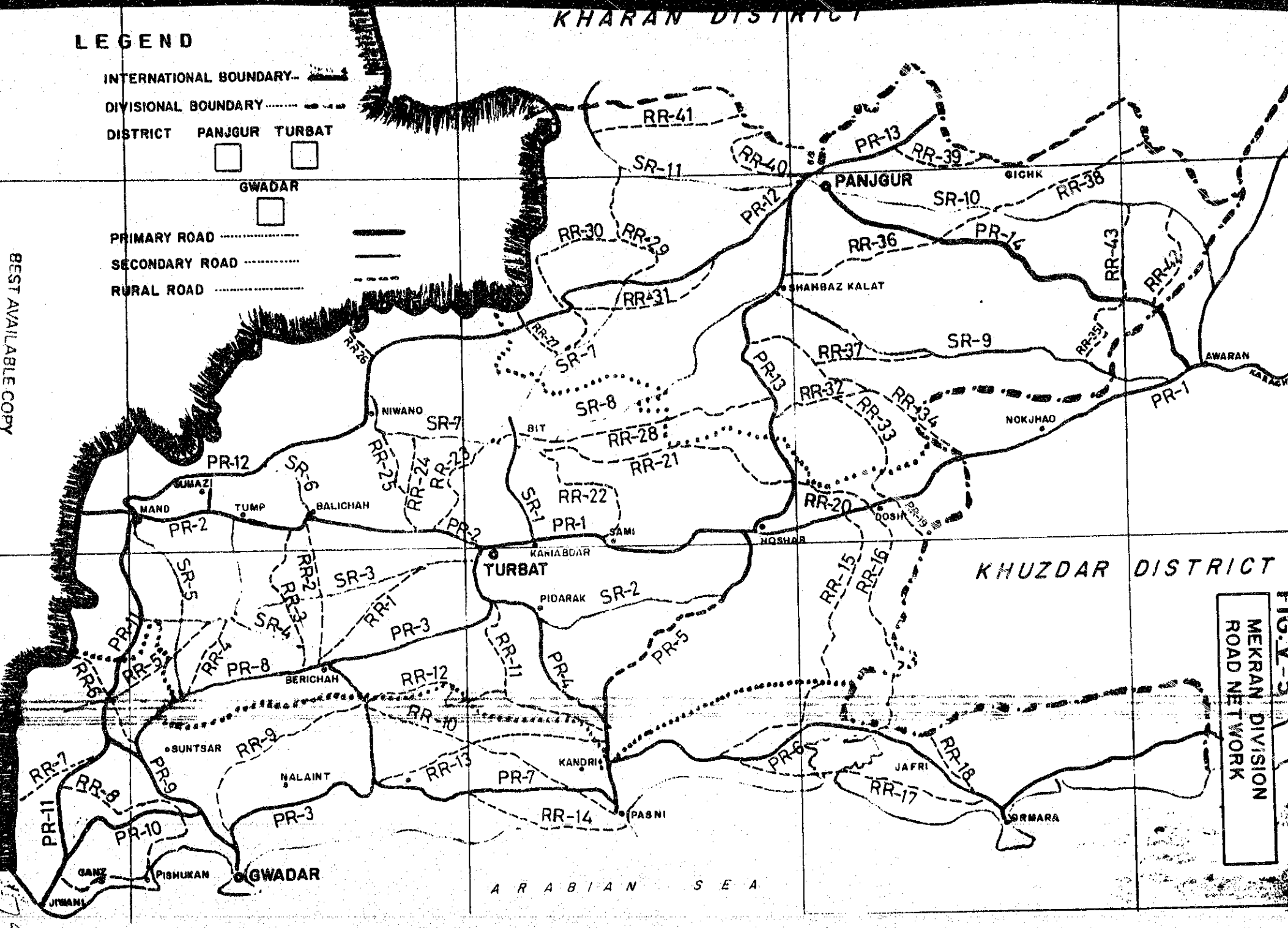
KHARAN DISTRICT
LEGEND
INTERNATIONAL BOUNDARY
DIVISIONAL BOUNDARY
DISTRICT PANJGUR TURBAT
GWADAR
PRIMARY ROAD
SECONDARY ROAD
RURAL ROAD
PANJGUR
GICHK
SHANBAZ KALAT
AWARAN
NOKJHAO
NIWANO
BIT
GUMAZI
MAND
TUMP
BALICHAH
SAMI
KANIABOAR
TURBAT
HOSHAB
DOSIH
PIDARAK
BERICHAH
SUNTSAR
NALAINT
KANDRI
PASNI
JAFRI
ORMARA
GANZ
PISHUKAN
GWADAR
JIWANI
ARABIAN SEA
KHUZDAR DISTRICT
MEKRAN DIVISION ROAD NETWORK
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COMMUNICATION SYSTEM OF GWADAR DISTRICT

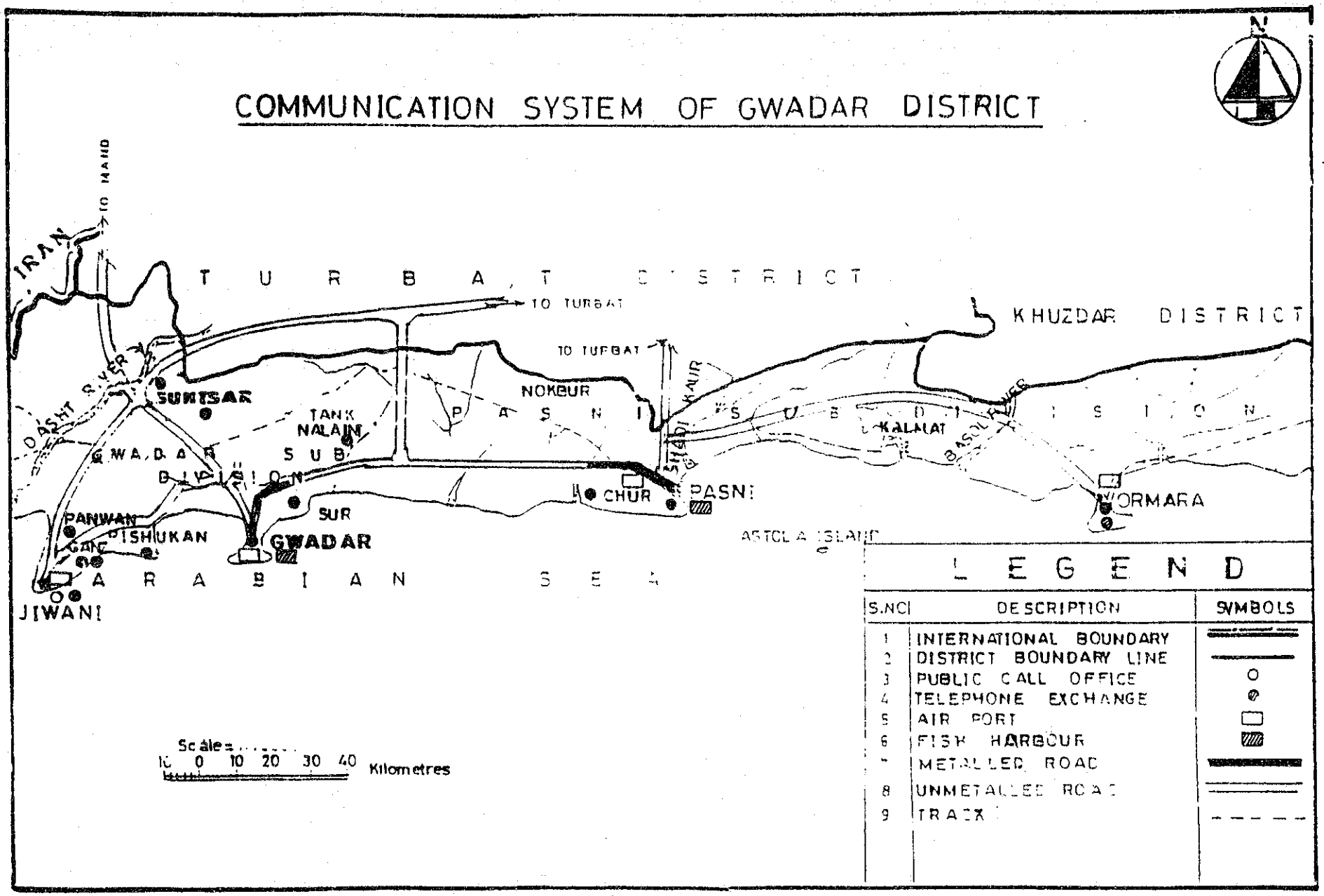

FIGURE V-8

CHAPTER VI

SUPPORTING SOCIAL INFRASTRUCTURE

A. INTRODUCTION

This chapter discusses the health and educational infrastructure of the Gwadar District. Consistent with Economic Base Analysis methodology described in Chapter II, the recommendations are oriented primarily toward the support which social infrastructure can give to exports.

B. HEALTH SERVICES

1. Current Situation

There are major health problems in the Gwadar District, as in the rest of the province and of Pakistan, including high infant mortality. Health facilities in Baluchistan treat a wide range of ailments. Diarrhea, malaria, and whooping cough are the three most frequently cited problems of the treated patients; water born diseases are common. Some of the prevalent problems are those often associated with unsanitary environmental conditions or practices. Further investigation is needed to determine the impacts of health problems on the production of the region's exports.

Although health care has improved in recent years, very serious deficiencies remain. In the region there is only one hospital in the Town of Gwadar, three rural health centers, 16 basic health dispensaries, and four civil dispensaries (Table VI-1). Of the 24 total health facilities, 15 are in the Gwadar Sub-division and nine in the Pasni Sub-division. This divisional mix is consistent with the heavier patient load (63 % of the District) in the Gwadar Sub division (Table VI-2). In 1990-91 the health facilities of Gwadar District had 322,555 patients, of which over 216,000 were male and over 106,000 female (Table VI-2).

Health services are mostly provided on an outpatient basis. In the Gwadar District Headquarters Hospital, 60,946 of the 62,806 patients into 1990-91 were outpatients, as shown in Table VI-3, in part because the hospital has only 20 beds. The patients of the Rural Health Centers are also predominantly out patients (Table VI-4); all of the patients in the two other kinds of facilities were out patients (Tables VI-5 and VI-6).

The Health Department has increased its immunizations in recent years with the help of UNICEF and WHO. In 1990-91, over 5,000

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patients received the third stage of both the polio and DPT vaccines (Table VI-7).

To serve a population of over 112,000, there are few medical staff from either the public sector or the private sector (Table VI-8). There are only 11 public sector doctors for the entire region. Some "private sector" doctors are the "public sector" doctors with private practices. In the Gwadar District there is an average of one doctor for every 10,000 people and one health facility for every 5,000 people. District health facilities are indicated in Figure VI-1. Because of the inadequate facilities and the shortage of staff, those who can afford to do so go to Karachi for treatment of their more serious ailments.

In short, the health of the population of the Gwadar District suffers because of the poor health care facilities, the severe shortage of medical staff, and, for the rural population, time consuming and difficult access to health care services and facilities.

2. Recommendations

- The Government of Baluchistan should investigate impact that health problems may have on the output and efficiency of exporters in the Gwadar District.

- Some of the health care budget of the GOB should be targeted to overcome health care obstacles to increasing regional exports.

- Simply from the perspective of human welfare, the GOB needs to take many vigorous steps to improve the health of the people of the Gwadar District. A host of measures are necessary to improve primary health care, hospital care, potable water supply, and environmental sanitation. The measures should include better health facilities, supplies, and staffing; improved potable water supply; and health education for the general public, including hygiene and nutrition.

B. EDUCATIONAL SERVICES

1. Current Situation

a. Illiteracy and Manpower Deficiencies

A high proportion of the population of the Gwadar District is illiterate. School enrollment has increased in recent years but more educational services will need to be provided to reduce illiteracy, to increase the skills of the labor force, and to

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increase the people's educational level.

As shown in Table VI-9, fewer than eight percent of people over ten years of age were literate in 1981. Male literacy, at 17%, far exceeded female literacy, which was one percent. Urban dwellers averaged higher literacy than rural. Literacy for urban females, although higher than rural females, was still less than two percent. Urban males had the highest literacy rate of the sub-groups shown in the table, at 26%; even for this group only one out of four adults can read. It is expected that the 1991 census, when the data are compiled, will show some improvement in literacy but that more than half the population will continue to be illiterate.

Illiteracy is a serious problem for major segments of the population and constitutes an obstacle to the long-term economic development of the region. Illiteracy makes it more difficult for members of the labor force to acquire job-related knowledge and skills. Reliance on skilled labor from outside the region reduces the benefit that the Gwadar District receives from the production of goods and services inside its boundaries.

At present, detailed information is lacking on specific manpower shortages in the Gwadar District, although on an anecdotal basis, it is known that implementation of public and private sector activities, such as the Gwadar Fish Harbor, sometimes requires importing professional staff and skilled workmen. A manpower analysis is needed to project employment by education and skill level and to assess to what extent that demand could be met by the local population in the Gwadar District. Such an analysis could identify opportunities for training the region's people to fill more demanding and better-paying jobs.

An education program could then be tailored to upgrade the general level of education as well as to focus on manpower constraints to the region's growth. The formal education system, which is described in the following sub-sections, could be used for broad objectives such as literacy, and to improve specific technical and job-related skills.

b. Primary Schools

In this sub-section, data from the Gwadar District Education Department and the USAID-supported Balochistan Primary Education Project are presented for both public and Mosque primary schools. The Balochistan Primary Education Project helped the GOB Education Department carry out the Balochistan Education Management Information System (BEMIS). Some of the data in BEMIS came from a survey conducted in 1990.

The Gwadar District accounts for a very small part of the girls'

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and boys' primary enrollment in Balochistan (Table VI-10). As in the province overall, many more boys are educated than girls: 7,493 boys and 2,094 girls in 1990.

The Mosque schools play an important role in supplementing the education provided by the (government) primary schools. In 1990, enrollments (from Table VI-11) were as follows:

	PRIMARY SCHOOLS	MOSQUE SCHOOLS
BOYS	2,639	1,627
GIRLS	669	531
TOTAL	3,308	2,158
GIRLS %	20 %	25 %

The Mosque Schools' enrollment of 2,158 was 65% of the government schools' enrollment. One out of four students was a girl in the Gwadar District's Mosque schools, compared to one out of five in the government schools. Gwadar District has one of the lowest ratios of boys to girls in the entire province. Thus although girls' education lags that of boys in the Gwadar District, the contribution of the Mosque schools to girls' schooling is greater than in most other districts of Balochistan. The distribution of girls' schools in Gwadar District is presented in Figure VI-2.

More students receive primary education in the Pasni Sub-division than in the Gwadar Sub-division, reflecting the higher number of primary and Mosque schools in Pasni (Tables VI-12 and VI-13) and faster enrollment growth in this Sub-division (Table VI-14 gives Gwadar District total enrollment trends, Table VI-15 trends for the Gwadar Sub-division, and Table VI-16 for Pasni Sub-division). About one quarter of primary level students attend classes in the primary sections of middle and high schools.

Although primary school enrollments for boys and girls have doubled in the last five years, dropout rates remain very high. One indicator of the high dropout rate is the proportion that Class V has in total enrollment. If overall enrollments were stable and there were no dropouts at all, that rate would be 20%. The actual rates for 1986-87 for both boys and girls is two percent, which increased to five percent in 1990-91 (computed from data in Tables VI-14 and 17). Thus although there has been an improvement in recent years, the dropout rate is still quite high. A high rate means most students are not receiving the benefit of the educational services that are being made available to them.

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c. Middle and High Schools

Middle and high schools in the district are shown in Figure VI-3. Given the high dropout rate from primary schools, it is to be expected that middle and high school enrollments would be much lower than primary enrollments. For boys [girls], enrollment in 1991 in middle schools was 1,290 [80]; in secondary schools 474 [8] (Tables VI-18, 19, 20 and 21).

The tendency of students to drop out continues from the primary grades through middle and secondary school. In 1991 Class VI of middle school had an enrollment of 566 boys, but Class X of secondary school had only 215, which is 38% of the Class VI figure. For girls, enrollment in Class VI is 42; Class X is 0.

Lower enrollments for girls compared to boys are even more pronounced at the middle and secondary school levels than at the primary level. The low number of girls continuing their education reduces the pool of potential women teachers for the future. A shortage of women teachers contributes to a long-term problem for education in Balochistan, as it negatively affects education for girls.

As in the province as a whole, in the Gwadar District primary teachers are not available where they are needed, and many are untrained, especially for the poor teaching conditions they must face.[5]

2. Recommendations

- To promote economic development as well as the general welfare of the people of the Gwadar District, the GOB should vigorously support public education, including efforts targeted to manpower requirements of the region's employers.

- The GOB in cooperation with the private sector should undertake a Gwadar District Manpower Study addressing the following points:

  - o Characteristics of the labor force currently working in the Gwadar District: number of workers, job classification, skill levels, compensation, and permanent residence (Gwadar District, rest of the Makran, rest of Balochistan, rest of Pakistan, and other countries).

  - o Projected labor force demands by skill category, particularly for export-related employment.

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[5] Teacher Supply and Training Plan, Balochistan, Balochistan Primary Education Project, draft, October 10, 1991, p. 24.

- o Assessment of the capability of local residents to meet current and future manpower demands.

- o Preparation of a Manpower Training Plan setting forth how local manpower can be educated (including literacy) and trained to meet current and future manpower demands.

- The GOB should implement a set of actions to increase the supply, training, and wide distribution of qualified teachers. The GOB should consider the actions recommended for the primary level in the Teacher Supply and Training Plan, Balochistan, Balochistan Primary Education Project, draft, October 19, 1991.

- In order to advance the education of girls, the GOB should give consideration to the following draft recommendations prepared by the Balochistan Primary Education Programme[5]:

  - o Sanction teaching positions in villages where teachers are needed to begin education for girls.

  - o Bus teachers to schools in villages where teachers are needed to begin education for girls and candidates are not available locally.

  - o Sanction male teachers for girls in villages where teachers are needed to begin girls' education and female teachers are not available.

  - o Recruit "middle pass" teachers in villages where teachers are needed for girls and "matric" level female teachers are not available.

  - o Provide temporary facilities for girls education in villages where support for girls education is high and school facilities are not available.

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[5] Human Resource Survey: Teacher Supply and Distribution, Balochistan, Policy Options for Semi-Urban Villages, Draft, for discussion only, April 1991.

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HEALTH FACILITIES OF GWADAR DISTRICT

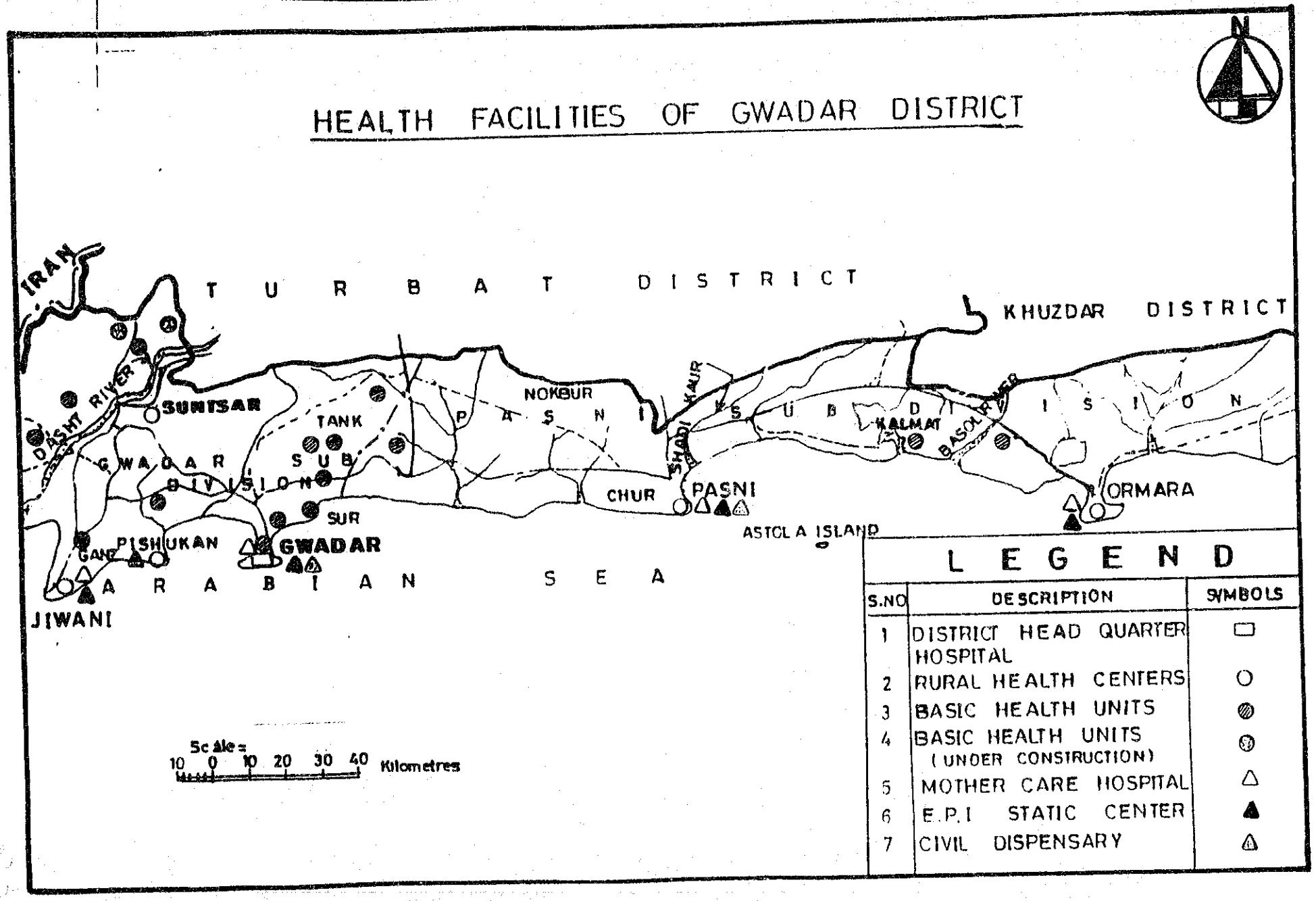

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TABLE VI-1

HEALTH FACILITIES AVAILABLE IN

GWADAR DISTRICT, 1990-91

GWADAR DISTRICT	HOSPITAL	RURAL HEALTH CENTERS	BASIC HEALTH DISPENSARIES	CIVIL DISPENSARIES	TOTAL
Gwadar Sub-Division	1	1	10	3	15
Gwadar Tehsil	1	0	5	2	
Jiwani Tehsil	0	1	5	1	
Pasni Sub-Divsion	0	2	6	1	9
Pasni Tehsil	0	1	5	1	
Ormara Tehsil	0	1	1	0	
TOTAL	1	3	16	4	24

Source: Health Department, Gwadar District.

HEALTH2/SA/GDRPLNG3/3

TABLE VI-2

ANNUAL PATIENT LOAD (MALE AND FEMALE)

IN GWADAR DISTRICT BY TEHSIL

TESHIL	MALE	FEMALE	TOTAL	%OF TOTAL
Gwadar	66,147	31,432	97,579	30.30
Jiwani	66,331	40,624	106,955	33.20
Pasni	73,216	25,945	99,161	30.70
Ormara	10,743	8,117	18,860	5.80
Total	216,437	106,118	322,555	100

Source: Health Department, Gwadar District

HEALTH5/SA/GDRPLNG3/2

TABLE VI-3

ANNUAL PATIENT LOAD IN GWADAR HOSPITAL

NAME OF HOSPITAL	OUT PATIENTS	IN PATIENTS	TOTAL
DISTRICT HEAD QUARTERS HOSPITAL, GWADAR	60,946	1,860	62,806

Source: Health Department, Gwadar District

HEALTH2/SA/GDRPLNG3/2

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TABLE VI-4

ANNUAL PATIENT LOAD IN RURAL HEALTH CENTERS

BY TEHSIL

TEHSIL	OUT PATIENTS	IN PATIENTS	TOTAL	% OF TOTAL
Gwadar*	0	0	0	0
Jiwani	26,271	300	26,571	25.42
Pasni	60,600	1,050	61,650	59
Ormara	16,154	124	16,278	15.57
TOTAL	103,025	1,474	104,499	100

* Note: There are no Rural Health Center in Gwadar Tehsil, where there is a hospital. (See Table VI-1).

Source: Health Department, Gwadar District.

HEALTH2/SA/GDRPLNG3/2

TABLE VI-5

ANNUAL PATIENT LOAD IN BASIC HEALTH
UNITS BY TEHSIL

TEHSIL	OUT PATIENTS	IN PATIENSTS	TOTAL	% OF TOTAL
Gwadar	24,618	0	24,618	21.5
Jiwani	55,639	0	55,639	48.7
Pasni	31,410	0	31,410	27.5
Ormara	2,582	0	2,582	2.3
TOTAL	114,249	0	114,249	100

Source: Health Department, Gwadar District.

HEALTH3/SA/GDRPLNG3/2

TBLE VI-6

ANNUAL PATIENT LOAD IN CIVIL DISPENSARIES

BY TEHSIL

TEHSIL	OUT PATIENTS	IN PATIENTS	T O T A L	% OF TOTAL
Gwadar	10,155	0	10,155	24.77
Jiwani	24,745	0	24,745	60.35
Pasni	6,101	0	6,101	14.88
Ormara	0	0	0	0.00
TOTAL	41,001	0	41,001	100

Source: Health Department, Gwadar District.

HEALTH4/SA/GDRPLNG3/2

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TABLE VI-7

CHILDREN VACCINATED IN GWADAR DISTRICT
UNDER EXPANDED PROGRAM ON IMMUNIZATION 1990-91

AGE GROUP	POLIO			DIPTHERIA PERTUSES TETNUS (D.P.T)		
	VACCINE I	VACCINE II	VACCINE III	VACCINE I	VACCINE II	VACCINE III
0-11 MONTHS	2,387	2,505	2,382	2,387	2,505	2,382
12-23 MONTHS	3,505	2,515	1,075	2,505	2,515	1,075
2-4 YEARS	2,515	1,381	1,681	2,515	1,381	1,681
TOTAL	8,407	6,401	5,138	7,407	6,401	5,138

Source:- Health Department, Gwadar District.

EPI1/SA/GDRPLNG3/2

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TABLE VI-8

STAFFING OF HEALTH DEPARTMENT BY TEHSIL

TEHSIL	DOCTORS	SURGEONS	DENTISTS	COMPUNDERS	NURSES	TOTAL MEDICAL STAFF
Gwadar	3	1	1	6	1	12
Jiwani	2	0	0	5	0	7
Pasni	4	0	0	3	3	10
Ormara	1	0	0	2	0	3
TOTAL	10	1	1	16	4	32

Source: Health Department, Gwadar District.

HEALTH6/SA/GDRPLNG3/2

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TABLE VI-9

LITERACY OF GWADAR DISTRICT POPULATION

ABOVE 10 YEARS OF AGE, 1981

GWADAR DISTRICT	URBAN	RURAL	TOTAL
TOTAL:	27,000	33,331	60,331
ILLITERATE	23,864	32,112	55,976
LITERATE	3,136	1,219	4,355
LITERACY %	13.14	3.80	7.78
MALE:	14,027	13,362	27,389
ILLITERATE	11,127	12,212	23,339
LITERATE	2,900	1,150	4,050
LITERACY %	26.06	9.42	17.35
FEMALE:	12,973	19,969	32,942
ILLITERATE	12,737	19,900	32,637
LITERATE	236	69	305
LITERACY %	1.85	0.35	0.93

Source: Education Department, Gwadar District.

TBVI12/TM/GWADAR3/3

TABLE VI-10

BALOCHISTAN – PRIMARY ENROLLMENTS BY GRADE AND GENDER
FROM BEMIS SCHOOL CENSUS, 1990

DISTRICT	GIRLS							BOYS						
	KACHI	PAKKI	2	3	4	5	TOT	KACHI	PAKKI	2	3	4	5	TOT
CHAGAI	1421	716	556	407	241	167	3507	3465	2040	1714	1466	1214	940	10828
DERA BUGTI	166	92	46	32	25	27	387	3190	1841	1323	1166	806	709	9134
GAWADUR	947	480	303	190	132	62	2094	2536	477	1216	943	745	548	6463
JAFFARABAD	1751	647	481	370	268	187	3692	8696	3131	3046	2838	2310	1580	21602
KACHHI	1308	612	341	261	182	132	2726	6873	2456	2262	2066	1660	1297	16613
KALAT	1821	872	689	423	311	220	4216	7829	3792	2324	2428	1924	1607	20304
KHARAN	720	230	166	100	69	39	1376	3297	1397	1049	918	730	604	7995
KHUZDAR	1633	728	463	317	234	134	3629	8645	4478	3609	2723	2037	1508	22900
K-SAIFULLAH	859	447	289	177	129	89	1990	2908	1253	1014	867	690	469	7221
KOHLU	416	111	87	45	24	19	702	2243	855	638	499	421	336	4992
LASBELA	1181	608	508	361	234	159	3051	3617	2406	2071	1789	1443	1149	12469
LORALAI	1570	651	499	388	262	228	3598	8076	3774	3138	2756	2129	1684	21537
PANJGUR	1259	650	667	508	352	254	3880	2178	1868	1417	1162	1047	915	8577
PISHIN	2229	1098	699	671	397	257	6241	13593	6980	5268	4317	3281	2581	36000
QUETTA	7499	6151	4272	3644	2480	1936	24882	11396	8014	6679	5910	4704	3477	40180
SIBI	956	542	325	273	262	204	2521	2658	1326	1274	1122	1006	789	8175
TAMBOO	535	191	118	90	52	27	1013	3919	1476	1307	1276	1024	697	9699
TURBAT	3102	1474	960	617	351	256	6700	7228	4201	3272	2933	2314	1891	21739
ZHOB	547	299	247	185	126	107	1511	4357	2408	1556	1276	842	573	11011
ZIARAT	548	259	203	148	46	28	1232	1043	511	474	401	376	320	3125
TOTAL	30486	15917	11781	8987	6166	4542	77848	107639	65663	46050	38737	30801	23574	301464

Source: Balochistan Primary Education Project, USAID/Quetta

TABLE VI-11

COMPARISON OF ENROLLMENTS

PRIMARY SCHOOL *			MOSQUE SCHOOLS		
DISTRICT	BOYS	GIRLS	DISTRICT	BOYS	GIRLS
LORALAI	11123	1880	LORALAI	8175	[illegible]
KILLA SAIFULLAH	3038	1087	KILLA SAIFULLAH	2406	[illegible]
ZHOB	5782	672	ZHOB	2669	[illegible]
DERA BUGTI	5959	213	DERA BUGTI	609	[illegible]
KOHLU	3219	433	KOHLU	903	[illegible]
SIBI	3029	873	SIBI	1799	[illegible]
ZIARAT	1275	732	ZIARAT	956	[illegible]
CHAGAI	3611	1490	CHAGHI	[illegible]	[illegible]
PISHIN	16336	2923	PISHIN	9591	[illegible]
QUETTA	31988	13733	QUETTA	5416	[illegible]
JAFFARABAD	8751	1699	JAFFARABAD	8191	[illegible]
KACHHI	7877	935	KACHHI	3053	[illegible]
TAMBOO	3828	382	TAMBOO	3753	[illegible]
KALAT	8398	1548	KALAT	5004	[illegible]
KHARAN	2814	895	KHARAN	2391	[illegible]
KHUZDAR	11619	1733	KHUZDAR	6474	[illegible]
LASBELA	6045	1469	LASBELA	2604	367
GAWADUR	2639	669	GAWADUR	1627	[illegible]
PANJGUR	2417	1384	PANJGUR	2599	[illegible]
TURBAT	8807	3566	TURBAT	3527	1612
TOTAL	148555	38018	TOTAL	70536	8394

*** Excludes Primary Section of Middle & High Schools.**

TABLE VI-12

BOYS PRIMARY EDUCATION ENROLLMENT OF GWADAR DISTRICT, 1990-91

GWADAR DISTRICT	IN PRIMARY AND MOSQUE SCHOOLS	IN MIDDLE/HIGH SCHOOLS	TOTAL
Gwadar Sub-Division	2,633	1,730	4,363
Pasni Sub-Division	5,764	1,682	7,446
TOTAL	8,397	3,412	11,809

Source: Education Department, Gwadar.

TAVI16/SA/GP05

TABLE VI-13

BOYS PRIMARY AND MOSQUE SCHOOLS OF GWADAR DISTRICT
AS OF 1990-91

GWADAR DISTRICT	NUMBER OF PRIMARY AND MOSQUE SCHOOLS	NUMBER OF MIDDLE/HIGH SCHOOLS WITH PRIMARY LEVEL CLASSES
Gwadar Sub-Division	66	9
Gwadar Tehsil	37	6
Jiwani Tehsil	29	3
Pasni Sub-Division	76	7
Pasni Tehsil	50	5
Ormara Tehsil	26	2
TOTAL	142	16

Sources: Education Department, Gwadar.

ENROL1/SA/GDRPLNG3/3

TABLE VI-14

BOYS PRIMARY AND MOSQUE SCHOOLS ENROLLMENT

OF GWADAR DISTRICT, 1986-91

YEAR	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V	TOTAL
1986-87	3,354	493	109	151	101	4,208
1987-88	2,000	672	343	184	146	3,345
1988-89	3,995	1,015	477	337	183	6,007
1989-90	4,508	1,241	667	414	265	7,095
1990-91	4,945	1,397	1,031	629	395	8,397

Source: Education Department, Gwadar District.

BME/GDRPLNG3

TABLE VI-15

BOYS PRIMARY LEVEL ENROLLMENT OF GWADAR SUB-DIVISION, 1987-91
(MOSQUE AND PRIMARY)

YEAR	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V	TOTAL
1986-87	1,387	183	97	64	38	1,769
1987-88	2,000	252	153	72	68	2,545
1988-89	1,838	359	217	140	66	2,670
1989-90	1,718	462	277	189	135	2,781
1990-91	1,460	453	355	237	128	2,633

Source: Education Department, Gwadar District.

PRLEVED1/SA/GDRPLNG3

TABLE VI-16

BOYS PRIMARY LEVEL ENROLLMENT OF PASNI SUB-DIVISION, 1987-91

(PRIMARY AND MOSQUE)

YEAR	I CLASS	II CLASS	III CLASS	IV CLASS	V CLASS	TOTAL
1986-87	1,120	310	102	87	63	1,682
1987-88	1,590	420	190	112	78	2,390
1988-89	2,107	656	260	197	107	3,327
1989-90	2,790	779	390	225	137	4,321
1990-91	3,485	944	578	392	267	5,666

Source: Education Department, Gwadar District.

PRLEVED2/SA/GDRPLNG3

TABLE VI-17

GRILS PRIMARY SCHOOL ENROLLMENT
OF GWADAR DISTRICT, 1990-91

YEAR	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V	TOTAL
1986-87	88	12	10	8	3	121
1987-88	101	20	8	9	4	142
1988-89	116	27	9	12	6	170
1989-90	119	47	16	20	8	210
1990-91	200	50	35	25	16	326
TOTAL	624	156	78	74	37	969

Source: Education Department, Makran Division.

PRISCHYE/SA/GDRPLNG3/3

TABLE VI-18

ENROLLMENT OF BOYS MIDDLE SCHOOLS
GWADAR DISTRICT, 1991.

GWADAR DISTRICT	CLASS VI	CLASS VII	CLASS VIII	TOTAL
Gwadar Sub-Division	254	194	156	604
Tehsil Gwadar	214	168	515	
Tehsil Jiwani	40	26	89	
Pasni Sub-Division	312	211	163	686
Tehsil Pasni	224	158	505	
Tehsil Ormara	88	53	181	
TOTAL	566	405	319	1,290

Source: Eduation Department, Gwadar District.

ENMID/SA/GDRPLNG3/3

TABLE VI-19

GIRLS MIDDLE LEVEL ENROLLMENT AS OF 1991

GWADAR DISTRICT	VI	VII	VIII	TOTAL
Gwadar Sub-Division	26	16	7	49
Gwadar Tehsil	26	16	7	49
Jiwani Tehsil	0	0	0	0
Pasni Sub-Division	16	10	5	31
Pasni Tehsil	11	6	5	22
Ormara Tehsil	5	4	0	9
TOTAL	42	26	12	80

Sources: Education Department, Gwadar District.

GIRSC2/SA/GDRPLNG3/3

TABLE VI-20

BOYS SECONDARY LEVEL ENROLLMENT OF GWADAR DISTRICT

1991

GWADAR DISTRICT	CLASS IX	CLASS X	TOTAL
Gwadar Sub-Division	127	102	229
Gwadar Tehsil	111	82	
Jiwani Tehsil	16	20	
Pasni Sub-Division	132	113	245
Pasni Tehsil	98	78	
Ormara Tehsil	34	35	
TOTAL	259	215	474

Sources: Education Department, Gwadar District

ENROL2/SA/GDRPLNG3/3

TABLE VI-21

GIRLS SECONDARY LEVEL ENROLLMENT, GWADAR DISTRICT, 1991

GWADAR DISTRICT	IX	X	TOTAL ENROLLMENT
Gwadar Sub-Division	8	0	8
Gwadar Tehsil	8	0	
Jiwani Tehsil	0	0	
Pasni Sub-Division	0	0	0
Pasni Tehsil	0	0	
Ormara Tehsil	0	0	
TOTAL:	8	0	8

Source: Education Department, Gwadar District.

GIRSC3/SA/GDRPLNG3/3

GIRLS SCHOOLS OF GWADAR DISTRICT

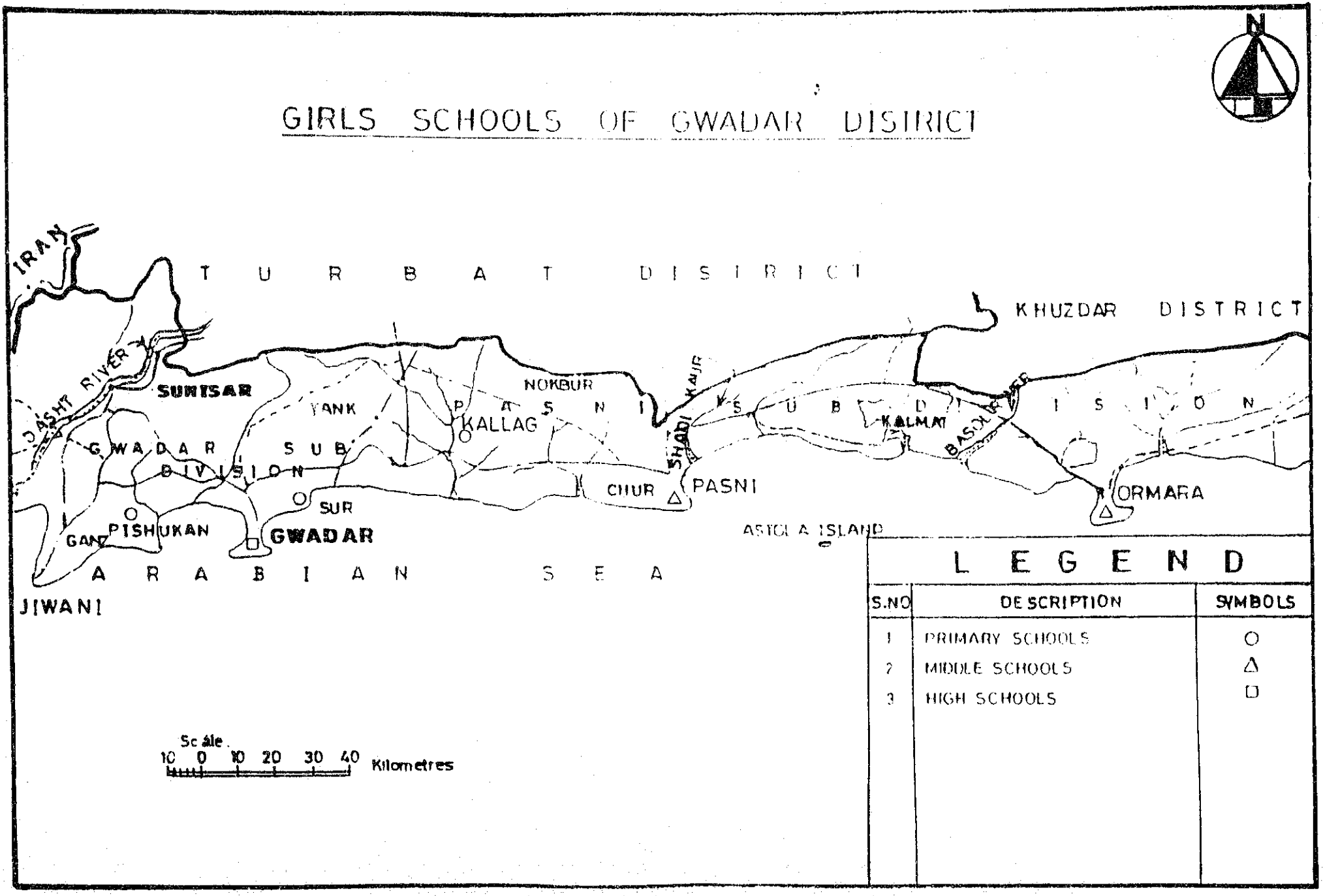

FIGURE VI-2

HIGH & MIDDLE SCHOOLS OF GWADAR DISTRICT

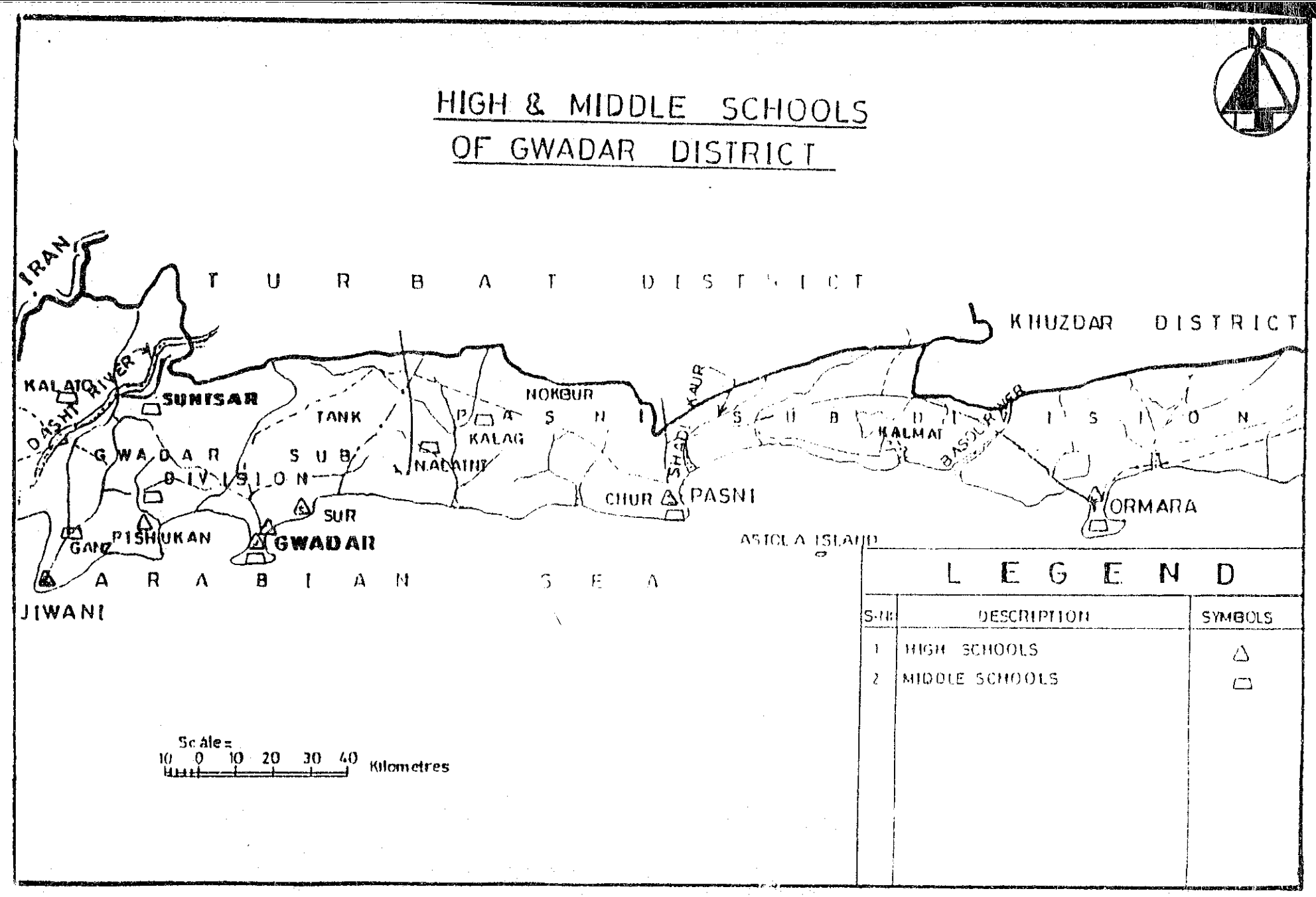

FIGURE VI-3

CHAPTER VII

AGRICULTURE AND LIVESTOCK

The agriculture and livestock sector is considered to be nonbasic in that most of its output is sold within the Gwadar District. This chapter provides an overview of sector activities and makes recommendations.

A. CURRENT SITUATION

Limited by the lack of water, the Gwadar District has a small agriculture and livestock sector. In 1988-89, 12,626 hectares of land in the region were listed as cultivated. Of those, 11,367 hectares lay fallow, leaving only 1,259 hectares producing crops.[1] Most of the cropped agricultural land is dedicated to fruits. As shown in Table VII-1, dates and mangos are the most important fruits in terms of land utilized and production in tons. Fodder and onions are also produced.

The Agriculture Department has recently established a "Coconut Progeny Orchard Cum Nursery" in Pasni to investigate the potential for coconut production on the Makran coast. The trees are presently only about a meter high. If the orchard proves to be a success, coconuts may have potential as an export crop. This would depend upon a host of factors, including the costs of an adequate supply of water to coconuts produced on a commercial scale.

Less than ten percent of the cultivated land is irrigated, with the major sources of water being karezes, springs and wells. The majority of cultivated land relies on direct rainfall or surface run-off for water, as indicated in Table VII-2.

Most of the approximately 38,250 large animals and poultry in the district in 1990-91 were chickens, as shown in Table VII-3. There is moderately more livestock in Gwadar Sub-division than in Pasni Sub-division. In 1990-91, 34,000 animals were vaccinated and 20,350 treated. As indicated in Table VII-4, the number of vaccinations and treatments increased between 1989 and 1991.

Even for the low level of agricultural and livestock production in the district, the support for agricultural extension and veterinary services is low. There are only nine positions in the agricultural department (Table VII-5) and eight working with livestock (Table VII-6). In 1990-91, the Agriculture Development Bank of Pakistan, the principal source of commercial credit for the sector, loaned

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[1] Agricultural Statistics, Balochistan, 1988-89, Agriculture Department, Quetta, Balochistan, p. 107.

Rs. 4.1 million in the Gwadar District for agriculture and livestock, as shown in Table VII-7.

Further development of agricultural and livestock production is severely limited by a shortage of water. Increasing irrigation water supply would be costly and in some areas there may be competing demands for water. Foodstuffs can be readily imported by sea into the Gwadar District and by road from the Turbat District. Thus an inadequate supply of foodstuffs is unlikely to be a constraint on increased production of exportable goods and services.

In Chapter V, it is recommended that a Gwadar District Master Plan for the Development and Management of Water Resources be prepared. Among other matters, the Master Plan should examine the potential sources available to support agriculture and livestock in the basins of the Dasht, Savar, Shadi, and Basol Rivers. Of those rivers, the Basol appears to have good soil and a potential larger supply of water, both of which could support the production of grains, fodder, and vegetables.

B. RECOMMENDATIONS

- In general, agriculture and livestock development should be given low priority. Other sources of foodstuffs are readily available and development of this sector appears to be costly.

- If the coconut demonstration project in Pasni is an agronomic success, further studies should be carried out to examine the commercial feasibility of coconuts as an export crop.

- Consideration should be given to potential sources of irrigation water identified in the proposed Gwadar District Master Plan for the Development and Management of Water Resources. Given limited funds for all development interventions, only very promising opportunities should be pursued. That is, any investment should be projected to have very high benefits in comparison with costs, and investment funds should not be diverted from worthwhile interventions in support of regional exports.

- In scheduling the maintenance of rural roads (discussed in Chapter V), consideration should be given to the need for inputs to be transported to farms and ranches and their outputs transported to the settlements of Gwadar, Pasni, Jiwani, and Ormara.

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TABLE VII-1

GWADAR DISTRICT

SELECTED AGRICULTURAL PRODUCT STATISTICS

	AREA IN HECTARES	PRODUCTION IN TONS
FODDER	180	8150
ONIONS	37	7100
GRAINS	48	25
VEGETABLES		
TOMATOES	4	50
FRUIT		
CITRUS	49	280
GUAVA	24	120
DATES	680	5120
MANGO	222	1570
CHIKOO	4	10
COCONUT	11	0
TOTAL (Fruit)	990	7100

Source: Agricultural Statistics of Balochistan, 1988-89.

AGRI/TM/GP05

TABLE VII-2

IRRIGATED AND UNIRRIGATED AREAS
UNDER CULTIVATION IN GWADAR DISTRICT
(IN HECTARES)

UN-IRRIGATED (Relying on Rain Fall or Surface Runoff)	IRRIGATED		TOTAL
	Tube Well	Karez, Springs and Others	
11,246	80	1,300	12,626

Source: Agricultural Statistics, Balochistan 1988-89.

AGRI/TM/GPOS

TABLE VII-3

ESTIMATED ANIMAL POPULATION OF GWADAR DISTRICT

BY SUB-DIVISION, 1990-91

GWADAR DISTRICT	ESTIMATED NUMBER OF ANIMALS					
	LARGE ANIMALS				POULTRY	TOTAL
	Goats	Sheep	Cattle	Camels		
Gwadar Sub-Division	6,300	450	0	300	15,000	22,050
Pasni Sub-Division	5,000	502	0	700	10,000	16,202
TOTAL	11,300	952	0	1,000	25,000	38,252

Source: Livestock Department, Gwadar District.

ANIMAL3/SA/GDRPLNG3/3

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TABLE VII-4

ANIMALS VACCINATED, TREATED, CASTRATED AND ARTIFICIALLY INSEMINATED IN THE GWADAR DISTRICT, 1990-91

YEAR	VACCINATED	TREATED	CASTRATED	ARTIFICIALLY INSEMINATED	TOTAL
1988-89	15,600	8,200	60	0	23,860
1989-90	17,300	10,500	76	0	27,876
1990-91	34,000	20,350	96	0	54,446
TOTAL:	66,900	39,050	232	0	106,182

Source: Livestock Department, Gwadar District

ANMAL2/SA/GDRPLNG3/3

TABLE VII-5

FILLED STAFF POSITIONS, AGRICULTURE EXTENSION,

GWADAR DISTRICT, BY TEHSIL, 1991

TEHSIL	EXTRA ASSISTANT DIRECTOR	AGRICULTURAL OFFICER	FIELD ASSISTANT	ASSISTANT PLANT PROTECTION OFFICER	TOTAL
Gwadar	1	1	2	0	4
Pasni	0	0	2	0	2
Jiwani	0	0	2	0	2
Ormara	0	0	1	0	1
Total	1	1	7	0	9

Sources:-- Agriculture Department, Makran Division.

AGRI3/SA/GDRPLNG3

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TABLE VII-6

FILLED STAFF POSITIONS, VETERINARY FACILITIES, GWADAR DISTRICT
1990

GWADAR DISTRICT	VETERINARIAN	STOCK ASSISTANT	CAMEL MAN	TOTAL
Gwadar Sub-Division	2	2	2	6
Gwadar Tehsil	2	1	1	
Jiwani Tehsil	0	1	1	
Pasni Sub-Division	0	1	1	2
Pasni Tehsil	0	1	1	
Ormara Tehsil	0	0	0	
TOTAL	2	3	3	8

Source: Livestock Department, Gwadar District

VTR1/ARB/GDRPLNG3/3

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TABLE VII-7

LOANS DISBURSED BY AGRICULTURE DEVELOPMENT BANK (ADBP) FOR AGRICULTURE PURPOSES BY SUB-DIVISION

(MILLIONS OF RS.)

SUB-DIVISION	1981-87	1987-88	1988-89	1989-90	1990-91
Gwadar	2.116	1.347	1.194	1.627	1.331
Pasni	0.63	2.22	1.714	2.287	2.773
TOTAL	2.746	3.567	2.908	3.914	4.104

Sources:- ADBP.

AGRI4/SA/GDRPKNG3

CHAPTER VIII

REGIONAL PLANNING CAPABILITY

The Regional Plan for Coastal Makran was prepared by the Louis Berger International, Inc. (LBII) technical assistance team for the Balochistan Area Development Project. Sponsored by the Government of Balochistan and USAID, the Project has assisted development in the Makran since 1986.

Most BALAD technical activities will conclude with the December 31, 1991, termination of the LBII technical assistance contract with USAID. A six month extension of BALAD to June 30, 1992, was recently approved by USAID. However, significant further regional planning work in Coastal Makran is not included in USAID's current plans for BALAD activities. Thus one must look elsewhere for follow-on activities to the present study.

Unfortunately, there is at present no single organization responsible for regional planning at either the Makran Division level or at the District level. As discussed in "PLANNING IN MAKRAN: A Study of the Policy, Institutional and Process Requirements for Effective Decision Making" (Louis Berger International, Inc./BALAD, October 1991), planning responsibilities are centralized at the national government level and in the Government of Balochistan. Recognizing this, one of the objectives of BALAD was to encourage regional planning at the level of the Makran.

Our recommendation is that regional planning capability be developed at the level of the Makran, following the specific recommendations for institutionalization of a Makran Planning and Development Unit (MPDU) made in the BALAD December 1991 "Planning in Makran" Report. Coastal Makran should be one of the sub-regions to be addressed by the Makran Planning and Development Unit. For the time being it is premature, in our judgement, for the GOB to decentralize to the level of the Gwadar District.

Whether or not the GOB Planning and Development Department decentralizes and creates an effective Makran-level planning unit, we recommend that this Department undertake further regional planning work for Coastal Makran in two important respects: improved regional plans and promotion of regional investment.

A. IMPROVED REGIONAL PLANS

The present Regional Plan for Coastal Makran represents a first step toward proper regional planning for this sub-region of the Makran. The regional planning data on social and physical infrastructure and the economics of export development will need to

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be refined and updated.

Such work should focus on the sectors and types of data that are most relevant and important for decision makers. As the preceding chapters have made clear, economic development depends heavily on export industries. Critical human needs also must be met. Follow-on efforts should be so oriented. In this way, decision makers will be able to focus on the truly crucial issues and address them more effectively.

B. PROMOTION OF REGIONAL INVESTMENTS

Plans do not implement themselves. The GOB Planning and Development Department should regard many of the recommendations made in the preceding chapters as "investment opportunities", and seek to exploit them.

Take, for example, the following recommendation from Chapter V:

> A Gwadar District Master Plan for the Development and Management of Water Resources should be prepared by a team of water resource specialists.

A planning agency might simply pass that recommendation to affected agencies, such as Public Health Engineering. An Investment Promotion agency would vigorously mobilize whatever resources and organizations (government/non-government; Pakistani/foreign) to get that Master Plan prepared. Some organization needs to have that activist, get-the-job-done attitude. It is recommended that the GOB Planning and Development Department adopt an activist Investment Promotion posture with respect to vital recommended investments identified in the present Regional Plan for Coastal Makran.

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BALOCHISTAN AREA DEVELOPMENT PROJECT

(Contract No. 391-0479-C-5031-00)

REGIONAL PLAN FOR COASTAL MAKRAN

VOLUME II

ANNEXES

Prepared by Louis Berger International, Inc.

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A Preliminary Review of the Fisheries Potential Off the Balochistan Coast (GG-315)

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INTRODUCTION

Louis Berger International, Inc. (LBA) has been reviewing the potential for economic development in the Balochistan Province of Pakistan. The deep sea fishery (large pelagic), a relatively under utilized resource, has been suggested by USAID as worthy of consideration, as well as improved exploration of other resources.

As a first step, the present state of knowledge of the marine fisheries resources has been based on an in-house review of existing documentation on the subject. Freshwater/inland fishing and aquaculture are not addressed owing to the relative lack of inland waterways and arid nature of the Balochistan province.

This review is divided into the following sections:

1. Background;
2. Knowledge of fish stocks and resources by geographic area;
3. The state of and the need for infrastructure in developing this resource;
4. Economic considerations for exploition of stocks;
5. Recommendations and level of effort; and
6. References and contacts.

1. BACKGROUND

Balochistan's shore line with the Arabian Sea (including the Makran Coast) is approximately 700 km long. The associated continental shelf is relatively narrow, ranging between 15 and 50 km wide with an estimated area of 14,530 sq. km. The coast is generally rocky and the adjacent sea floor consists of sands, muds and rock out-crops. These rock out-crops are common throughout the coast with the exception of the Sonmiani Bay near Karachi. Other bays from east to west exist at Ormara, Pasni, Gwadar and Jiwani. No significant rivers enter the Arabian Sea along this coast line.

The waters off the Makran Coast exhibit "upsloping" (a weak form of upwelling) of cool, low oxygenated water from May/June to November/December which induces fish to move closer to the coast. The Arabian Sea in general is considered to be highly productive, and it is said to be twice that of the world's oceans (CIDA, 1987).

Oman has recently extended its territorial claims over former Balochi pelagic fisheries (World Bank 1975) and both deep sea poaching and non-Balochi shrimp harvesting along the Makran coast have been noted to occur (CIDA 1987).

2. KNOWLEDGE OF FISH STOCKS AND RESOURCES BY GEOGRAPHIC AREA

The commercial fisheries of Pakistan utilize approximately 350 species. Of these 240 species are demersal fish, 50 are small pelagics, and 18 are large pelagics. There are also 15 species of shrimp, 12 of squid and 5 of lobster off the coast

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of Pakistan. The number of species off the Balochistan coast would be a subset of this (CIDA 1987). Due to the greater diversity of ecotypes that exist off the Sind Province coast (i.e. Indus River, Broader Continental Shelf, etc.) it can be assumed that the diversity of near shore fish would be less along the Balochistan Coast, whereas the deep sea resources would be more or less equal to that listed above.

Pakistan showed landings of 336,129 mt of fish in 1987, and is within 67,000 mt of what the Asian Development Bank (ADB) considers "a fully mature fishery" (Table 1). The term "fully mature" refers to the fisheries existing at that time and may not apply to the large pelagic stocks, of which little is known.

Table 1

Marine Fisheries Resource Status In Pakistan, 1984 (MT)

	Biomass Estimates	MSY Estimates	MFD Estimates of Landings 1984	Technical Incre-mental Potential	Economic Incre-mental Potential	Total Possible Economic Landing
Demersal	500,000	189,000	128,000[a]	61,000	61,000	189,000
Small Pelagics	500,000	250,000	131,000	119,000	29,000	160,000
Large Pelagics	NA	NA	20,000	5,000	5,000	25,000
Shrimp	88,000	35,000	29,000[b]	6,000	-	29,000
Squid	10,000	2,000	-	2,000	-	-
Total	NA	NA	308,000	193,000	95,000	403,000

[a] Includes subsistence landings of 17,318 mt
[b] Probably underestimated by about 6,000 mt

Source: CIDA, Fisheries of Pakistan (1987).

The Pakistani Shrimp Resources have been relatively well studied through the years (CIDA 1987). Commercial shrimp fishing appears to have exceeded the total possible economic landing limits, and the shrimp resource is considered to be over exploited. A decline in shrimp production occurred between 1981 and 1987. Any increased production would most likely have to come from improved processing and marketing.

Recent studies conducted by the GOP/UNDP/FAO Marine Fisheries Development Project (1986) on demersal and small pelagic fish resources indicate that these stocks are approaching their limits. Increased landings of demersal (bottom feeding) fish is limited off the Makran Coast due to its rocky characteristics. As of 1987, small pelagic (deep sea/open sea) fish landings have been limited by the Balochistan ban on Katra (encircling) nets. The Balochi claim to prefer to leave these small fish in the sea as food for the larger fish. About 20,000 mt of small pelagics were landed in Balochistan in 1984 mainly for fish meal. However, the lack of local facilities to process these fish at that time was also a limiting factor to their exploitation. Further limiting factors are primarily economic in nature, involving the low value and relatively high cost of production of offshore small pelagics (CIDA 1987).

Full exploitation of large pelagics is limited by the need to extend vessel operations to the edge of the continental shelf where pelagic long lines could be used (CIDA, 1988). There is a recognized lack of scientific research on the large pelagic fish stocks off the Pakistani continental shelf. There is an adjacent need for research to determine the types, and extent of the deep sea (off continental shelf) stocks. Tuna would be a species of special interest wherein data on food/feeding relationships, reproductive rates, sex ratios, age composition and growth rates need to be obtained.

Total marine fish production in Balochistan generally increased from 37,385 mt in 1970 to 94,110 mt in 1985 with a few off years. However, production had declined to 87,508 mt in 1987.

Projected annual marine fish production is expected to reach the total possible economic landing limit by 1993 and level off through the year 2000 (Table 3). With the exception of the over-exploited shrimp resource, the limits to increasing the Pakistani marine fish harvest are primarily imposed by the lack of appropriate technology and infrastructure.

Current scientific knowledge of fish stocks and resources off the Balochistan Coast appears to focus on shrimp and continental shelf fishing. Studies as to the populations and sustainable yields of deep sea (pelagic) fish are few, and studies of Balochistan's large pelagic resources are virtually non-existent.

3. THE STATE OF AND NEED FOR INFRASTRUCTURE IN DEVELOPING THE RESOURCE

3.1 Fishing Fleet

As indicated in Table 4, in 1984 Balochistan had approximately 2,163 mechanized cum sail boats, 349 sail boats, 136 gill-nettlers and no trawlers operating off its coasts. This represents a gradual increase in the total number of vessels from 1,552 in 1959 to 2,648 in 1984. Motorized craft increased significantly over this period from only 2 in 1959 to 2,229 in 1984 with the largest increases occurring after 1976.

Table 2

Fisheries Production In Pakistan
(mt)

Year	Marine Fisheries					Total Inland	Grand Total
	Sind	Balochistan	EEZ	Total	(Shrimp)		
1959	35,561	15,707	-	51,268	2,853	18,000	69,268
1970	102,418	37,385	-	139,803	17,570	18,740	158,543
1971	101,955	35,316	-	137,271	19,821	18,028	155,299
1972	131,741	41,481	-	173,222	23,867	18,022	191,244
1973	158,892	37,722	-	196,614	21,284	17,617	214,231
1974	110,220	39,790	-	150,010	16,050	19,092	169,102
1975	113,000	41,124	-	154,124	17,709	20,015	174,139
1976	127,795	49,373	-	177,168	22,274	28,491	205,659
1977	165,968	68,848	-	234,816	20,515	33,138	267,954
1978	189,460	68,346	-	257,806	19,399	35,223	293,029
1979	197,248	62,423	-	259,671	24,217	40,718	300,389
1980	177,255	57,688	-	232,943	25,943	46,320	279,263
1981	190,117	71,422	-	261,539	30,000	56,310	317,849
1982	205,500	70,335	2,314	178,149	26,697	59,140	337,289
1983	202,572	77,362	3,109	283,043	27,502	60,359	343,402
1984	221,507	79,258	7,419	308,184	28,570	70,606	378,790
1985	229,220	94,110	9,986	333,316	26,874	75,088	408,404
1986	240,376	86,408	4,955	331,739	26,990	83,993	415,732
1987	246,962	87,508	1,659	336,129	30,133	91,632[a]	427,760

[a] Including estimated aquaculture production of 6,000 mt.

Source: ADB, Appraisal of the Second Aquaculture Development Project in Pakistan (1988).

The mechanization and motorization of the Balochistan fishing fleet since the late 1970s have been hampered by the slow progress of loan programs to local fisherman (CIDA 1987). Loan programs have been slow to distribute and even slower to collect. This is primarily due to the extreme poverty of many of the Balochi fishermen (Klassis), the misconception on the part of these fishermen concerning the loans (many accept them as grants) and resistance from the local "moleholders" (CIDA 1987).

As previously mentioned, Pakistan is nearing "a fully mature fishery" situation wherein landings of marine fish are approaching their total possible economic limit, with shrimp catches surpassing it. In fact, scientists in the MFD/FAO fisheries project have recommended a closed season of about two months per year and a reduction in the shrimp fleet to about one half its 1987 size of over 1,000

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Table 3

Projected Annual Fish Production, Years 1993 AND 2000
('000 mt)

	Actual Production 1985	Projected Production 1993 a/	Projected Annual Growth Rate 1985-1993 (%)	Projected Production Year 2000	Projected Annual Growth Rate 1993-2000 (%)	Projected Annual Growth Rate 1985-2000
Marine Fisheries	333	403	2.4	403	0.0	1.3
Inland Fisheries	75	90	2.3	110	2.9	2.6
Inland Capture Fisheries b/	71	81	1.7	91	1.7	1.7
Aquaculture	4	9	10.7	19	11.3	10.9
Total	408	493	2.4	513	0.6	1.5

a/ 1992/93 is the final year of the Seventh Plan Period

b/ Increased production to result from stocking and harvesting reservoirs and other natural water bodies

Source: CIDA, Fisheries of Pakistan (1987)

Table 4

Fishing Fleet and Gear

Fishing Craft of Pakistan 1959-1985

	Karachi and Sind Coasts						Balochistan Coast							
	Trawlers	Gill netters	Mechanized cum Sail Boat	Motorized Vessels Sub-Total	Sail Boats	Total	Trawlers	Gill-netters	Mechanized cum Sail Boats	Motorized Vessels Sub-Total	Sail Boats	Total	Sail Boats	Total
59	33	135	-	168	1,065	1,233	-	2	-	2	1,550	1,552	1,670	4,455
60	86	146	-	232	1,100	1,332	-	14	-	14	1,961	1,975	1,700	5,007
61	113	253	-	366	1,100	1,446	-	14	-	14	2,000	2,014	2,000	5,480
62	141	301	-	442	1,198	1,640	2	17	-	19	2,005	2,024	2,500	6,164
63	176	359	-	535	1,367	1,902	2	16	-	18	1,915	1,933	2,500	6,335
64	224	422	-	646	2,644	3,290	2	16	-	18	1,915	1,933	2,500	7,723
-	258	490	-	748	2,794	3,542	2	20	-	22	1,933	1,955	2,500	7,997
66	292	506	-	798	2,891	3,689	4	54	-	58	2,475	2,533	2,500	8,722
67	316	559	-	875	3,029	3,904	4	54	-	58	2,475	2,533	2,500	8,937
68	356	593	-	949	3,127	4,076	7	61	-	68	2,500	2,568	8,699	15,343
69	388	627	-	1,015	3,206	4,221	7	61	-	68	2,500	2,568	8,707	15,496
70	443	659	-	1,102	3,339	4,441	-	48	-	48	2,004	2,052	4,933	11,426
71	668	559	-	1,227	3,389	4,616	-	48	-	48	2,004	2,052	5,012	11,680
72	745	618	-	1,363	3,567	4,930	-	48	-	48	2,004	2,052	5,863	12,845
73	922	691	-	1,613	3,967	5,580	-	60	-	60	2,200	2,260	6,431	14,271
74	1,076	731	-	1,807	4,130	5,937	-	60	-	60	2,200	2,260	7,164	15,361
75	1,098	752	230	2,080	3,978	6,058	-	63	-	63	2,249	2,312	7,431	15,801
76	1,130	825	250	2,205	4,000	6,205	-	40	158	198	2,070	2,268	7,972	16,445
77	1,151	840	267	2,258	4,152	6,410	-	42	330	372	2,014	2,386	8,107	16,903
78	1,270	859	327	2,456	4,191	6,647	-	42	677	719	1,673	2,392	8,487	17,526
79	1,280	863	377	2,520	4,247	6,767	-	42	758	800	1,661	2,461	8,908	18,136
80	1,296	888	487	2,671	4,220	6,891	-	21	846	867	1,639	2,506	16,391	25,788
81	1,315	904	637	2,856	4,270	7,126	-	14	1,307	1,321	1,208	2,529	9,954	19,609
82	1,380	933	1,736	4,049	2,745	6,794	-	18	1,895	1,913	652	2,565	10,185	19,544
83	1,431	1,019	1,770	4,220	2,769	6,989	-	106	2,020	2,126	473	2,599	10,766	20,354
84	1,539	1,047	2,000	4,586	2,539	7,125	-	136	2,163	2,299	349	2,648	11,572	21,345
85	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	42	2,353	2,396	333	2,728	n.a.	n.a.	n.a.

Source: CIDA, Fisheries of Pakistan (1987)

trawlers. Improved production may more effectively come from increasing the efficiency of post harvest fishing operations rather than from simple increases in the tonnage of fish/shrimp landings (CIDA, 1987).

3.2 Fishermen

The number of marine fishermen in Balochistan tended to decrease over time from 28,600 in 1970 to 22,027 in 1984. A low of 16,964 existed in 1979 (Table 5). Table 6 illustrates the make-up of fishermen in Balochistan in 1986-1987 which seems to further indicate the decline in marine fishing employment. Of a total of 20,861 fishermen in 1987, 14,562 were full-time, 3,658 were part-time and 2,731 were "occasional" fishermen. This decline in the number of fisherman is due in part to the increased amount of mechanization which has occurred in the recent past.

3.3 Fish Processing Facilities

Karachi is the main fish harbour in Pakistan and virtually the only marine fisheries infrastructure along the coast to accommodate the fishing fleet. The Karachi port, built in 1960 to handle 400 vessels was congested with well over 1,000 vessels in 1987. Despite this congestion the fish processing/freezing facilities were operating a fifty percent of capacity that year. Poor maintenance and sanitation, as well as management problems (The Fishermen's Cooperative Society) have been cited as contributing to this under utilization. Plans were underway in 1987 to rehabilitate this port and increase vessel accommodations to 1,040 trawlers and gill nettlers (CIDA 1987).

A new fish harbour with support facilities was planned in 1987 to be located on the Korangi Creek approximately 20 miles from the Karachi facility. This harbour is designed to accommodate 387 vessels which will relieve some of the congestion at Karachi. The Korangi post is better suited for larger vessels as it has natural protection and deeper waters, but a reluctance to work there on the part of the fisherman has been noted. Many of these fishermen live in Karachi.

Improvements to the Pasni fish harbour on Phitti Creek, approximately 720 km (by road) from Karachi were also planned for 1987. These harbour improvements were designed to handle 16,000 mt of fish annually. Truck transport from Pasni to Karachi takes approximately 15 hours and boat transport can take between 24 to 48 hours.

Improvements to the Gwadar Harbor and infrastructure were in various stages of planning and implementation in 1987, but serious problems with water and electricity shortages have occurred. In 1975 this port contained 37 launches and handled 500 sail boats per day. Plans were designed to handle five trawlers, 20 long-liners and 800 sail boats per day upon completion (World Bank 1975). The full implementation of the harbour improvement plans is apparently incomplete as of 1991 (Van Satan, 1991).

Market and landing shelters have also been installed at a few of the smaller landing areas along the Makran Coast, but these improvements have been under-utilized due to locational problems and resistance from local "moleholders" (middlemen).

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Table 5

Number of Fishermen in Pakistan, 1970-1984

	MARINE			INLAND	GRAND TOTAL
	Karachi-Sind	Balo-chistan	Total		
1970	61,000	28,600	89,600	73,180	162,780
1971	62,520	28,600	91,120	72,878	163,998
1972	65,005	28,600	93,605	82,895	176,500
1973	70,770	25,200	95,970	87,237	183,207
1974	72,000	25,200	97,200	100,984	198,184
1975	73,500	25,200	98,700	108,597	207,297
1976	74,100	17,868	91,968	113,903	205,871
1977	75,200	17,636	92,836	124,337	217,173
1978	80,800	17,427	98,227	130,183	228,410
1979	86,400	16,964	103,364	135,725	239,089
1980	54,896	19,625	74,521	116,935	191,456
1981	60,771	21,034	81,805	118,098	199,903
1982	63,050	21,431	84,481	120,906	205,387
1983	63,526	21,531	85,057	124,375	209,432
1984	64,795	22,027	86,822	131,760	218,582

Source: CIDA, Fisheries of Pakistan (1987).

Table 6

Number of Fishermen in Pakistan
(1986-1987)

	Full-time		Part-time		Occasional		Total	
	1986	1987	1986	1987	1986	1987	1986	1987
Marine								
Sind	51,011	51,101	13,938	14,002	1,498	1,600	66,447	66,703
Balochistan	15,293	14,562	3,412	3,568	5,285	2,731	23,990	20,861
Subtotal	66,304	65,663	17,350	17,570	6,783	4,331	90,437	87,564
Inland								
Sind	15,390	15,890	6,530	6,818	-	-	21,920	22,708
Punjab	34,822	35,209	36,613	36,821	36,968	43,909	108,403	115,939
NWFP	2,335	2,335	2,327	2,327	550	8,780	5,212	13,442
Others	991	1,131	423	330	440	704	1,854	2,165
Subtotal	55,538	54,565	45,893	46,296	37,958	53,393	137,389	154,254
TOTAL	119,842	120,228	63,243	63,866	44,741	57,724	227,826	241,818

Source: ADB, 1988.

The lack of freshwater, electricity, all-weather roads, sanitation and education limit the efficiency of the post-harvest operations of the Balochistan fishing industry. Wide-spread poverty of the fishermen who do not own the boats they work on has also been a barrier to effecting positive change.

An all-weather road or rail way system appears to be the one tangible facility which can generate the most positive benefits for Makran coastal communities. A reliable and timely transportation system from Gwadar to Karachi could facilitate improved communication, education and extension. This could, in turn, foster improved sanitation, facilities maintenance and efficiency.

4. ECONOMIC CONSIDERATIONS FOR EXPLOITATION OF STOCKS

The existing state of poverty, and other local socioeconomic factors, as well as the lack of adequate sanitation, education, over-land transport, and fish processing/marketing infrastructure that occurs along the Balochistan coast poses the primary economic constraints to improving the exploitation of the fish stocks. Although near-shore fish stocks appear to be approaching harvestable limits, there is a lack of scientific data on the large pelagic stocks (i.e., tuna) that occur off the Balochistan continental shelf.

The cost of evaluating the productivity of these large pelagic stocks as well as the cost of the technology required to harvest these stocks must be determined. The existing need for post harvest, marketing and distribution has associated costs which must also be addressed.

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5. RECOMMENDATIONS AND LEVEL OF EFFORT

A review of the existing literature on the fisheries of Pakistan and Balochistan reveals many opportunities for improvement. There are two areas of opportunity for Balochistan fisheries: improved port harvest, marketing and distribution of currently explored resources. The sustainable harvest of large pelagics (i.e., tuna), is an area which has received little consideration in the past.

LBII, therefore, recommends a study of the opportunities for investment in fisheries in Balochistan, with the following objectives:

1. Identify the opportunities for improving existing fisheries activities.

2. Estimate the potential for large pelagic fisheries.

To accomplish these objectives, the following tasks would be be needed:

1. **Data Development.** Further define the extent of knowledge of Balochistan fisheries, especially of stocks and their relationship to contiguous areas (i.e. continental shelf, deep sea/off-shelf). Large pelagic fish stocks (i.e. tuna) can be a focus of special interest. Two weeks of effort on the part of a Natural Resources/Planner can be expended on data collection as follows: Three days at FAO, Rome and ten days in Karachi and Balochistan.

2. **Field Study Design.** Determine specific needs and appropriate methods to conduct trophic studies (stomach analyses), and studies to correlate landing size and stock size, focusing on existing large pelagics (especially tuna). One week of effort on the part of a Senior Fisheries Expert to be expended along the Makran Coast and the Karachi/Korangi ports.

3. **Stock Assessment Design.** Initiate the determination of the productivity and sustainable yield of the Balochistan Fishery with emphasis on the large pelagics (tuna). The need for the following studies will be defined for selected stocks: sex ratios, age compositions, growth rates, reproduction rates, and food/feeding relationships.

4. **Review Existing Fishery Infrastructures.** Review and develop a database on existing Balochistan/Karachi-Korangi Fishery Infrastructure, relevant socioeconomic climate, transportation, and marketing/distribution systems. One week of effort on the part of a Natural Resource Planner can be expended in Pakistan.

5. **Identify Possible Investments.** Renew needs for investments in fisheries including port harvest services, processing, storage, port and other transport facilities, marketing systems, etc. One week of an industrial planner will be required.

6. **Identify Interested Investors.** Contact firms who have invested in fisheries, or have expressed interest in the past. Determine their potential interest and willingness to pursue opportunities, including participation in further studies. Identify complementary public sector investment needs. One week of an industrial planner is needed.

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7. **Contact Potential Financial Sources.** Meet with banks and other funding agencies to determine interest in financing:

   - Further studies.

   - Investments. This will be carried out in one week by an Industrial Planner.

8. **Prepare Draft Report.** Prepare and submit report of findings of discussion with the GOB and USAID.

9. **Final Report Preparation and Follow-up.** Reporting of findings, analyses and conclusions will be prepared, along with appropriate follow-up incorporating comments on draft report.

The following table summarizes the proposed staffing and scheduling of these tasks.

OPPORTUNITIES FOR FISHERIES

INVESTMENTS IN BALOCHISTAN

Proposed Staffing

Tasks	Industrial Planner	Senior Fisheries Spec.	Natural Resource Planner	Schedule (by week)
1. Data Collection			2	Weeks 1,3
2. Field Study Design		1		3
3. Stock Assessment		1		4
4. Infrastructure Review			1	2
5. Possible Investments	1			3
6. Interested Investors	1			4
7. Financial Sources	1			5
8. Draft Report	1			6
9. Final Report	2	1	2	7,8
TOTALS	6	3	5	

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16) Techo-Economic Feasibility Study of Utilizing Kesopelagic Fish for the Production of Fish Meal and Fish Oil in the Sultanate of Oman by E. Arnesen, Consultant, Fish Reduction Technologist, and J. Scharfe, Consultant Fishing Technologist (FI:GCP/INT/368/NOR), FAO, Rome, 1986.

17) Mr. Van Satan, Senior Fisheries Economist, World Bank, E.M.E., Washington, D.C. (202) 473-2458.

18) Mr. Mike Carich, USAID - CDIE Washington, D.C. (703) 875-4960.

19) Mr. William Chen, Office of Operations, Room F-302, FAO Rome, Italy (011) 396 5797 6425.

ANNEX 2

BALOCHISTAN AREA DEVELOPMENT PROJECT

GOVERNMENT OF BALOCHISTAN

AND

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

OPPORTUNITIES FOR TOURISM IN BALOCHISTAN: PRELIMINARY REVIEW

prepared by

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of

LOUIS BERGER INTERNATIONAL, INC

September, 1991

EXECUTIVE SUMMARY

During this short visit, I have reached preliminary conclusions regarding tourism in Pakistan and in Balochistan, based upon which I have made several recommendations.

PRELIMINARY CONCLUSIONS: PAKISTAN

A basic understanding of travel in Pakistan is essential to review of opportunities for tourism in Balochistan. Some of the key points are:

* The travel purpose of the clientele of Pakistan's top hotels is largely business.

* Travel agencies estimate that Pakistan annually receives less than 20,000 tourists organized in groups, very little when compared to the millions who visit preferred destination countries. In addition, Pakistanis and other foreigners travelling individually have occasion to visit certain attractions.

* These tourists and the few Pakistanis who travel for leisure traditionally prefere hill stations, especially those located in the Northern Areas. The Karachi beaches are used mostly by a relatively small percentage of local residents.

PRELIMINARY CONCLUSIONS: BALOCHISTAN

Any basic strategy for tourism development in Balochistan must have the objective of attracting guests from among those who would otherwise already be in Pakistan.

The Quetta area has unexploited potential for tourism as a city and due to its location near many interesting day trips. This will depend upon a more accurate demand analysis, improvement of conditions in Afghanistan and Iran and increased air travel capacity to and from Quetta.

Other areas of Balochistan have limited access and facilities. The feasibility of developing the Makrani coast is limited due to:

- the small number of tourists in Pakistan and a lack of a beach tradition here

- prevalent security and religious restrictions

- inadequate utility services and facilities

- Although Makran beaches are beautiful, pristine, closer

and air fares are low, they may not be as attractive as alternatives such as the Maldive Islands

- investors may prefer a location closer to Karachi.

Nevertheless, small resort(s) on the coast may yet be considered as constraints are removed. The beaches are beautiful and the weather, tempered by the Arabian sea, is mild. There are potential wildlife and archaeological sites. There are no other significant groups of attractions in the Makran.

RECOMMENDATIONS

The Consultant makes the following recommendations regarding short-term studies, the development of a Quetta area site and medium-term studies as follows:

Short-term studies

* First, the GOB and USAID should finalize its review of private sector interest in and timeliness of further studies along with the proposed scopes of work.

* The following interests should be taken into account in addition to the strong interest expressed by the GOB:

  o The Ministry of Tourism, the Pakistan Tourism Development Corporation, and the management of Serena Hotels have asked to review this report.

  o Ashwani and Sheraton Hotels are not interested.

  o Avari Hotels remain to be consulted.

  o The leading travel agent, Walji's, has expressed a definite interest and a clear willingnesss to participate in subsequent studies.

* If a go ahead is received, three studies are recommended in sequence following the attached scopes of works.

* First, carry out a Balochistan Tourism Demand Study with participating organizations, including Walji's, consisting of:

  o surveys of wholesale travel operators and hotel guests in Pakistan, with emphasis upon tourists

  o resulting analysis and demand projections.

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Development of a Quetta Area Site

Specific recommendations are also made for immediate integrated action in preparing the way for improving the attractiveness of a specific day trip in the Quetta area, including private sector investments. There is currently more tourist interest in Mehrgarh. The PTDC - Quetta can provide detailed guidance.

Medium-term Studies

Later the Consultant recommends that, based upon the results of the demand analysis, and agreements reached with the interested parties, the following studies be considered:

* A development plan for the Quetta area, with the possible participation of Serena Hotels and other interested parties; and

* a Makrani coast development plan, for which there is likely to be much less interest, contingent upon an agreement in principle to remove security and customary restrictions. The latter study might include an evaluation of opportunities to privatize facilities built by government agencies.

I. INTRODUCTION

Background

Consistent with USAID policy to emphasize development through the private sector, in March, 1991, the Project Officer, A. Karim Nayani, asked LBII to investigate sectors which appear suitable for private sector development, including tourism potential. After review of the BALAD evaluation report in this regard and discussions with private sector experts including the author of this portion fo the report, Michael Julien, the Chief of Party, Dwight Bunce, recommended the following approach:

* The effort should be province wide, as tourism potential in the Makran may be limited.

* It should be based upon a strategy of partnership between the public and private sectors.

* After an initial review, the involvement of Pakistan International Airlines - PIA, the Pakistan Tourism Development Corporation - PTDC, hotel operators and potential investors should be assured. Full-fledged tourism development studies would not be warranted unless key investors expressed interest in jointly pursuing the matter.

* Carry out subsequent studies only after obtaining comments upon the draft scopes of work and commitments to participate from several of the above organizations.

Objectives

This phase should thus be limited to preliminary information collection and analysis, based upon which interested agencies and potential investors would make initial decisions. The scope of work is:

* Meet with the Government of Balochistan to determine the level and type of interest in tourism, as well as their policies to promote investment in the sector.

* Obtain and review existing tourism studies. Interview concerned organizations and collect preliminary data. In order to achieve this objective, it was essential to:

  - Establish a framework of travel patterns in Pakistan and the constraints upon tourism placed by the country's cultural and economic environment.
  - Visit selected sites.

* Ascertain organizational interest in the promotion of tourism as technical and financial involvement in subsequent phases.

* Prepare draft scopes of work for tourism studies.

Subsequent Steps

After submitting this first phase report to GOB and USAID for review, LBII will:

* Evaluate, together with GOB and USAID, private sector interest in and timeliness of further studies along with their draft scopes of work and revise accordingly.

* If a go ahead is received, propose a subsequent study with revised scope of work, as well as responsibilities, budget and consultants by organization.

Travel in Pakistan

It is essential to place this review of opportunities in Balochistan in the context of existing travel patterns in Pakistan. Some of the key points are:

* The travel purpose of the clientele of Pakistan's top hotels is largely business (private sector or official), much less for personal reasons, and a very small percentage for tourism.

* Most hotel guests come from Pakistan (both Pakistani and expat), while others are from Japan, Europe, the Middle East and United States.

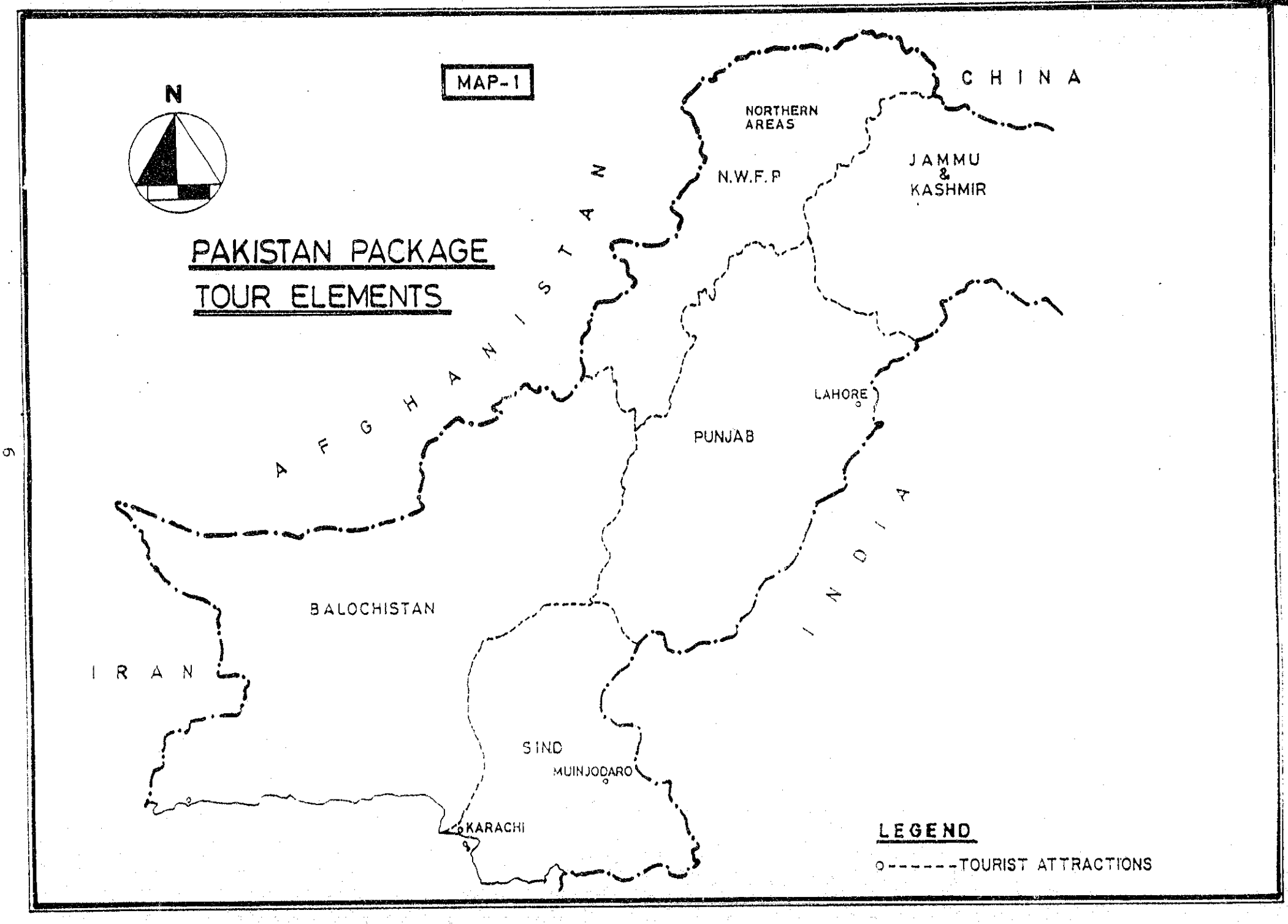
* Travel agencies estimate that Pakistan annually receives less than 20,000 tourists organized in groups, very little when compared to the millions who visit preferred destination countries.

* The average group, typically with 70% aged 55 and over, spends 6 days to 2 weeks in Pakistan.

* In addition, Pakistanis and other foreigners travelling individually have occasion to visit certain attractions.

* The few Pakistanis who travel for leisure traditionally prefere hill stations, especially those located in the Northern Areas. See Map 1 - Pakistan.

* Other than mountaineers, the international tourists who include Pakistan in their travels are generally seeking


MAP-1
N
PAKISTAN PACKAGE
TOUR ELEMENTS
CHINA
NORTHERN AREAS
N.W.F.P
JAMMU & KASHMIR
AFGHANISTAN
LAHORE
PUNJAB
INDIA
BALOCHISTAN
IRAN
SIND
MUINJODARO
KARACHI
LEGEND
o------TOURIST ATTRACTIONS

"soft adventure," something slightly daring and unusual, to tell their friends, but without the thrills of real danger. Since there has generally been a lack of promotion (destination marketing) for Pakistan, it is generally off the beaten path.

* However, there is a growing interest in Pakistan with the support. The Ministry of Tourism and Pakistan Tourism Development Corporation are seeking to develop the tourism industry. The Pacific Air Travel Association is showing interest in exploiting the country's potential. Further evidence of this is the very decision by the Government of Balochistan to initiate this report.

Beach Recreation in Pakistan

* The beaches of Balochistan are generally not used.

* The current use of beaches refers to an entirely different market than the Balochistan and Makran potential. Most beachgoers are residents of Karachi on one-day excursions. Many residents of Karachi relax (largely at the Clifton) beach, and some swim in the ocean, preferrably in their shalwar-kameez. They, nevertheless, represent only a small percentage of the metropolitan population. The issue of tourism development becomes an integral part of urban development and recreation plans. See the Karachi Coastal Recreation Development Plan, 19900-2000.

* An additional aspect of urban beach recreation is the potential development of the Hub Lake and Las Bela areas. A pre-feasibility study was prepared for the tourist development of the Hub Lake area. The facilities would also appeal largely to the Karachi-based population for one-day visits.

* On the other hand the concept of a beach resort would appeal to visitors seeking to relax for a longer stay, preferably in an quiet, relaxing area. These guests would tend to have greater purchasing power and potential contribution to the local economy.

Organization of Report

After a preliminary analysis of Balochistan's tourism development potential, the constraints to travellers in Pakistan and Balochistan are reviewed. This is followed by a summary of interest expressed by public and private organizations and preliminary conclusions. The needs for further study are then identified and scopes of work are presented in draft form.

II. TOURISM POTENTIAL

Balochistan

Balochistan is a vast, unspoiled, arid and sparsely inhabited province. Covering nearly half of Pakistan, it contains less than 5% of the country's population. Despite many places of interest and its living, thriving culture, it is generally not included as part of Pakistan's limited destination marketing. See Map 2.

Few tourists go to Pakistan when compared to the millions who visit preferred destination countries. While one might expect growth in tourism in Pakistan, a basic premise of this report is that Balochistan attractions, in and of themselves, would not be the cause. Instead, the idea is for the province to attract a greater share of tourists currently travelling in Pakistan. Even though the market is not that large at present, attracting a significant share could have a major impact upon Balochistan's economy.

A key to tourism in Balochistan would thus be to include it in the country's package tours currently concentrated on the Northern Areas, and to a lesser extent Moenjodaro and Lahore. Walji's offers several tours to Balochistan but few clients are interested. There is a somewhat greater interest in France where favorable articles were publisshed recently.

Quetta

Quetta receives an overwhelming share of travellers[1] to Balochistan but a very small share of visitors to Pakistan. PTDC has printed one of its attractive brochures on Quetta. It is generally not available overseas however, as are its brochures for other locations. The city has a varied bazaar, good other facilities, fine dry and cool weather most of the year, and many things to see in the area.

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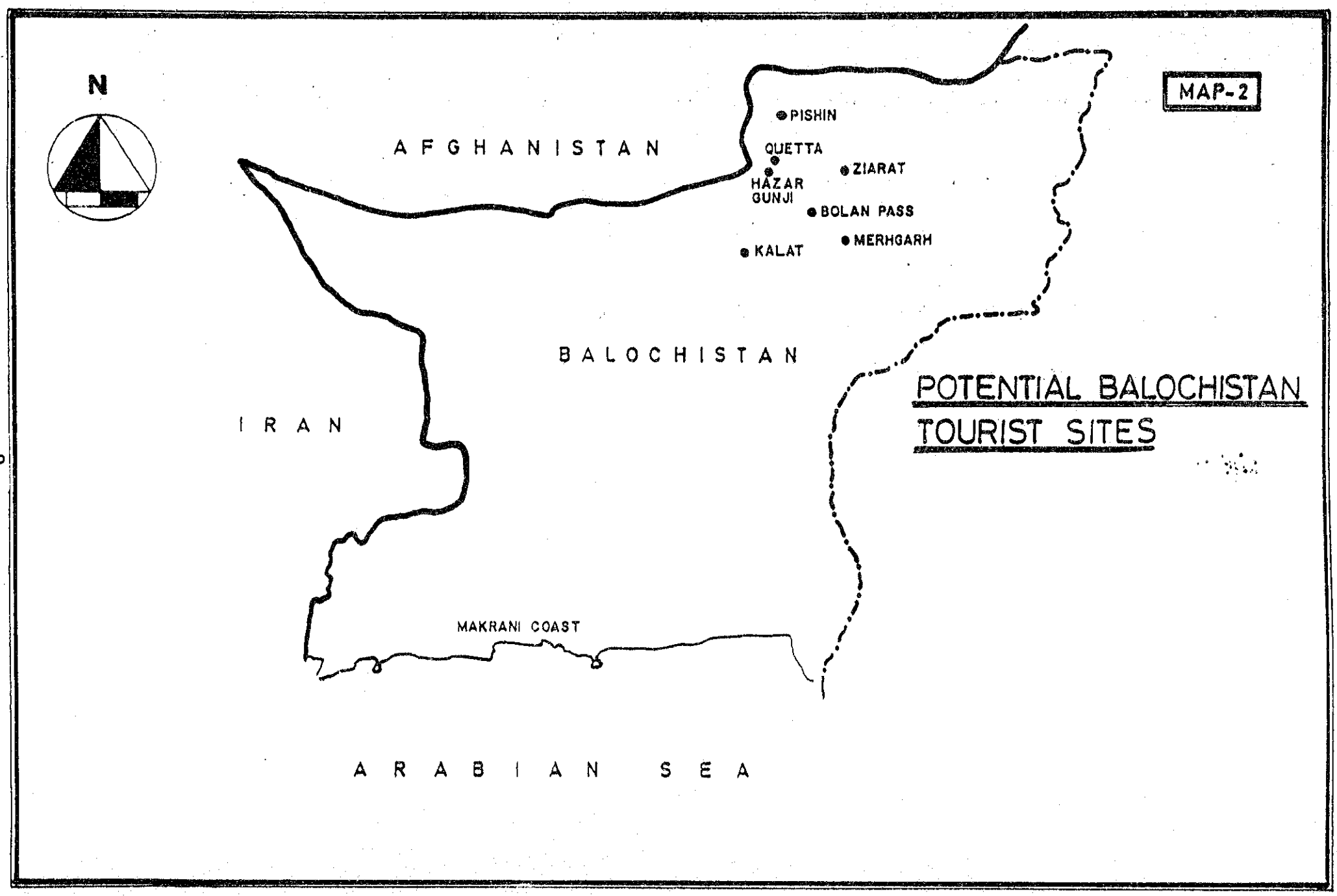
[1] - Although "travellers" spend much less per day than the four-star hotel "tourists," they tend to remain in country longer so that their total expenditures in country may not be much less than the typical tourist, and their spending tends to be more equitably distributed among middle and lower-class suppliers.


MAP-2
N
AFGHANISTAN
PISHIN
QUETTA
ZIARAT
HAZAR GUNJI
BOLAN PASS
MERHGARH
KALAT
BALOCHISTAN
IRAN
MAKRANI COAST
ARABIAN SEA
POTENTIAL BALOCHISTAN TOURIST SITES

There are a number of attractive day trips around Quetta. However, only now are there plans to develop them into organized tours. These include:

* Ziarat, a hill station at 2500 m, with many interesting sites, surrounded by a sparse juniper forest, is where Muhammad Ali Jinnah spent his last days.
* Bolan Pass, the historical, spectacularly long and narrow pass to drive through
* Mehrgarh, Archaeological sites of a neolithic settlement dating from 6,000 to 3,000 BC, probably the earliest found on the sub-continent
* Hazar Gunji Chiltan National Park, wildlife, original vegetation, and wide-open landscapes
* Hanna Lake and the Urak Valley, and Pishin Valley (orchards).

Typical music and dance programs could also be organized. With effective promotion, a proportion of visitors to Quetta could conceivably stay an extra day or more, considerably increasing their expenditures in Balochistan.

The Serena, the only four-star hotel, is a beautifully conceived adaptation of desert architecture and Balochi interior decor. Its clientele is made up of expats and international agencies working wih the refugees, government employees, diplomats and, increasingly, businessmen. Its occupancy rate varies around 50%.

Asian land travellers have dwindled to a trickle due to conditions in Afghanistan and Iran. One can assume that they will once again pass through this key Asian crossroads as these situations improve. PTDC-Quetta estimates that approximately 30% of the travellers from Kabul travelled via Quetta, totalling approximately 4 vehicles per day, including large buses and passenger trucks. Other travellers come from Iran through Zahidan which is now connected to Quetta via limited Iran Airlines and Pakistan Railway service.

Although destroyed by the great earthquake of 1935, the historical city of Kalat continues to be another important point of interest. A relatively strenuous day tour could possibly include the National Park.

The Makrani Coast

There are few beach resorts in South Asia. One of the options would be the Maldive Islands; others include Sri Lanka, Goa (India), and the beaches of the Gulf states. For those in the

region who wish to relax in a beach setting, Balochistan could be a future alternative.

Despite the lack of a tradition, if beach vacationing were developed, there would be two alternatives in Balochistan. Assuming a suitable site were identified, the Las Bela Division might be preferred due to its proximity to Karachi. The other would be the Makrani coast, consisting of over 750 km of untouched beaches along the Arabian sea, interrupted by jagged promontories, tidal creeks, and an occasional fishing village. It is relatively inaccessible, except by air, although road improvements are in progress and a coastal cruise line is being considered.

Map 3 shows the area visited for this report, from Ormara to Gwadar. A discussion of alternative resort sites is presented in Attachment A. If significant demand could be identified and estimated, one or more resort sites could be selected, providing a broad choice of sport programs including golf, court games, swimming, sailing and water sports. Although the Makranis do not have a diving tradition, there may be interesting diving spots. Camel riding, visits to sealife areas and cultural programs are other options.

Outsiders expect a desert climate with extreme heat and wind storms. However, this is tempered along the coast by the influence of the Arabian sea. According to 30-year weather data, Ormara has a mild climate with only balmy winds, which becomes slightly less amenable as one travels toward Gwadar. The beaches consist of smooth sand with almost no vegetation, although certain species can survive when planted. The tides are mild most of the year and, since the slope into the sea is gradual, a bather would have to walk far out at low tide.

III. CONSTRAINTS TO TOURISM

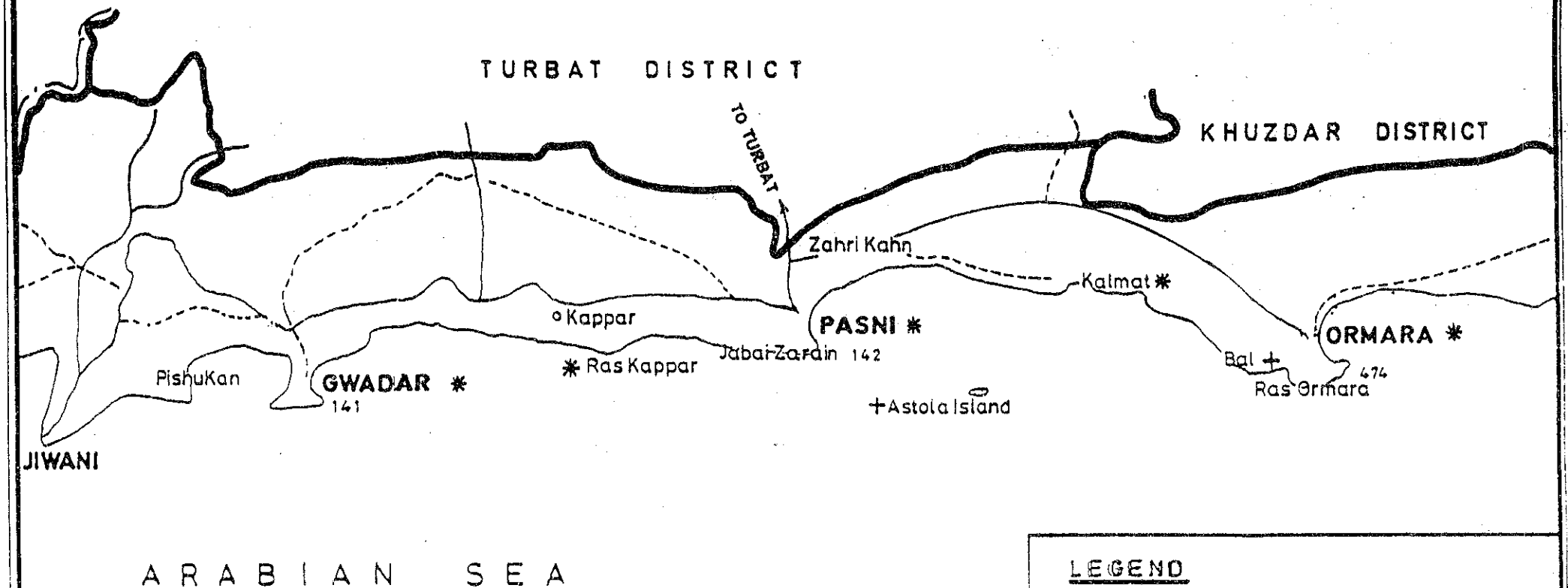
The Environment for Tourism in Pakistan

While the people are generally friendly, education regarding attitudes and treatment of tourists is unknown. There are things to see and do in other countries which appear to be comparatively more attractive to the average visitor. For lack of promotion, Pakistan is considered off the beaten track.

Certain behavior is not generally accepted, under most conditions, and is sometimes illegal: inappropriate dress, public sunbathing, alcoholic drinks, photography, public demonstrations of affection, etc. Some of these restrictions may be waived for private clubs under certain circumstances.

MAP - 3

ALTERNATE RESORT SITES ON THE MAKRANI COAST



LEGEND

SCALE = 1:50,000

✱------ ALTERNATE SITE

+ ------SEA TURTLE SPAWNING SITE

141------HEIGHT IN METERS

———UNMETALLED ROAD

---------TRACK

Due to unsatisfactory land travel options, there is a heavy demand for air travel. Low air fares increase the demand and other fiscal and administrative policies affect airline operations. Despite its considerable and expanding fleet, PIA is unable to meet existing or, at least, future demand due to its entirely saturated capacity. This is especially true in Balochistan, where roads are very poor, despite the fact that it has PIA's largest feeder service. However, the Agha Khan group has received an initial go ahead to develop a proposal for another airline to serve Pakistan's domestic needs.

Pakistan has not provided incentives for hotels and tourism development similar to those which promote industrial activities, although both can have multiplier effects on the economy.

Constraints to Travel in Balochistan

In addition to the bad roads, there is generally a lack of services in Balochistan. Water supply, electricity and telecommunications are often undependable.

Current conditions in Afghanistan and Iran limit the prospects for attracting Asia overland travel.

Except for the Quetta area, the highways from there to Sukkur and Iran, and the Hub dam area, a travel permit is presently required for foreigners. It is generally only granted for work purposes. In the past, this was due to the danger of dacoits (kidnappers and robbers), as well as border and tribal questions. However, there is a slow trend towards reducing these requirements and conditions have been generally peaceful. Permits are no longer required for the Northern Areas and, although still slow, the permit request process for Balochistan has become more flexible and responsive.

Controls would have to be simplified or removed for increased tourism to be possible, especially along the coast. This could be made possible initially for limited areas.

The potential demand among both Pakistanis and foreigners for beach destinations such as the Makran is currently limited due to lack of tradition.

IV. EXPRESSED INTERESTS

In order to further analyze and plan for tourism development in Balochistan, inquiries were made with the public and private sector regarding their possible interest. In general, there was interest mixed with scepticism.

In addition to the GOB, the Pakistan Ministry of Tourism and the Pakistan Tourism Developmnt Corporation - PTDC expressed interest in reviewing this report to consider possible participation in further studies. The PTDC - Quetta is especially interested and has the technical resources to provide specialized guidance.

While the GOB and the GOP may be interested in participating in further study, the key concern is whether the private sector is likely to be interested in investing in the sector.

PIA cooperates regularly with the Tourism Division (GOP) and the Pakistan Tourism Development Corporation Ltd. - PTDC in tourism promotion. PIA recently participated in the Pacific Area Travel Association meeting held in Lahore, where considerable interest was expressed in travel opportunities in Pakistan. However, due to its saturated capacity, PIA, both in Quetta and at its headquarters in Karachi, clearly expressed its lack of interest in further pursuing the matter at this time.

On the other hand a PIA executive felt a study of this nature might deserve more merit if conducted regarding tourism nation-wide, including Balochistan.

The Marketing Manager of Serena Hotels, based in Karachi, expressed interest in destination marketing for Quetta. This may be due to continued room availability, as their hotel averages roughly around 50% occupancy.

Although initially hesitant, he brought attention to several of the elements to be weighed in considering investments along the Makrani Coast. He proposed that the company's chief executive have the opportunity to review this report upon his return from abroad in September.

Ashwani Hotels, the owner of both the Holiday Inn and Pearl-Continental chains in Pakistan, is not interested in Balochistan, given the current low occupancy rate there. Meanwhile, their largest investment underway is a major facility at Burban, in the Northern Areas.

Sheraton Hotels also indicated their lack of interest. Their management systems restrict their projects to a minimum of 200 rooms, far beyond what would be considered for Balochistan. Avari Hotels and other local groups were not interviewed.

V. PRELIMINARY CONCLUSIONS

The initial conclusions are:

* Depending upon a more accurate assessment of potential demand, there are definitely opportunities for attracting more visitors to Balochistan, especially in the region around Quetta.

* There is initial interest in both the public and private sectors in further pursuing opportunities in Balochistan.

* This potential will increase with the improvement of Pakistan's ability to attract visitors, political conditions in Afghanistan and Iran and greater air transport capacity to and from Quetta.

* The attractiveness of other areas of Balochistan is smaller, limited further due to problems of access and facilities.

* The feasibility of establishing special resort facilities along the Makran coast is limited due to the following:

  - The number of tourists who otherwise come to Pakistan is small.

  - Security and religious restrictions prevail, although special arrangements could be made.

  - Hill stations rather than beaches are preferred in Pakistan.

  - Many beaches do not have vegetation, have a very gradual slope into the sea with mud flats during low tide.

  - Even if a beach resort were feasible, it is possible that, given its proximity to Karachi, investors would concentrate their attention on the development of the Hub dam area of Las Bela division, Balochistan, rather than the Makran.

  Nevertheless, depending upon demand, relatively small resort(s) on the coast might be further considered as constraints are removed.

* Other than the beach, there are no other sites in the Makran which could attract visitors.

The site development would include:

* development of and access to specific sites including choice of sites, preliminary design and cost estimates and appraisal of investor interest for:

    - o rehabilitation, restoration, drainage, paths, facilities, utilities and services at site, etc

    - o access roads, parking, etc

    - o guide, guard and maintenance services

* specification of requirements and bidding process for restaurant concession(s), possibly including stopover facilities

* design of day tours.

This might also include invitations of interest in the opening of a full-service travel agency in Quetta, including to service group day and overnight tours.

Medium-term Study Needs

Future studies could be carried out, with intense private sector participation, regarding:

1) a development plan for the Quetta area, for which a positive response from Serena and other hotel companies is likely given the prevailing occupancy rates (see scope of work below);

2) a Makrani coast development plan, for which there is likely to be much less interest (see attachment C). The second study would be contingent upon an agreement in principle to remove security and customary restrictions in the areas selected for development, a clearly verified demand and seriously interested investors. An added plus would be a decision to privatize some of the public agency facilities built along the coast, especially in Gwadar.

For each study, agreements would be reached with the interested parties and the studies would be jointly carried out.

VII. SCOPES OF WORK

Scopes of work and estimates of the resources required for each study component are presented below.

Balochistan Demand Study - Scope of Work and Required Resources

1. Demand Analysis

1.1 Individual Demand

Carry out a small sample survey of tourists and other hotel guests in Pakistan (especially with regard to their attitudes towards the Quetta area and beach resorts in general, and demand or preference for specific activities). Demand would also be estimated for additional hotels, restaurants and shops.

1.2 Institutional Demand

Survey of and interviews with travel operators through their associations. Seek their commitments to promote a proposed package. Analyze the market share that Balochistan would be likely to attract.

2. Constraints Analysis

Further analyze local attitudes towards and treatment of tourists and prepare plan to mitigate potential conflicts. This could include an education program for both the public and for travellers. Analyze conditions under which relaxation of travel permit requirements and religious restrictions would be permitted. Determine needs for additional airline services.

3. Demand Projections

Project potential demand in Balochistan under various scenarios.

4. Required Resources

This study is likely to require the following resources: Tourism Marketing Specialist - 4 weeks, Survey specialist - 4 weeks, Policy Analyst/Economist - 2 weeks, interviewers, 3 weeks each.

Quetta Tourism Development Master Plan- Scope of Work and Required Resources

1. Tourism Potential

Analyze attractiveness of specific sites and the services

available both for transportation and at the locale.

2. Preparation of Master Plan Components

The plan would be prepared to the level of feasibility. It would have both policy and project components. Policy changes would be carefully detailed, decisions made and agreed to. These would include:

* increased air travel capacity
* government support for investment studies
* expansion of areas permitted for travel

Projects would each to be detailed at the level of conceptual design and pre-feasibility. These would be prepared for:

* destination marketing
* improved air services
* development of and access to specific sites including choice of sites, preliminary design, costs and appraisal of investor interest
* design of day tours.

3. Feasibility Analysis

Economic feasibility would be determined for the master plan as well as financial pre-feasibility for each of the projects.

4. Required Resources

It is estimated that the following resources will be required: Architect or Site Planner (with tourist site development experience) - 6 weeks, Tourism Promotion Specialist - 3 weeks, Financial Analyst/Economist - 3 weeks.

<u>Makrani Coast Development Plan - Scope of Work</u>

The plan would consist of three components: It would only be initiated if it were determined that it was warranted, based upon constraints removed, interested investors and effective demand. These are: 1) a feasibility study for a resort, largely at the expense of the interested investor (see scope of work in the attachment C; 2) planning for utilities to serve the resort; 3) planning of a natural wildlife reserve. There is no need to estimate the required resources, as this is largely a private sector endeavor which the government would encourage.

ATTACHMENTS

ATTACHMENT A

ALTERNATIVE RESORT SITES ON THE MAKRANI COAST

This attachment is based upon a three-day trip in the area, which, in no way, can provide the full knowledge required to begin a master planning exercise. However, it provided for the following general conclusions:

If a traveller is looking for a remote location, he/she certainly would have trouble finding one more so. Access would be almost exclusively by air. Roads are very poor. Water supply is potentially a serious constraint and its availability needs to be carefully analyzed for each site. Power and telecommunications are also extremely limited, as well as shops, health and other services. Road and utility improvements are underway, however, and coastal cruises are being considered.

The area's desert climate is tempered along the coast by the influence of the Arabian sea. According to 30-year weather data, Ormara has a mild climate with balmy winds. The climate becomes slightly less amenable as one travels toward Gwadar. Thus ideal weather conditions prevail for most of the year and are generally appropriate for most sports and activities associated with beach resorts. See Table A.1.

Table A.1
WEATHER CONDITIONS ON THE MAKRANI COAST (Ormara)
Normals - 1931-60

Temperature (C)	Humidity (%)	Wind (knots/hr)*
Dec-Mar: 15 - 27	average: 75-90	calm: 35%
Apr-Oct: 23 - 32	low (April): 59-84	39% W/WSW < 9 knots
		10% W/WSW 10-19 "
		0.4% W/WSW >20 "

Source: Sayed Parveez Hussain, basic weather forecaster, Karachi airport (during his visit to Ormara), WMO 41760, ICAO id: OPOR (lat. 25 13′ N, long. 64 37′ E). * from wind rose.

However, many beaches do not have vegetation, have a very gradual slope into the sea with mud flats during low tide, and therefore may not be especially attractive for swimming nor surfing. Snorkling and scuba diving may be possible but there are no known reefs and little information about existing sea habitats.

The religious restrictions mentioned in the text prevail, even though the Zikri sect, representing up to 50% of the population,

Ormara currently has adequate water supply brought from a well over 20 km away. the local leaders believe its capacity can easily be doubled if need be, although this remains to be determined.

There is a nearby sea turtle spawning area. Its abundant lobster and shrimp were at one time shippped to Karachi by air charter.

Table A.2
CONDITIONS FOR TOURISM DEVELOPMENT
ON THE MAKRANI COAST

CONDITION	GWADAR	PASNI[2]	ORMARA
Attractiveness			
site (all beautiful beaches)	port, lower peak view, historic well, Astola island with turtles.	remote fishing villages and new harbor, lower peak view, island with turtles	pictoresque fishing village, high peak view, shellfish, turtles,
climate [3]	good, slightly hotter, more humid and less breeze	good, somewhat humid and hot	very good (see table)
sea life (turtles/shellfish)	least, Astola	Kalmat	more than other sites.
distance	near P. Gulf	intermediate	near Karachi
Technical Aspects			
water supply	limited	adequate	not certain
KHI air access	2/day, Oman	daily+2 737s	2/week
telephone	direct	difficult	difficult
skilled labor	available	limited	unavailable
facilities	adequate	limited, power 24 hrs	inadequate
Guest Houses	abundant	few	one
CONCLUSION	ok for foreigners, possible local demand	power, nearby beaches ok for foreigners	ok for foreigners

[2] The beaches of Kappar and Kalmat are included in this column. Jiwani is another attractive location not visited on this trip.

[3] Weather data should be obtained for Pasni and Gwadar, compared here to Ormara.

ATTACHMENT B

HISTORY AND CULTURE OF THE MAKRANI COAST

HISTORY

The majority of the settlements along the Coast are considered as very ancient. The march of Alexender the Great is a land mark in the history of the Makran coast. Alexendar the Great, on his way to the Indian Sub-Continent, first landed at the Makran Coast. He captured many points along the Coast with his strong army contigent.

The authentic history of the area begins with the Portuguese attacks in the early sixteenth century, when they captured many places in the Coast. The inhabitants of the area offered them strong resistence under the leadership of Hammal Jihand. Hammal is said to have been the chief of the area and is still regarded as one of the heroes of Baloch history. However, he was ultimately, captured and taken away by the Portuguese.

The Portuguese burnt Pasni and Gwadar. Gwadar, known as "Gwadel" by the Portuguese, is mentioned in "The history of doing in the east". It was the chief sea port during the early period of the British reigm. Most of the trade was conducted through the Gwadar port before the introduction of India-wide steamer services by the British India Company, after which it established a fortnightly service to Gwader.

Trade from Persia and Kalat gravitated around the town. It was the main market place of coastal and inland Makran, as well during the era of sultanate of Oman.

The sea port Pasni came into signigicant prominence in 1905, when British India Company introduced fortnightly steamer services. Pasni's advantage lies in the great Pasni Bay located on a sandy spit connecting the Ras Juddi and Jabbal Zarren with the main land. As a result of introduction of the steamers services, most of Makran trade moved to the port of Pasni. Chief exports were wool, ghee, cotton, fish, shark, etc. After the commencement of steamers services, trade increased consid..ably.

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CULTURE AND RELIGIOUS GROUPS

There are three major Muslim religious sects in the coastal area of the Makran, namely Sunni, Zikri and Ismaili. These sects have lived together for centuries and have depended on each other for their socio-economic pursuits. There is no religious bias or conflict nor sectarian feelings among these groups, espacially alaong the coast.

The Sunni

The majority of the coastal inhabitants belong to the Sunni sect by belief and practices, representing approximately 55% of the population. The Sunnis are more staunch and strict in observance of their religion.

In contrast other sects are tolerant in the observance of their religion.

The Zikri

The Zikri sect is the second largest. Although they are considered Muslim, they have somewhat different religious beliefs and practices, The Zikri sect became stronger and flourished during the reigns of Buleda and Gichic, rulers on the coast who embraced the sect.

The Makran had been the bastion and flourishing ground for the Zikri sect. In fact, the Zikri religion originated from the Makran. The majority of the Zikri are involved fishing and livestock raising along the coast. They are mostly settled in the areas of Ormara, Basol, Kalmat, Pasni and their vicinity. About 60% of the aforesaid areas ae inhabited by the Zikris.

The Zikri only resort to "Zikr" repeating the name of God and their Mehdi. Their beliefs and practices are somehow different than those of Sunnis. They do believe in the Quran, but do not beleive that Hazrat Mohammad (peace be upon him) was the last prophet. They also do not believe in fasting the whole month of Ramzan. They only fast for ten days before the second Eid of Islam. They do not perform pilgrimage to Mecca. Instead they perform their pilgrimage at Koh-E-Murad near Turbat Town.

It is believed that the Zikris would be much more tolerant of a proposal to have a beach resort for foreigners, where they would be allowed to follow their own customs.

The Ismaili

There is another sect of Shia Muslim, called Ismaili, living mostly in the coastal towns, now in negligible numbers. There are

still some families living in the urban areas of Gwader, Pasni as well as in Ormara. They are mostly engaged in the fishing business. The majority of the Ismailis have migrated from the Coast and settled in Karachi, where they live in an organized community and continue to be prominent in the fishing industry. The Makran Coast is regard as their second home.

Retailing on the Coast was mostly in the hands of Hindu businessmen before 1947. They then migrated to Dubai and other Persian Gulf States. They are still found in very negligible numbers in the Coastal urban areas.

ATTACHMENT C

SCOPE OF WORK OF MAKRANI COAST RESORT STUDY

This study would be a component of the coast tourism development plan. It would be the responsibility of the interested investor. The following scope of work is only presented as an illustration.

I. Location Study

Determine the technical feasibility and attractiveness of alternative sites. Select site.

II. Marketing Analysis

Estimate number and type of visitors by season. Plan the size of the facility.

III. Conceptual Design

Determine the services and facilities which would be provided. Prepare conceptual design and cost estimate.

IV. Policy and Service Approvals

Obtain final policy approvals, agreed to previously in principle, for exemptions from customs duties, security requirements, permissions for private areas, etc. Also determine participation with utility companies in developing water, power and telecommunications needs, as well as air and other transport services

ATTACHMENT E

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ANNEX 3

GWADAR DISTRICT ROADS INVENTORY

ROAD INVENTORY

TURBAT-PASNI ROAD

EMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
0-1	9	P/R	Silty Soil	-	
1-2	9	P/R	Silty Soil	1.1	Minor
				1.9	Minor
2-3	9	P/R	Silty Soil	2.3	Minor
3-4	9	H	Silty Soil	3.4	Minor
				3.6	Minor
				3.8	Major
4-5	9	H	Silty Soil	4.3	Minor
				5.0	Minor
5-6	9	H	Silty Soil	5.8	Minor
6-7	9	H	Silty Soil	6.3	Major
				6.5	Major
				6.6	Minor
				7.0	Minor
7-8	9	P/R	Silty Soil	7.1	Minor
				7.4	Minor
				7.6	Major
8-9	9	P/R	Silty Soil	8.5	Major
9-10	9	P/R	Silty Soil	9.1	Minor
				9.5	Major
				9.8	Major
10-11	8	P	Silty Soil	10.1	Major
11-12	8	P	Silty Soil	11.3	Major
				11.6	Minor
12-13	8	P	Silty Soil	12.2	Major
				12.3	Major
				12.8	Minor
13-14	8	P	Silty Soil	13.5	Minor
				14.0	Minor

NOTE:
*
Major=> width >20 m
Minor=> width <20 m
$
P=> Plain
R=> Rolling
P/R=> Plain to Rolling
H=> Hilly

ROAD INVENTORY

TURBAT-PASIR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	[illegible] (KM)	[illegible]
14-15	9	R	Silty Soil		
15-16	9	R	Silty Soil		
16-17	8	R	Silty Soil	[illegible]	Minor
				[illegible]	Minor
				[illegible]	Minor
17-18	8	R	Silty Soil	[illegible]	Minor
18-19	8	R/R	Silty Soil	[illegible]	Minor
				[illegible]	Major
19-20	9	R/R	Silty Soil	[illegible]	Minor
				[illegible]	Minor
20-21	10	R	Silty Soil	[illegible]	Minor
				[illegible]	Minor
				[illegible]	Minor
21-22	10	R	Silty Soil	[illegible]	Minor
22-23	9	R	Silty Soil	[illegible]	Minor
				[illegible]	Minor
23-24	8	R	Silty Soil	[illegible]	Minor
24-25	9	R	Silty Soil		
25-26	9	R	Silty Soil		
26-27	9	R	Silty Soil		
27-28	9	R	Silty Soil	[illegible]	Minor
28-29	8	R	Silty Soil		
29-30	8	R	Silty Soil	[illegible]	Major
				[illegible]	Minor
30-31	9	R	Silty Soil		

ROAD INVENTORY

TURBAT-PASNI ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
31-32	9	R	Silty Soil		
32-33	9	R	Silty Soil	32.7	Major
33-34	8	P	Silty Soil	33.4	Minor
34-35	8	R	Silty Soil	34.4 34.7	Major Major
35-36	8	R	Silty Soil	35.7	Major
36-37	8	R	Silty Soil	36.3 36.8	Major Minor
37-38	8	R	Silty Soil	37.3 37.5 38.0	Major Major Major
38-39	8	R	Silty Soil	38.4 38.6 38.7	Major Minor Major
39-40	8	R	Silty Soil		
40-41	8	H	Silty Soil	40.8	Major
41-42	8	P	Silty Soil	41.4	Major
42-43	8	P	Silty Soil		
43-44	9	R	Silty Soil	43.1	Major
44-45	9	R	Silty Soil	44.1 44.4 44.6	Minor Major Minor
45-46	9	R	Silty Soil	45.2 45.4 45.6	Major Major Minor

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ROAD INVENTORY

TURBAT-PASNI ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
46-47	8	H	Silty Soil	46.2 46.3	Minor Major
47-48	9	P	Silty Soil		
48-49	9	P	Silty Soil	48.4 48.7	Major Minor
49-50	9	R	Silty Soil	49.3 49.5 49.7	Minor Major Minor
50-51	9	P	Silty Soil	51.0	Major
51-52	8	P	Silty Soil	51.7	Major
52-53	9	H	Silty Soil	52.1 52.7 53.0	Minor Major Minor
53-54	9	H	Silty Soil	53.1 53.4 53.6 53.9	Minor Major Minor Minor
54-55	9	H	Silty Soil	54.8	Minor
55-56	8	H	Silty Soil	55.7 55.9 56.0	Minor Minor Minor
56-57	8	H	Silty Soil	56.8 57.0	Major Minor
57-58	8	H	Silty Soil	57.1 57.2 57.4 57.6	Minor Minor Minor Minor
58-59	8	H	Silty Soil	58.1 58.6	Major Major

ROAD INVENTORY

TURBAT-PASNI ROAD

EMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
59-60	9	P	Silty Soil	59.3	Major
60-61	9	R	Silty Soil	60.2	Major
				60.6	Major
61-62	9	R	Silty Soil	61.2	Major
				61.8	Minor
				61.9	Major
62-63	9	H	Silty Soil	62.5	Minor
				62.7	Minor
				62.8	Major
63-64	10	P	Silty Soil	-	
64-65	10	P	Silty Soil	-	
65-66	10	P	Silty Soil		
66-67	10	P	Silty Soil	-	
67-68	10	P	Silty Soil	-	
68-69	10	P	Silty Soil	-	
69-70	10	P	Silty Soil		
70-71	7	P	Silty Soil	70.9	Minor
71-72	8	H	Silty Soil	-	
72-73	8	R	Silty Soil	72.2	Minor
73-74	8	P	Silty Soil	73.9	Major
74-75	8	P	Silty Soil	-	
75-76	8	P	Silty Soil	75.2	Major
76-77	8	H	Silty Soil	76.1	Major
77-78	8	H	Silty Soil	77.8	Major

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ROAD INVENTORY

TURBAT-PASNI ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
78-79	9	H	Silty Soil	78.4 78.9	Major Major
79-80	8	H	Silty Soil		
80-81	8	P	Silty Soil		
81-82	8	R	Silty Soil		
82-83	9	R	Silty Soil	82.1 82.9	Minor Major
83-84	9	R	Silty Soil		
84-85	8	P	Silty Soil	84.9	Major
85-86	8	P	Silty Soil	85.8	Minor
86-87	8	R	Silty Soil	86.6	Major
87-88	8	H	Silty Soil		
88-89	8	H	Silty Soil	-	
89-90	9	H	Silty Soil	89.1 89.3	Minor Minor
90-91	8	H	Silty Soil	90.1	Major
91-92	8	R	Silty Soil	91.3	Major
92-93	8	P	Silty Soil	92.2 92.6 92.8	Minor Minor Major
93-94	8	H	Silty Soil	93.8	Minor
94-95	8	P	Silty Soil		
95-96	8	P	Silty Soil	-	

ROAD INVENTORY

TURBAT-PASNI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
96-97	8	R	Silty Soil	96.3	Minor
97-98	8	H	Silty Soil	97.5	Minor
98-99	8	H	Silty Soil	98.6 98.8 98.9	Minor Minor Major
99-100	8	H	Silty Soil	99.3	Major
100-101	9	P	Silty Soil	101	Major
101-102	7	P	Silty Soil	101.7 102.3	Minor Major
102-103	8	P	Silty Soil	12.3	Major
103-104	8	P	Silty Soil	-	
104-105	8	P	Silty Soil	104.4 104.6	Major Major
105-106	8	P	Silty Soil		
106-107	8	P	Silty Soil		
107-108	8	R	Silty Soil	107.1	Major
108-109	8	H	Silty Soil		
109-110	8	P	Silty Soil		
110-111	8	H	Silty Soil	110.5 110.8 110.9	Minor Minor Minor
111-112	8	H	Silty Soil	111.8	Major
112-113	8	H	Silty Soil	112.5	Major
113-114	8	P	Silty Soil	113.2	Minor

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ROAD INVENTORY

TURBAT-PASNI ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	DRAIN CROSSING	
				CHAINAGE (km)	DRAIN * TYPE
114-115	8	P	Silty Soil	114.8	Minor
115-116	9	P	Silty Soil		
116-117	9	P	Silty Soil	116.2 116.5 116.8	Minor Minor Minor
117-118	9	P	Silty Soil	117.2 117.8 118.0	Minor Minor Minor
118-119	9	P	Silty Soil	117.2 118.2 119.0	Minor Minor Minor
119-120	9	P	Silty Soil	-	
120-121	8	P	Silty Soil	120.2	Major
121-122	8	P	Silty Soil	-	
122-123	8	P	Silty Soil	122.3	Minor
123-124	8	P	Silty Soil	-	
124-125	8	P	Silty Soil	-	

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ROAD INVENTORY

TURBAT-GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
0–1	9	P/R	Silty Soil		
1–2	9	P/R	Silty Soil	1.1	Minor
				1.9	Minor
2–3	9	P/R	Silty Soil	2.3	Minor
3–4	9	H	Silty Soil	3.4	Minor
				3.6	Minor
				3.9	Major
4–5	9	H	Silty Soil	4.3	Minor
				5.0	Minor
5–6	9	H	Silty Soil	5.8	Minor
6–7	9	H	Silty Soil	6.3	Major
				6.5	Major
				6.6	Minor
				7.0	Minor
7–8	9	P/R	Silty Soil	7.1	Minor
				7.4	Minor
				7.6	Major
8–9	9	P/R	Silty Soil	8.5	Major
9–10	9	P/R	Silty Soil	9.1	Minor
				9.5	Major
				9.8	Major
10–11	8	P	Silty Soil	10.1	Major
11–12	8	P	Silty Soil	11.3	Major
				11.6	Minor
12–13	8	P	Silty Soil	12.2	Major
				12.3	Major
				12.8	Minor

NOTE:

*

Major => width >20 m

Minor => width <20 m

$

P => Plain

R => Rolling

P/R => Plain to Rolling

H => Hilly

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ROAD INVENTORY

TURBAT-GWADAR ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING CHAINAGE (km)	NULLAH CROSSING * TYPE
13-14	8	P	Silty Soil	13.5 14.0	Minor Minor
14-15	9	H	Silty Soil		
15-16	9	P	Silty Soil		
16-17	8	P	Silty Soil	16.3 16.6 16.8	Major Minor Minor
17-18	8	P	Silty Soil	17.9	Major
18-19	8	P/R	Silty Soil	18.5 18.7	Minor Major
19-20	7	P	Silty Soil		
20-21	7	P	Silty Soil	20.3	Minor
21-22	7	P	Silty Soil		
22-23	8	P	Silty Soil	22.7 22.9	Minor Major
23-24	8	P	Silty Soil	23.4 23.6	Minor Minor
24-25	8	P	Silty Soil		
25-26	8	P	Silty Soil	25.5	Major
26-27	8	P	Silty Soil	26.5 26.6	Minor Minor
27-28	8	P	Silty Soil	27.5 27.9 28.0	Minor Minor Minor

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ROAD INVENTORY

TURBAT-GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
28-29	8	P	Silty Soil	28.3	Minor
				28.4	Minor
				28.6	Major
29-30	8	P	Silty Soil	29.2	Minor
				29.9	Minor
30-31	8	P	Silty Soil	30.2	Major
				30.4	Minor
				30.8	Minor
31-32	8	P/R	Silty Soil	31.0	Minor
				31.4	Minor
				31.6	Minor
32-33	8	P/R	Silty Soil	32.3	Minor
33-34	8	P/R	Silty Soil	33.4	Minor
				33.9	Minor
34-35	8	P/R	Silty Soil	34.1	Minor
				34.3	Minor
				34.4	Minor
				34.7	Minor
35-36	8	P	Silty Soil	35.8	Major
				36.0	Minor
36-37	9	P	Silty Soil	36.2	Major
				36.4	Minor
37-38	9	P	Silty Soil	37.9	Minor
38-39	9	P	Silty Soil	38.2	Minor
39-40	9	P	Silty Soil	39.1	Minor
				39.3	Minor
				39.7	Minor

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ROAD INVENTORY

TURBAT-GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
40–41	9	P/R	Silty Soil	40.3 40.5	Minor Major
41–42	8	P	Silty Soil	41.1	Major
42–43	8	P	Silty Soil	[illegible]	Major
43–44	8	P	Silty Soil	43.3 43.5	Major Major
44–45	8	P	Silty Soil		
45–46	8	P/R	Silty Soil	45.8	Minor
46–47	8	P/R	Silty Soil	46.1 46.7	Major Minor
47–48	8	P/R	Silty Soil	[illegible]	Minor
48–49	8	P/R	Silty Soil	48.0	Minor
49–50	8	P/R	Silty Soil	[illegible] 49.7	Minor Major
50–51	8	P/R	Silty Soil	50.2 50.8	Major Minor
51–52	8	P/R	Silty Soil		
52–53	8	P/R	Silty Soil	52.1	Minor
53–54	9	P	Silty Soil	53.8 53.9	Major Major
54–55	8	P/R	Silty Soil	54.1 54.7 54.8	Major Major Major
55–56	8	P	Silty Soil		

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ROAD INVENTORY

TURBAT-GWADAR ROAD

EMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
56-57	8	P	Silty Soil	56.8	Major
				56.9	Major
57-58	8	P	Silty Soil	57.1	Minor
				57.7	Minor
				58.0	Major
58-59	8	P/R	Silty Soil	58.3	Minor
				58.5	Minor
				59.0	Minor
59-60	8	P/R	Silty Soil	59.1	Minor
				59.6	Minor
60-61	8	P/R	Silty Soil	60.1	Minor
				60.5	Major
				60.9	Minor
61-62	8	P/R	Silty Soil	61.3	Minor
				61.8	Major
62-63	8	P	Silty Soil	62.4	Minor
63-64	8	P/R	Silty Soil	63.0	Minor
				63.3	Major
				63.9	Minor
64-65	8	P/R	Silty Soil	64.4	Major
				64.5	Major
				64.7	Minor
65-66	8	P	Silty Soil	65.5	Minor
66-67	8	P	Silty Soil	66.5	Major
				66.7	Major
				66.8	Minor
67-68	8	P	Silty Soil		
68-69	8	P/R	Silty Soil		

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ROAD INVENTORY

TURBAT-GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
69-70	8	P	Silty Soil	69.3	Minor
70-71	8	P	Silty Soil	70.4	Major
				70.6	Major
				70.8	Minor
71-72	8	P	Silty Soil		
72-73	8	P	Silty Soil		
73-74	8	P	Silty Soil	73.4	Minor
				73.5	Major
				74.0	Minor
74-75	8	P	Silty Soil	74.7	Minor
75-76	8	P/R	Silty Soil	75.1	Minor
76-77	8	P	Silty Soil	-	
77-78	8	P	Silty Soil	77.2	Minor
				77.3	Minor
				77.6	
78-79	8	P	Silty Soil	78.0	Minor
				78.4	Minor
				78.8	Major
				78.6	Major
79-80	8	P	Silty Soil	79.4	Minor
				79.7	Minor
				79.8	Minor
80-81	8	P	Silty Soil	80.5	Major
81-82	8	P	Silty Soil	81.2	Major
				81.4	Minor
				81.5	Major
				81.8	Minor

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ROAD INVENTORY

TURBAT-GWADAR ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
82-83	8	P/R	Silty Soil	82.1	Minor
				82.2	Minor
				82.3	Minor
83-84	8	P/R	Silty Soil	83.0	Minor
				83.3	Minor
84-85	8	P/R	Silty Soil	84.8	Minor
85-86	8	P/R	Silty Soil	85.6	Minor
				85.8	Minor
86-87	8	P/R	Silty Soil	86.1	Minor
				86.2	Minor
87-88	8	P/R	Silty Soil	87.2	Minor
				87.6	Minor
				87.8	Minor
88-89	9	P/R	Silty Soil	88.0	Minor
				88.3	Minor
				88.7	Minor
				88.8	Major
89-90	8	P/R	Silty Soil	89.0	[illegible]
				89.1	Minor
				89.2	Minor
90-91	8	P	Silty Soil		
91-92	8	P/R	Silty Soil	91.2	Minor
				91.4	Major
92-93	9	H	Silty Soil	92.0	Major
				92.4	Minor
				92.5	[illegible]
93-94	8	P	Silty Soil	93.7	Major

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ROAD INVENTORY

TURBAT-GWADAR ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
94-95	8	H	Silty Soil	94.7	Major
95-96	9	P/R	Silty Soil	95.6 95.8	Major Minor
96-97	9	P/R	Silty Soil	96.4 96.7	Minor Minor
97-98	9	P/R	Silty Soil	97.3 97.7 97.9	Major Major Major
98-99	10	P	Shingle Road	98.6 99.0	Minor Major
99-100	10	P	Shingle Road	99.9	Minor
100-101	10	P	Shingle Road		
101-102	10	P/R	Shingle Road		
102-103	10	P/R	Shingle Road	102.6	Minor
103-104	10	P/R	Shingle Road	103.1 103.8	Minor Minor
104-105	10	P	Shingle Road		
105-106	10	P	Shingle Road	105.1 105.2	Minor Major
106-107	10	P	Shingle Road	106.8	Minor
107-108	10	P	Shingle Road		
108-109	10	P	Shingle Road		
109-110	10	P	Shingle Road	109.5	Major
110-111	10	P	Shingle Road	110.7	Minor

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ROAD INVENTORY

[illegible]

RMS	ROAD WIDTH (m)	% TYPE OF TERRAIN	TYPE OF SOIL	[illegible] (km)	[illegible]
111-112	10	P	Shingle Road		
112-113	10	P	Shingle Road		
113-114	10	P	Shingle Road		
114-115	10	P	Shingle Road	[illegible]	[illegible]
115-116	10	P	Shingle Road	[illegible]	[illegible]
116-117	10	P	Shingle Road	[illegible] [illegible]	[illegible] [illegible]
117-118	10	P/R	Shingle Road		
118-119	8	P/R	Silty Soil	[illegible] [illegible]	[illegible] [illegible]
119-120	7	P	Silty Soil	[illegible]	[illegible]
120-121	7	P/R	Silty Soil		
121-122	8	R	Silty Soil	[illegible]	[illegible]
122-123	8	R	Silty Soil	[illegible] [illegible]	[illegible] [illegible]
123-124	8	P/R	Silty Soil	[illegible] [illegible]	[illegible] [illegible]
124-125	9	P	Silty Soil	[illegible] [illegible] [illegible]	[illegible] [illegible] [illegible]
125-126	8	P	Silty Soil	[illegible]	[illegible]
126-127	8	P	Silty Soil	[illegible]	[illegible]
127-128	8	P	Silty Soil		

ROAD INVENTORY

TURBAT–GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
128–129	8	P	Silty Soil	128.3	Minor
				128.5	Minor
				128.7	Major
129–130	8	P	Silty Soil	129.2	Minor
130–131	7	P	Silty Soil		
131–132	8	P	Silty Soil		
132–133	8	P	Silty Soil	132.1	Minor
				132.9	Minor
133–134	6	P	Silty Soil	133.1	Minor
				133.6	Minor
				133.7	Minor
134–135	7	P	Silty Soil		
135–136	7	P	Silty Soil		
136–137	7	P	Silty Soil	136.2	Major
				136.8	Minor
				136.9	Minor
137–138	7	P	Silty Soil	137.9	Minor
138–139	8	P	Silty Soil		
139–140	8	P	Silty Clay	139.1	Minor
				139.5	Minor
140–141	6	P	Silty Clay	140.3	Minor
				140.7	Minor
141–142	7.5	P	Silty Clay	141.1	Minor
				141.6	Minor
142–143	9	P	Silty Clay		

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ROAD INVENTORY

TURBAT-GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
143-144	10	H	Silty Clay	143.0	Minor
				143.2	Minor
				143.4	Minor
				143.8	Minor
144-145	7	H	Silty Clay	144.3	Minor
				145.0	Major
145-146	8	H	Silty Clay	145.6	Minor
				145.8	Minor
146-147	8	P/R	Silty Clay	146.1	Minor
				146.6	Minor
147-148	7	H	Silty Clay	147.3	Major
				147.6	Minor
				147.7	Minor
148-149	7	H	Silty Clay	148.2	Minor
				148.5	Minor
				148.8	Minor
149-150	7	H	Silty Clay	149.1	Minor
				149.3	Minor
				149.8	Minor
				149.9	Minor
150-151	8	P/R	Silty Clay	150.1	Minor
				150.3	Minor
				150.4	Minor
				150.9	Minor
151-152	8	P/R	Silty Clay	151.4	Minor
				151.8	Major
				152.0	Minor
152-153	8	P/R	Silty Clay	152.3	Minor
153-154	8	P/R	Silty Clay	-	

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ROAD INVENTORY

TURBAT-GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
154-155	8	P	Silty Clay	-	
155-156	9	P	Silty Clay	155.4 155.9	Minor Minor
156-157	9	P	Silty Clay	156.2 156.5 156.6	Minor Minor Major
157-158	8.5	P	Silty Clay	-	
158-159	8	P	Silty Clay	-	
159-160	8	P	Silty Clay	159.9	Major
160-161	8	P	Silty Clay	160.2 160.9	Minor Minor
161-162	8	P/R	Silty Clay	161.8	Minor
162-163	8	P/R	Silty Clay	162.3	Minor
163-164	8	P/R	Silty Clay	163.3	Minor
164-165	8	P/R	Silty Clay	164.4 164.9	Minor Minor
165-166	8	P	Silty Clay	-	
166-167	8	P/R	Silty Clay	166.4	Minor
167-168	8	P/R	Silty Clay	168.0	Major
168-169	8	P	Silty Clay	168.7 169.0	Minor Minor
169-170	8	P	Silty Clay	169.3	Minor
170-171	8	P	Silty Clay	170.2	Minor

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ROAD INVENTORY

TURBAT-GWADAR ROAD

RMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
				170.3	Minor
				170.5	Minor
171-172	8	P	Silty Clay	171.3	Minor
				171.7	Minor
172-173	8	P	Silty Clay	173.0	Minor
173-174	8	P	Silty Clay	173.4	Minor
				173.5	Minor
174-175	6	P	Silty Clay	-	
175-176	7.5	P	Paved Road	175.3	Culvert
176-177	7.5	P	Paved Road	176.3	Culvert
				176.6	Culvert
				176.7	Culvert
177-178	7.5	P	Paved Road	177.0	Culvert
				177.2	Culvert
				177.5	Culvert
178-179	7.5	P	Paved Road	178.2	Culvert
				178.4	Culvert
				178.5	Culvert
				178.9	Culvert
179-180	7.5	P	Paved Road	179.3	Culvert
180-181	7.5	R	Paved Road	180.1	Culvert
				180.5	Culvert
				180.9	Culvert
181-182	7.5	P	Paved Road	181.6	Culvert
				181.7	Culvert
				182.0	Culvert
182-183	7.5	P	Paved Road	182.9	Culvert

ROAD INVENTORY

TURBAT–GWADAR ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
183–184	7.5	P	Paved Road	183.1	Culvert
				183.2	Culvert
				183.4	Culvert
				183.6	Culvert
184–185	7.5	P	Paved Road	184.2	Culvert
				184.8	Culvert

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ROAD INVENTORY

GWADAR-JIWANI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
0-1	10	P	Shingled Road (crushed)	-	
1-2	9	P	"	-	
2-3	9	P	"		
3-4	9	P	"	-	
4-5	8.5	P	"	-	
5-6	6	P	"	-	
6-7	8	P	"	-	
7-8	8	P	"	7.9	Major
8-9	8	P	"	-	
9-10	8	P	"	-	
10-11	8	P	"	-	
11-12	8	P	"	11.7	Major
12-13	8	P	"	12.2 13.0	Minor Major
13-14	8	P	"	-	
14-15	7	P	"	-	
15-16	8	P	"	-	
16-17	7	P	Silty Soil	-	
17-18	6.5	P	Silty Soil	17.1	Major
18-19	6	P	Silty Soil	18.2	Major
19-20	5	P	Silty Sand	-	

NOTE:
*
Major = width >20 m
Minor = width <20 m
$
P = Plain
R = Rolling
P/R = Plain to Rolling
H = Hilly

ROAD INVENTORY

GWADAR-JIWANI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
20-21	5.5	P	Silty Soil	-	
21-22	5.5	P	Silty Soil	-	
22-23	7	P	Silty Soil	-	
23-24	7	P	Silty Soil	-	
24-25	7.5	P	Silty Soil	24.1	Minor
25-26	8	P	Silty Soil	25.4 25.7 26.0	Minor Minor Minor
26-27	8	P	Silty Soil	26.3 26.5 26.6	Minor Minor Minor
27-28	8	P	Silty Soil	-	
28-29	8	P	Silty Soil	28.2	Minor
29-30	8	P	Silty Soil	-	
30-31	4.5	P	Silty Soil	-	
31-32	7	P	Silty Soil		
32-33	7	P	Silty Soil		
33-34	7	P	Silty Soil	-	
34-35	7	P	Silty Soil	34.3 34.5 34.6	Minor Minor Minor
35-36	8	P	Silty Soil		
36-37	6	P	Silty Soil	36.8	Minor
37-38	7	P	Silty Soil	37.9	Minor

ROAD INVENTORY

GWADAR-JIWANI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
38-39	7	p	Shingle Road (Crushed)	38.2	Minor
39-40	7	p	"	39.2	Minor
40-41	6	p	"		
41-42	7	p	Silty Soil	-	
42-43	7	p	Shingle Road (Crushed)	42.6	Minor
43-44	8	p	"	-	
44-45	8	p	"	-	
45-46	8	p	"	45.7	Minor
46-47	7	p	Silty Soil	-	
47-48	5	p	Silty Soil	-	
48-49	6	p	Silty Soil	-	
49-50	7	p	Silty Soil	-	
50-51	7	p	Silty Soil	-	
51-52	6	p	Fine Sandy Clay Soil		
52-53	7	p	"	-	
53-54	7	p	"	-	
54-55	8	p	"	-	
55-56	8	p	"	-	
56-57	8	p	"	-	
57-58	8	p	"		

ROAD INVENTORY

GWADAR-JIWANI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
58-59	8	P	Fine Sandy Clay Soil		
59-60	8	P	"		
60-61	8	P	"		
61-62	7	P	"		
62-63	7	P	"		
63-64	7	P	"		
64-65	7	P	"		
65-66	7	P	"		
66-67	7	P	"		
67-68	7	P	"		
68-69	7	P	"		
69-70	7	P	"		
70-71	7	P	"		
71-72	7	P	"	72.7	[illegible]
72-73	7	P	"		
73-74	7	P	"		
74-75	7	P	"		
75-76	7	P	"		
76-77	7	P	"		
77-78	7	P	"		

ROAD INVENTORY

GWADAR-JIWANI ROAD

ROAD INVENTORY

NALAINT-PASNI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	HULLAH CROSSING CHAINAGE (km)	HULLAH * TYPE
				[illegible]	[illegible]
				[illegible]	[illegible]
32-33	8	P/R	Silty Soil	[illegible]	[illegible]
33-34	8	P	Silty Soil	[illegible]	[illegible]
34-35	8	P	Silty Soil	[illegible]	[illegible]
				[illegible]	[illegible]
35-36	8	P	Silty Soil		
36-37	8	P	Silty Soil	[illegible]	[illegible]
37-38	8	P	Silty Soil	[illegible]	[illegible]
38-39	8	P	Silty Soil		
39-40	9	P	Silty Soil		
40-41	9	P	Silty Soil	[illegible]	[illegible]
41-42	9	P	Silty Soil		
42-43	9	P	Silty Soil		
43-44	9	P	Silty Soil		
44-45	8	P	Silty Soil		
45-46	9	P	Silty Soil		
46-47	8	P	Silty Soil	[illegible]	[illegible]
47-48	8	P	Silty Soil		
48-49	8	P	Silty Soil	[illegible]	[illegible]
49-50	8	P	Silty Soil	[illegible]	[illegible]
50-51	8	P	Silty Soil	[illegible]	[illegible]
				[illegible]	[illegible]

ROAD INVENTORY

NALAINT-PASNI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	HULLAH CROSSING	
				CHAINAGE (km)	HULLAH * TYPE
51-52	9	P	Silty Soil		
52-53	9	P	Silty Soil	52.7	Minor
53-54	9	P	Silty Soil	53.1	Minor
				53.8	Minor
				53.9	Minor
54-55	9	P	Silty Soil	54.4	Minor
55-56	9	P	Silty Soil		
56-56.1				56.0	Minor
56-57	8	P	Paved Road	56.7	Culvert
57-58	8	P	Paved Road	57.2	Culvert
				57.7	Major
				57.9	Culvert
58-59	8	P	Paved Road		
59-60	8	P	Paved Road	59.1	Minor
				59.7	Major
60-61	7	P	Paved Road		
61-62	7	P	Paved Road		
62-63	7	P	Paved Road		
63-64	8	P	Paved Road		
64-65	8	P	Paved Road		

ROAD INVENTORY

NALAINT-PASNI ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
65-66	8	P	Paved Road	65.3	Culvert
				65.6	Culvert
				65.8	Culvert
66-67	8	P	Paved Road	66.1	Culvert
				66.5	Culvert
				66.6	Culvert
				66.8	Culvert
67-68	8	P	Paved Road	67.0	Culvert
				67.1	Culvert
				67.3	Culvert
				67.5	Culvert
68-69	8	P	Paved Road	67.7	Culvert
				67.9	Culvert
				68.0	Culvert
				68.3	Culvert
69-70	8	P	Paved Road	69.6	Culvert
70-71	8	P	Paved Road	70.1	Culvert
				70.2	Culvert
				70.5	Culvert
71-72	8	P	Paved Road		
72-73	8	P	Paved Road	72.1	Culvert
				72.3	Culvert
				72.5	Culvert
73-74	8	P	Paved Road	73.7	Culvert
74-75	8	P	Paved Road	74.3	Culvert

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ROAD INVENTORY

PASNI–ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	HULLAH CROSSING	
				CHAINAGE (km)	HULLAH * TYPE
0–1	7	P	Sandy Silt Sur.Shingle		
1–2	8	P	"		
2–3	9	P	"		
3–4	9	P	"		
4–5	8.5	P	"		
5–6	8	P	"		
6–7	6.5	P	"		
7–8	7	P	"	–	
8–9	7	P	"		
9–10	6	P	"	9.6	Minor
10–11	5	P	"		
11–12	5	P/R	"	–	
12–13	5	P/R	"		
13–14	5	P	"		
14–15	5	P	"	–	
15–16	9	P	"	15.5 15.6 15.7	Culvert Culvert Culvert
16–17	9	P	"	16.7	Culvert
17–18	8	P	Silty Soil	–	
18–19	8	P	Silty Soil		
19–20	8	P	Silty Soil		

[illegible]

*

Main[illegible] width >20 m

Upper [illegible] width <20 m

$

P = Plain

R = Rolling

P/R = Plain to Rolling

H = Hilly

ROAD INVENTORY

PASNI–ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
20–21	7	P	Silty Soil		
21–22	8	P	Silty Soil		
22–23	9	P	Silty Soil	22.7	Minor
23–24	9	P	Silty Soil	–	
24–25	9	P	Silty Soil		
25–26	9	P	Sandy Silty Soil		
26–27	8	P	"		
27–28	8	P	"		
28–29	7	P	"		
29–30	7	P	"		
30–31	7	P	"		
31–32	7	P	"		
32–33	7	P	"		
33–34	7	P	"		
34–35	7	P	"		
35–36	7	P	Silty Soil		
36–37	7	P	Silty Soil		
37–38	7	P	Silty Soil	37.3 37.5 37.7	Minor Minor Minor
38–39	5	P	Silty Soil	38.8	Major

ROAD INVENTORY

PASNI-ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH TYPE
39-40	5	P/R	Silty Soil	39.5 39.7	Minor Minor
40-41	7	P	Silty Soil		
41-42	7	P	Silty Soil	41.1	Minor
42-43	7	P	Silty Soil	42.4 42.8	Minor Minor
43-44	8	P	Silty Soil	43.5	Minor
44-45	8	P/R	Silty Soil	44.6	Minor
45-46	7	P/R	Silty Soil	45.1 45.4	Minor Minor
46-47	7	P/R	Silty Soil	46.1	Minor
47-48	7	P/R	Silty Soil		
48-49	7	P	Silty Soil	48.2 48.3 48.6	Minor Minor Minor
49-50	6	P	Silty Soil	49.3 49.5	Minor Minor
50-51	7	P	Silty Soil	50.3 50.5	Minor Major
51-52	6	P/R	Silty Soil		
52-53	7	P	Silty Soil	52.1	Minor

ROAD INVENTORY

PASNI-ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
94-95	7	P	Silty Soil	94.9	Minor
95-96	6	P	Silty Soil	95.1	Minor
				95.3	Minor
				95.8	Minor
96-97	6	P/R	Silty Soil	96.1	Minor
97-98	6	P/R	Silty Soil	97.2	Minor
				97.7	Minor
98-99	6	P	Silty Soil	98.3	Minor
				98.8	Minor
99-100	6	P	Silty Soil	99.3	Minor
				99.8	Minor
				100.0	Minor
100-101	6	P	Silty Soil	100.1	Minor
101-102	7	P/R	Silty Soil	101.5	Minor
				102.0	Minor
102-103	7	P	Silty Soil		
103-104	7	P	Silty Soil	103.3	Minor
				103.8	Minor
104-105	7	P	Silty Soil	104.2	Minor
				104.4	Minor
				105.0	Minor
105-106	7	P	Silty Soil	106.0	Minor
106-107	7	P	Silty Soil	106.6	Minor
				106.9	Minor
107-108	7	P	Silty Soil	107.3	Minor
108-109	7	P	Silty Soil		

ROAD INVENTORY

PASNI-ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
109-110	7	P	Silty Soil	109.9	
110-111	7	P	Silty Soil		
111-112	7	P	Silty Soil		
112-113	7	P	Silty Soil		
113-114	7	P/R	Silty Soil	113.1	Minor
114-115	7	P	Silty Soil	115.0	Minor
115-116	7	P	Silty Soil	116.3	Minor
116-117	7	P	Silty Soil		
117-118	7	P	Silty Soil	117.3 117.8	Minor Minor
118-119	7	P	Silty Soil	118.3 118.8 118.9	Minor Major Major
119-120	7	P/R	Silty Soil	119.4 119.7	Minor Minor
120-121	7	P/R	Silty Soil	120.6 120.7	Minor Minor
121-122	7	P	Silty Soil		
122-123	7	P	Silty Soil	122.1	Major
123-124	7	R	Silty Soil		
124-125	7	P/R	Silty Soil	-	
125-126	7	P	Silty Soil	125.7	Minor
126-127	7	P/R	Silty Soil	126.1 126.3	Major Major

ROAD INVENTORY

PASNI-ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
127-128	6	P	Silty Soil		
128-129	6	P	Silty Soil		
129-130	6	P/R	Silty Soil	129.4	Major
				130.0	Minor
130-131	5	P/R	Silty Soil	130.5	Minor
				130.8	Major
				130.9	Minor
131-132	6	H	Silty Soil	131.8	Minor
132-133	6	H	Silty Soil	132.9	Major
133-134	6	P/R	Silty Soil	133.2	Minor
				133.3	Major
				133.4	Major
				133.9	Major
				134.0	Major
134-135	6	P/R	Silty Soil	134.4	Major
				134.9	Major
135-136	6	P/R	Silty Soil	135.3	Major
136-137	6	P/R	Silty Soil	136.2	Minor
				136.5	Minor
				136.7	Minor
137-138	7	P/R	Silty Soil	136.8	Minor
				136.9	Minor
				137.0	Minor
				137.4	Minor
138-139	6	P/R	Silty Soil	138.5	Minor
				138.6	Major
				138.9	Minor
139-140	7	H	Silty Soil	-	
140-141	7	P/R	Silty Soil	140.4	Minor

ROAD INVENTORY

PASNI–ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
				140.6	Major
				141.1	Minor
141–142	7	P/R	Silty Soil	141.6	Minor
				141.8	Major
				141.9	Minor
142–143	7	P/R	Silty Soil	142.6	Minor
				142.7	Minor
				143.0	Minor
143–144	7	P/R	Silty Soil	–	
144–145	6	P	Silty Soil	–	
145–146	7	P/R	Silty Soil	145.4	Minor
				145.7	Minor
146–147	7	P/R	Silty Soil	145.4	Minor
				146.5	Minor
				146.8	Major
147–148	7	P	Silty Soil	147.7	Minor
148–149	7	P	Silty Soil	148.6	Minor
149–150	7	P	Silty Soil	149.8	Minor
150–151	6	P	Silty Soil	150.2	Minor
				151.0	Major
151–152	7	P	Silty Soil	151.5	Minor
152–153	7	P	Silty Soil	–	
153–154	7	P	Silty Soil	153.3	Minor
				153.7	Minor
				154.0	Minor
154–155	7	P	Silty Soil	154.4	Minor
				154.7	Major

ROAD INVENTORY

PASNI-ORMARA ROAD

KMS	ROAD WIDTH (m)	$ TYPE OF TERRAIN	TYPE OF SOIL	NULLAH CROSSING	
				CHAINAGE (km)	NULLAH * TYPE
155-156	7	P	Silty Soil	155.6 155.7	Minor Minor
156-157	7	P	Silty Soil	-	
157-158	7	P/R	Silty Soil	157.2 157.3	Minor Minor
158-159	7	P/R	Silty Soil		
159-160	7	P/R	Silty Soil	-	
160-161	7	P	Silty Soil		
161-162	7	P/R	Silty Soil	161.1 161.5	Major Minor
162-163	7	P	Silty Soil	162.1 162.3	Major Major

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