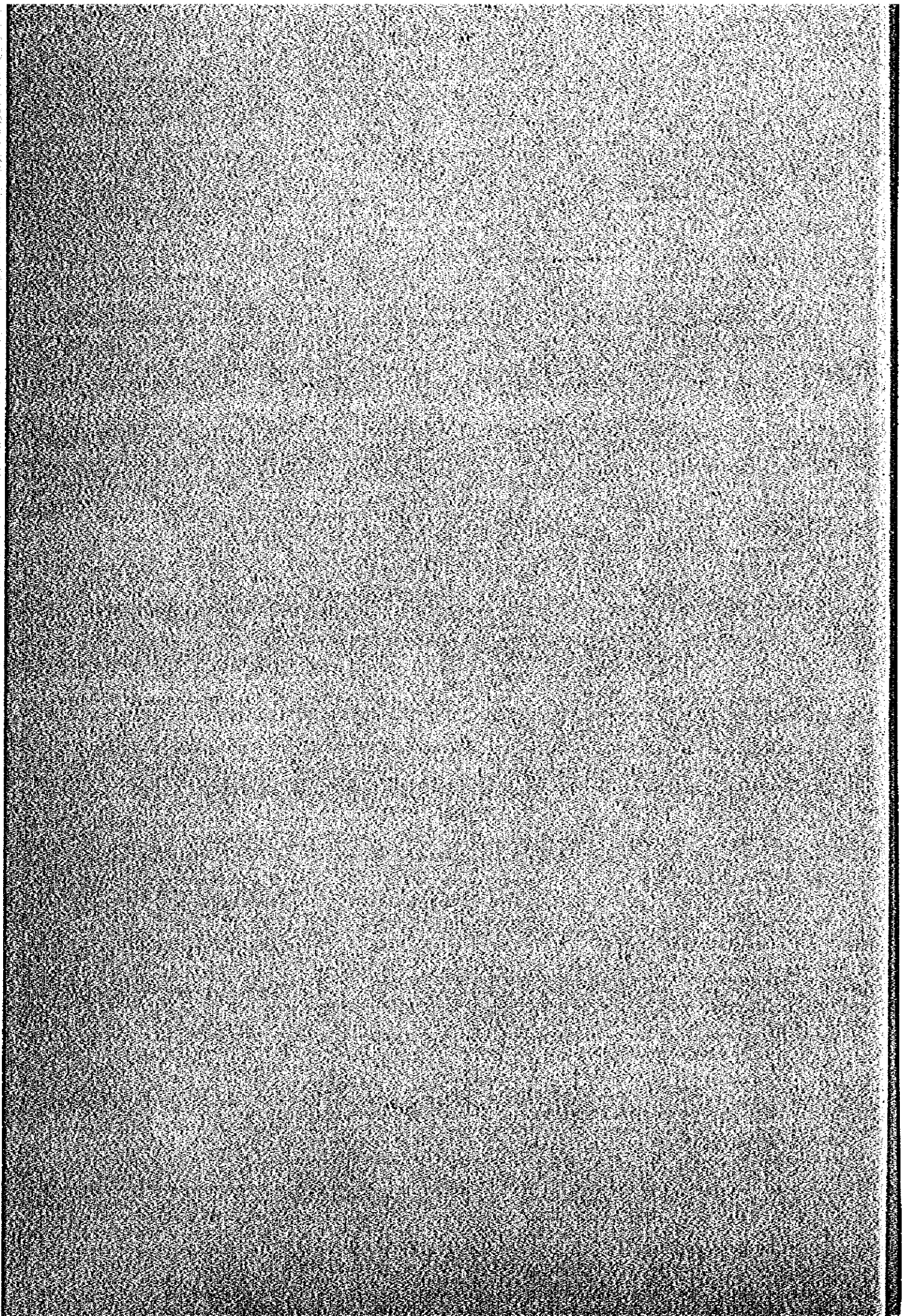


**CHAPTER 1**

**INTRODUCTION**



# CHAPTER 1

## INTRODUCTION

### 1.1 HISTORY OF STUDY

The Government of the Kingdom of Morocco, since early '70s, has felt the need to develop some adequate airport facilities in the Oriental Region, with a view to meeting its increasing air traffic demand and serving as a fresh impetus for the socio-economic development of the Region.

In November 1982, the Government of Japan received an official request from the Government of the Kingdom of Morocco (hereunder referred to as "Moroccan Government") for the implementation of the Feasibility Study on the Nador New Airport Project (hereunder referred to as "the Project"). In response to this request, the Government of Japan has decided to undertake the Feasibility Study of the Project and the Japan International Cooperation Agency (JICA), an official agency responsible for the execution of the technical cooperation programs of the Japanese Government was assigned to carry out the Study.

In April 1983, JICA sent a preliminary survey mission to Morocco to identify the general requirements of the Project and to determine the Scope of Works of the Feasibility Study through discussions with the officials concerned of the Moroccan Government. An agreement was reached between both parties at that time. Upon approval of the Inception Report, the field survey was officially started in November 1983 and the results of which were submitted in the form of the Interim Report in January 1984 to the Moroccan Government.



Subsequently, detailed analysis has followed in Japan to formulate the development plan of the new airport and study its comprehensive feasibility. A Draft Final Report containing the study results was submitted with relevant explanation to the Moroccan authorities in March 1984. Upon receiving comments thereon from Moroccan side and upon further detailed discussions on the said comments, the present Feasibility Study Report has been finalized taking into due consideration the conclusions reached between the Japanese and Moroccan parties concerned.

## 1.2 PURPOSE AND SCOPE OF STUDY

The primary purpose of the present Feasibility Study is to make a comprehensive evaluation of the Nador New Airport Construction Project from the technical, financial and economic points of view.

The scope of the Feasibility Study made for the said purpose includes a projection of future air traffic demand of the Oriental Region of Morocco, establishment of the basic facilities requirements to meet the forecasted traffic demand, basic planning of all airport facilities for appropriate stagewise development, followed by cost estimation and construction scheduling. Furthermore, detailed financial analysis and economic analysis of the Project have been carried out to evaluate the project profitability in various aspects.

In addition, the present study includes recommendations on the project implementation organization and the new airport administration organization.

### 1.3 STUDY ORGANIZATION

The Study was carried out by the Study Team entrusted by JICA under supervision of the Japanese Supervisory Committee and with the close cooperation of the Moroccan Counterpart Team which is under the Steering Committee of Administration of Air Bureau, Ministry of Transport. The relationship of these Committees and Teams is shown in Fig. 1-1. The list of members of both Committees, Counterpart and Study Team is presented in Table 1-1 hereinafter.

Table 1-1 LIST OF MEMBERS OF COMMITTEES AND  
COUNTERPARTS OF SURVEY TEAM

#### STEERING COMMITTEE OF THE ADMINISTRATION OF AIR BUREAU

Mr. Mohamed MEKOUAR	Directeur Général de l'Administration de l'Air
Mr. Mohammed ALLALI	Directeur des Bases Aériennes
Mr. Abdeljawad DAOUDI	Directeur de l'Aéronautique Civile
Mr. Ahmed BENSARI	Directeur de la Météorologie Nationale
Mr. Abdeslam SQUALLI	Adjoint au Directeur des Bases Aériennes (Chief Counterpart)

#### COUNTERPART TEAM

Mr. Abdeslam AGHORI	Chef du Service des Etudes des Infrastructures, p.i.
Mr. Redouane BELARBI	Chef de la Circonscription Nord des Bases Aériennes
Mr. Abdeslam BOUSFIHA	Ingénieur d'Application a la Division Navigation Aérienne
Mr. Mimoun ABOUHALI	Chef de la Section Radio-Navigation
Mr. Farouk RAISSOUNI	Chef de la Division de la Climatologie Appliquée
Mr. Abdelmajid EL KHATIB	Chef de la Division Technique et Matériel
Mr. Saad BEN ARFA	Chef de Division du Centre National d'Exploitation

JAPANESE SUPERVISORY COMMITTEE

Mr. Yoshimori YASUDA	Director of the Construction Division, Aerodrome Department, Civil Aviation Bureau, Ministry of Transport
Mr. Kimitaka FUJINO	Deputy Director, International Affairs Division, Secretariat of the Minister, Ministry of Transport
Mr. Yoshihiko IWASHITA	Special Assistant to the Director, Flight Standard Division, Technical Department, Civil Aviation Bureau, Ministry of Transport
Mr. Yoshizo YAMAMOTO	Special Assistant to the Director, Construction Division, Aerodrome Department, Civil Aviation Bureau, Ministry of Transport
Mr. Akira MURATA	Development Survey Division, Social Development Cooperation Department, JICA
Mr. Shunichi MIZUOCHI	Development Survey Division, Social Development Cooperation Department, JICA

STUDY TEAM

Mr. Hisaaki HATA	Team Leader
Mr. Eiichiro OGAWA	Aircraft Operation and Nav aids Planner
Mr. Teruomi AKABANE	Airport Planner (Facilities)
Mr. Noboru YOSHIDA	Airport Planner (Civil)
Mr. Yuji SAGO	Airport Construction Planner
Mr. Katsumi NAITOH	Soil and Topo Surveyer
Mr. Fumihiko FURUICHI	Financial and Economic Analyst

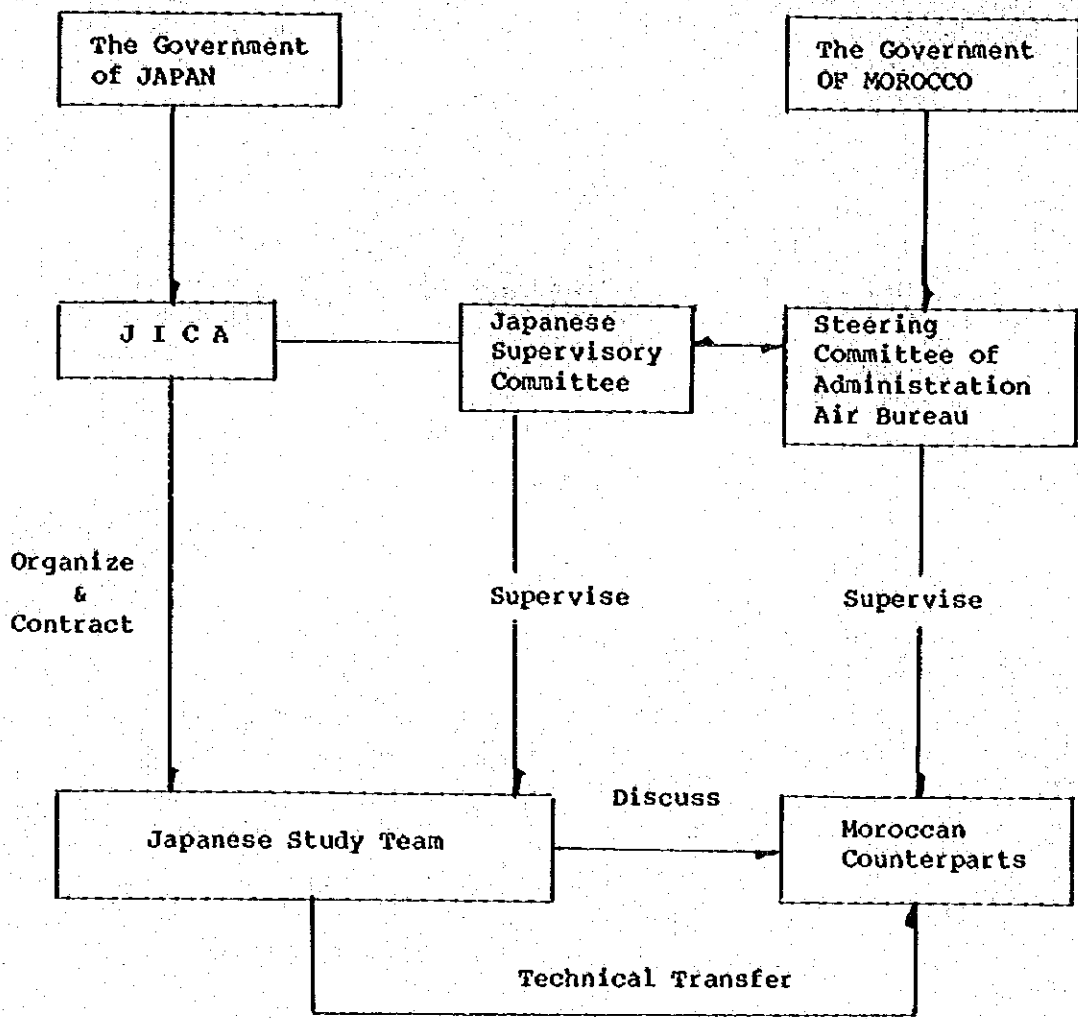


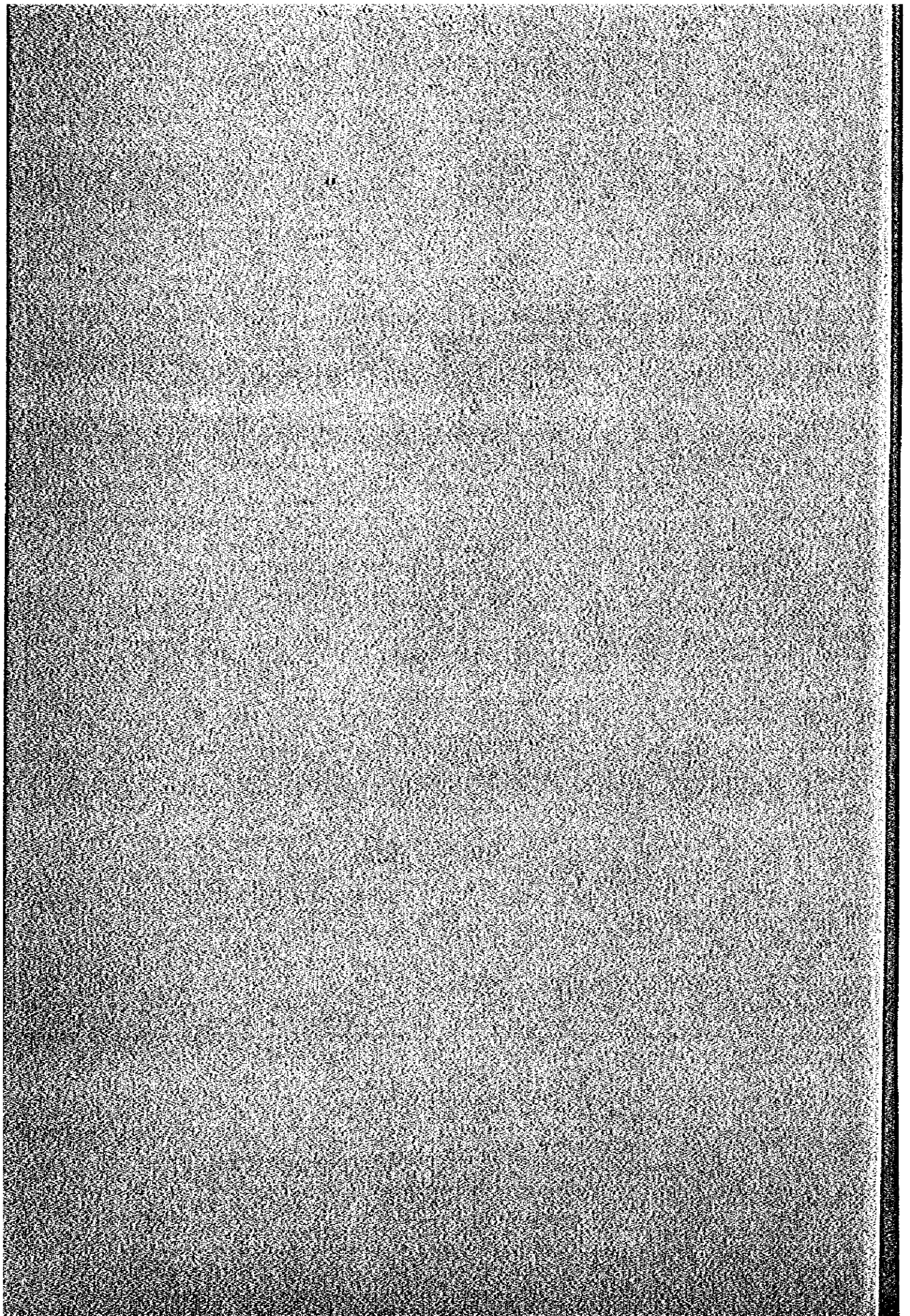
Fig. 1-1 ORGANIZATION CHART OF THE STUDY





**CHAPTER 2**

**BACKGROUND OF PROJECT**



## CHAPTER 2

### BACKGROUND OF PROJECT

#### 2.1 ECONOMIC SITUATION OF MOROCCO

##### 2.1.1 Geographical Situation of the Country

The Kingdom of Morocco with an area of 710,850 km<sup>2</sup> is located in Northwest Africa between the Atlantic Ocean, the Mediterranean and the Sahara. The Atlas mountains running from southwest to northeast of the country separate Atlantic Morocco on the west from the steppe and desert on the east and southeast. On the north, the Rif Chain runs from the Straits of Gibraltar to the Moulouya Valley near the Algerian border.

Morocco lies mostly in the Mediterranean climatic zone. However, according to latitude, and even more to location relative to the Ocean, there are important nuances between the various regions.

##### 2.1.2 Population

According to the population census in 1982, the population of Morocco is estimated at about 20,420,000. The annual growth rate of population between the census years of 1971 and 1982 was 2.6%, which is slightly higher than the growth rate of 2.5% recorded between 1960 and 1971.

The population density is 28.7 persons per square kilometer. About 45.5% of the population are under 15 years old. The working population accounts for 28% of the total population, with 48% of the working force belonging to the agricultural sector, 19% to the industrial sector, and 33% to the service sector.

According to the estimation in the middle of 1981, about 57% of the total population live in rural areas, while the population in urban areas has remarkably increased at an average annual growth rate of 5%, which is about three (3) times of that in rural areas. This shows that people have emigrated from rural areas into urban areas, seeking jobs and better condition of living.

In 1983, it is estimated that the foreign currency amount remitted by Moroccans working abroad was about DH5 billion, which by far exceeds the revenues from the export of phosphate (DH3.5 billion) and tourism (DH3 billion) and accounts for about 6 to 10% of GDP. It is likely that nearly 30% of the population of the Region have emigrated. In the case of the Nador Province, the total number of emigrants in 1982 was estimated roughly at more than 100,000 persons, based on the estimation in 1971, or about 19% of the total population.

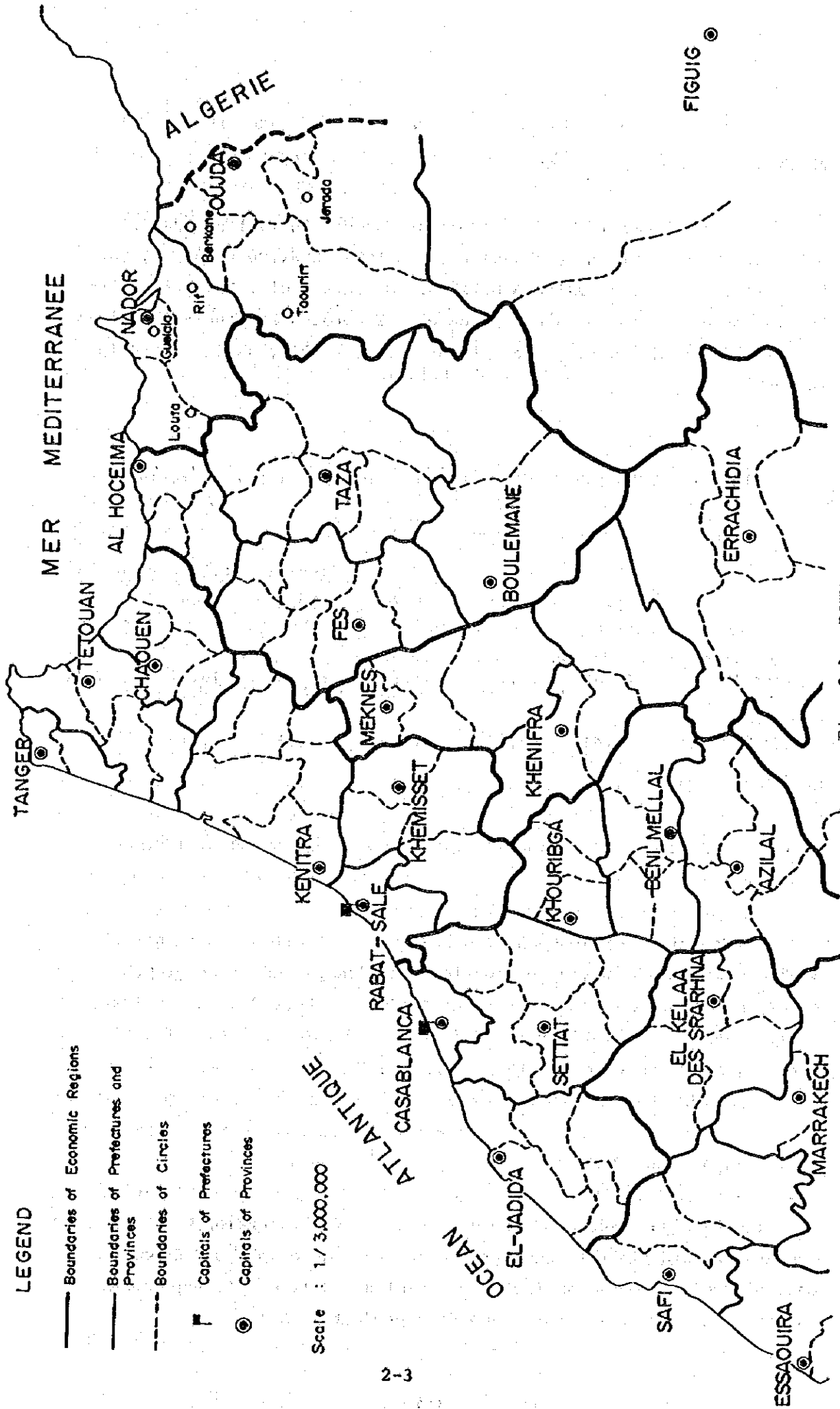
### 2.1.3 Administrative and Economic Division

Administratively, Morocco consists of 38 Provinces and 8 Prefectures composed of Municipalities, Circles, Communes, etc.

From the economic standpoint, the country is divided into following seven (7) Regions.

- Southern and Saharian Region
- Tensift Region
- Central Region
- Northern-Western Region
- Central-Northern Region
- Oriental Region
- Central-Southern Region

Boundaries of the northern part of Morocco are illustrated in Fig. 2-1.



**LEGEND**

- Boundaries of Economic Regions
- - - Boundaries of Prefectures and Provinces
- Boundaries of Circles
- ▣ Capitals of Prefectures
- Capitals of Provinces

Scale : 1 / 3,000,000

Fig. 2-1 BOUNDARIES OF THE NORTHERN REGIONS, PREFECTURES, PROVINCES AND CIRCLES



#### 2.1.4 Gross Domestic Product

The Gross Domestic Product (GDP) of Morocco in 1981 was DH77.5 billion. At the current exchange rate in 1984 (US\$1.00 = DH6.2), this is equivalent to about US\$12.5 billion. On this basis, the per capita GDP is calculated to be US\$630. The GDP of Morocco had increased at an annual rate of 4.6% during the period of 1976 - 1980, as indicated in Table 2-1.

Table 2-1 EVOLUTION OF GROSS DOMESTIC PRODUCT (GDP), 1976-1982

	(Unit: Billion Dirhams)					
	1976	1977	1978	1979	1980	1981
GDP (Current Prices)	41.01	49.76	55.15	62.04	70.02	77.50
GDP (Constant Prices 1980)	58.49	62.28	64.39	67.31	70.02	-
Growth Rate (%)	7.0	6.5	3.4	4.5	4.0	-

Source: International Financial Statistics, Yearbook 1983, IMF.

The National Development Plan (1981 - 1985) has set a target of 6.5% annual growth in real GDP during the Plan period. The growth rates in each sector are presumed as follows: about 3.4% for primary activities, 7.7% for secondary activities and more than 6.5% for tertiary activities.

#### 2.1.5 Exports and Imports

The foreign trade of Morocco is not yet fully developed. The country exports minerals and agricultural raw materials and imports capital goods, foods, manufactured articles. Half of its exports are raw or processed agricultural and fish products.



Minerals account for about 40% of the total export value of the country. The leading mineral is phosphate, which accounts for 30% of exports, though it suffered a decline of 12.5% in 1982 due to the international economic recession and especially the deterioration of foreign exchange rates.

Due to the increasing import burden such as energy products and various equipment, the deficit of external commerce accumulates from DH10.5 billion in 1981 to DH13.6 billion in 1982 (Refer to Appendix II-1).

There is a foreign trade deficit, but the balance is being redressed by efforts to export more and import less. However, imports are expected to increase in future commensurately with the increase of GDP.

Morocco's principal trade partner is France, which shares 25% of both imports and exports of Morocco. In all, 40% of the import trade and 50% of the export trade are with EC countries.

#### 2.1.6 Tourism

Tourism industry plays an important role in foreign exchange earnings of the country, and the total income of the tourism industry in 1982 amounted to DH2.5 billion, which is 20% of the total export receipts. Its contribution to GDP and balance of payments is around 3 - 5% and 10%, respectively.

The total number of visitors to Morocco (non residents) in 1982 amounted to more than 1.9 million persons, of which 71% accounted for the international tourist movement. The return gained by this influx of visitors is estimated at DH2,550 million.

As to the mode of transport used by the tourists visiting Morocco in 1982, 39.9% of them moved by air, 20.4% by sea and 39.7% by road, as shown in Table 2-2. It is noticed that the share of air transport is steadily increasing.

Table 2-2 MEANS OF TRANSPORT AND PLACES OF ENTRY AND  
EXIT OF TRAVELLERS, YEAR 1982

Means and Location	No. of Entries	(%)	No. of Exits	(%)
<u>By Land</u>	<u>950,005</u>	<u>39.9</u>	<u>903,718</u>	<u>37.0</u>
Bab Sebta	803,531	33.7	760,795	31.2
Beni Enzar	94,192	4.0	90,132	3.7
Oujda Zoudj El Beghal	49,511	2.1	48,961	2.0
Others	2,771	0.1	3,830	0.1
<u>By Sea</u>	<u>486,975</u>	<u>20.4</u>	<u>562,063</u>	<u>23.0</u>
Casablanca	4,215	0.2	4,509	0.2
Tanger	479,538	20.1	544,739	22.7
Others	3,222	0.1	2,815	0.1
<u>By Air</u>	<u>945,315</u>	<u>39.7</u>	<u>975,679</u>	<u>40.0</u>
Al Hoceima	12,793	0.5	14,049	0.6
Casablanca Mohammed V	382,579	16.1	401,544	16.4
Marrakech Menara	111,485	4.7	112,758	4.6
Oujda-Angads	51,551	2.2	60,070	2.5
Rabat-Salé	36,509	1.5	32,578	1.3
Tanger Boukhalef	138,647	5.8	143,314	5.9
Others	211,751	8.9	211,366	8.7
<u>All Means</u>	<u>2,383,295</u>	<u>100.0</u>	<u>2,441,460</u>	<u>100.0</u>

Source: Direction Générale de la Sûreté Nationale

Europeans accounted for 57.8% of all visitors who arrived in Morocco in 1982. Other visitors included 29% of Moroccans residing abroad, 4.8% of Arab nationals and 8.4% of visitors from countries other than the above-mentioned origins, i.e. Americans, Asians and Africans (Refer to Appendix II-2).

Such being the situation, it is easily supposed that the improvement of air traffic can contribute to the increase of the visitors from the above-mentioned regions.

The number of hotels in Morocco in 1982 amounted to 969, with a total of 70,738 beds and about 40% of them are up to the international standard.

As target numbers of the National Development Plan (1981 - 1985), the authorities expect 2.5 million tourist entries in 1985 and 20 million in 2000.

In order to receive suitably the increasing number of visitors, it is required for the country to expand, as soon as possible, the capacity of lodging and as well to promote the development of the touristic sites.

## 2.2 TRANSPORTATION SYSTEM OF MOROCCO

### 2.2.1 Road

Road is a very important transport mode in the country (Refer to Fig. 2-2). The road system is remarkably dense in the Atlantic areas, but inadequate in the high inland regions. The country has a total of 58,607 km of roads as of 1980, about 44% of which are paved, as summarized in Table 2-3.

Table 2-3 ROAD NETWORK CONDITIONS IN MOROCCO, 1980

Category of roads	Length (km)	Pavement (%)
- Main road	10,259	
- total		
- paved	8,823	86.0
- Secondary road	8,498	
- total		
- paved	6,139	72.2
- Tertiary road	39,850	
- total		
- paved	10,588	26.6
- TOTAL	58,607	
- PAVED	25,550	43.6

With the development of roads and increase of the national income, the number of registered cars is increasing year after year, amounting to a total of 698,887 vehicles at the end of 1982. The number of vehicles per thousand people, however, still remains at 34.

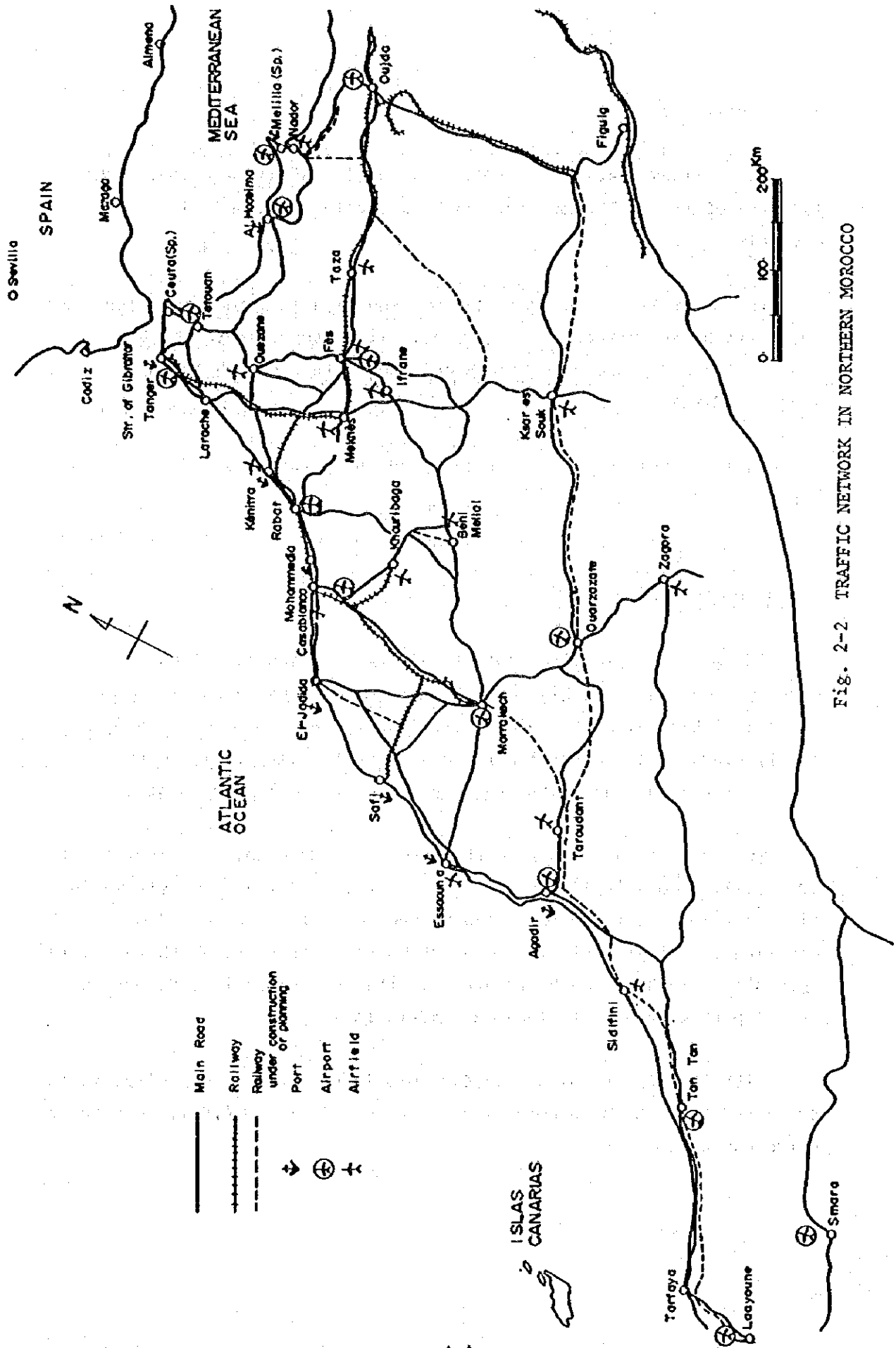


Fig. 2-2 TRAFFIC NETWORK IN NORTHERN MOROCCO

### 2.2.2 Railways

The railway system run by National Office of Railways (ONCF) has 1,977 km of track, 178 km of which have double track and 709 km are electrified.

The major line is between Morocco and Algeria, from Casablanca to Oujda via Rabat, Meknes, Fès and Taza. It is supplemented by two branch lines: Casablanca - Marrakech line, with a branch to Safi; Tanger - Meknès.

In 1982, the ONCF transported 7,520,000 passengers and 25,508,000 tons of goods.

### 2.2.3 Ports

Sea ports play a vital role in exports and imports of the country. On the coast-line of 3,500 km, Morocco has eight (8) major ports (Casablanca, Mohammedia, Safi, Agadir, Kenitra, Tanger, Nador, etc.), eleven (11) regional ports and about ten (10) refuge ports. Most of the important ports are situated on the Atlantic coast.

The port of Casablanca is the largest in Morocco. Its traffic of 19.7 million tons in 1981 represents about 62% of the country's maritime traffic. It is supplemented by the port of Mohammedia (total handling capacity: 4 million tons) 25 km north thereof, which is mainly specialized in handling hydrocarbons. The port of Safi is Morocco's second port with 5.2 million-ton traffic in 1981.

With 52 ships totaling 507,610 tons in dead weight capacity, it is estimated that the Morocco's fleet transported around 4,542,000 tons of cargo per annum.



#### 2.2.4 Aviation

Aviation plays an important role as a means of both international and domestic transports in Morocco.

There exist 39 airports in the country, of which about 20 are capable of accommodating operation of commercial aircraft. Nine (9) of these have facilities for international service. The largest airport is Casablanca (Mohammed V), a class A international airport, which handles about 40% of the passenger traffic and most of the freight. The other large airports are Rabat-Salé, Fès-Saiss, Al Hoceima, Tanger, Marrakech, Agadir, Oujda and Laayoune (See Table 2-4).

The number of commercial air companies which used the Morocco's airports in 1982 amounted to 78. Among these, two (2) are of Moroccan nationality: Royal Air Morocco (International Air Company) and Royal Air Inter (Domestic Air Company), in which the state has the majority share.

The ratios of air traffic handled in 1982 by the two national companies were as follows:

- 63.4% of the total aircraft movements
- 62.2% of the total domestic passengers
- 57.1% of the total air cargo.

Table 2-4 AIR TRAFFICS OF THE MAIN AIRPORTS (1982)

Airports	Aircraft Movements (%)		<u>1</u> Passengers (%)		Cargo (%)		Mail (%)	
Agadir	12,250	(15.8)	669,966	(19.0)	1,041.5	(3.4)	41.1	(2.4)
Al Hoceïma	938	(1.2)	37,490	(1.1)	8.5	(0.1)	-	(0.0)
Marrakech	33,867	(9.1)	298,027	(9.0)	553.8	(1.8)	12.3	(0.7)
Oujda	2,119	(3.8)	142,082	(4.3)	332.9	(1.1)	10.3	(0.6)
Rabat-Salé	26,994	(4.3)	110,950	(3.3)	1,405.9	(4.6)	104.0	(6.1)
Tanger	9,804	(15.6)	439,855	(13.1)	506.1	(1.6)	75.3	(4.4)
Tetouan	764	(0.4)	6,358	(0.1)	-	(0.0)	-	(0.0)
Fès-Saliss	4,158	(2.9)	94,290	(2.5)	525.1	(1.7)	10.2	(0.6)
Ouarzazate	886	(0.1)	5,813	(0.1)	-	(0.0)	-	(0.0)
Mohammed V	19,749	(40.3)	1,387,780	(42.0)	25,584.2	(83.2)	1,312.1	(71.1)
Laayoune	3,359	(6.5)	184,753	(5.5)	779.3	(2.5)	136.9	(8.1)
<b>Total</b>	<b>114,888</b>	<b>(100.0)</b>	<b>3,377,364</b>	<b>(100.0)</b>	<b>30,737.3</b>	<b>(100.0)</b>	<b>1,702.2</b>	<b>(100.0)</b>

Source : Analyse du Trafic des Aéroports Marocains, 1982  
Ministère des Transports, Administration de l'Air

Remarks: 1 Grand-Total of Passengers

Existing international and domestic air routes are shown in Fig. 2-3 and Fig. 2-4.

The Royal Air Morocco (RAM) runs a wide service network, stretching over 150,000 km and links 4 Continents (Europe, America, Asia and Africa), 28 countries and 48 international airports. In 1981, the RAM transported 1,262,209 passengers, 17,560.8 tons of cargo and 726 tons of mails. Its traffic is expected to increase at an annual average rate of 10% and reach 5,820,000 persons as target number of passengers in 1985. As for the cargo, it is also expected to grow at the rate of 11% per annum and attain 52,000 tons in 1985.

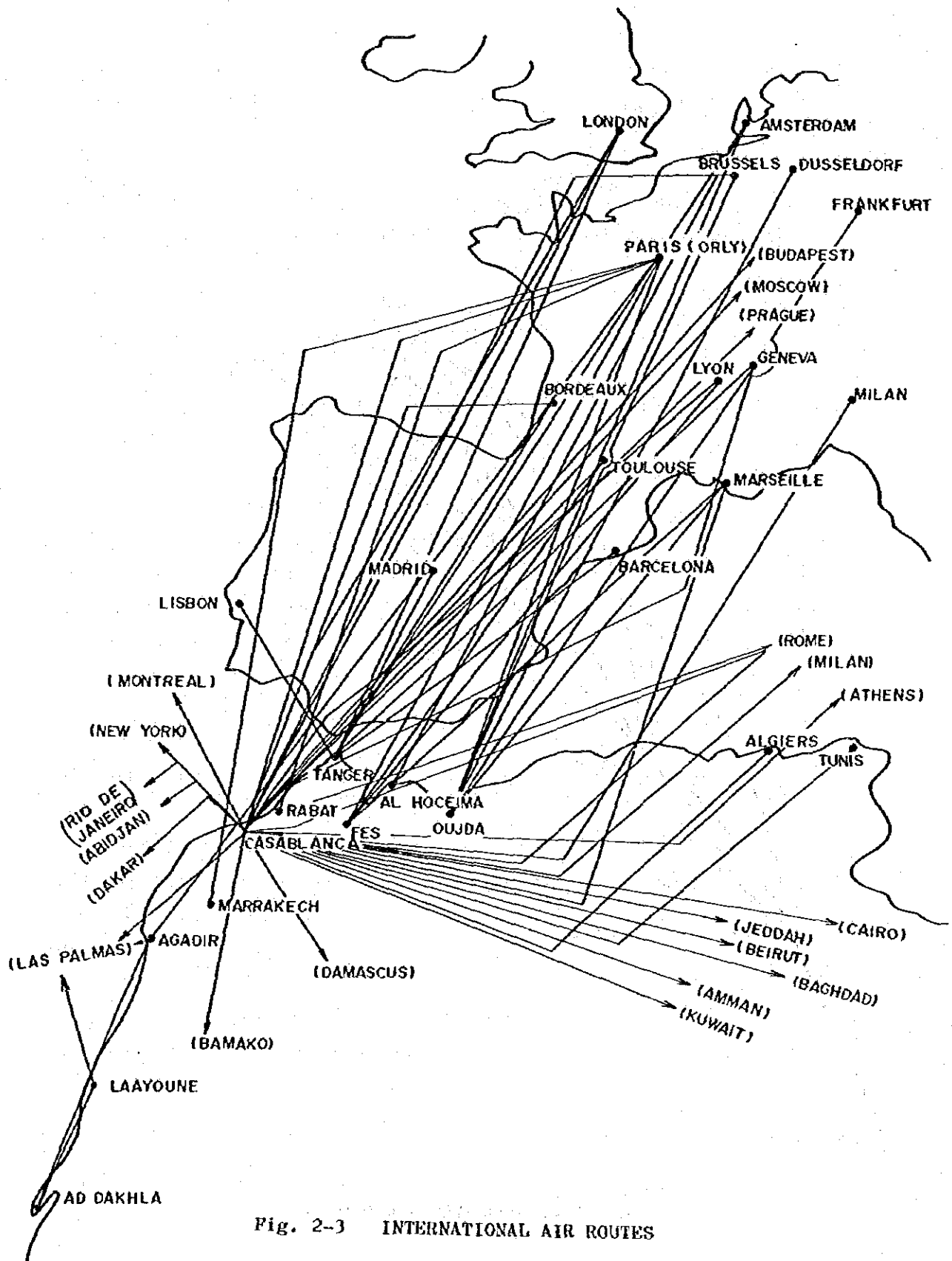


Fig. 2-3 INTERNATIONAL AIR ROUTES

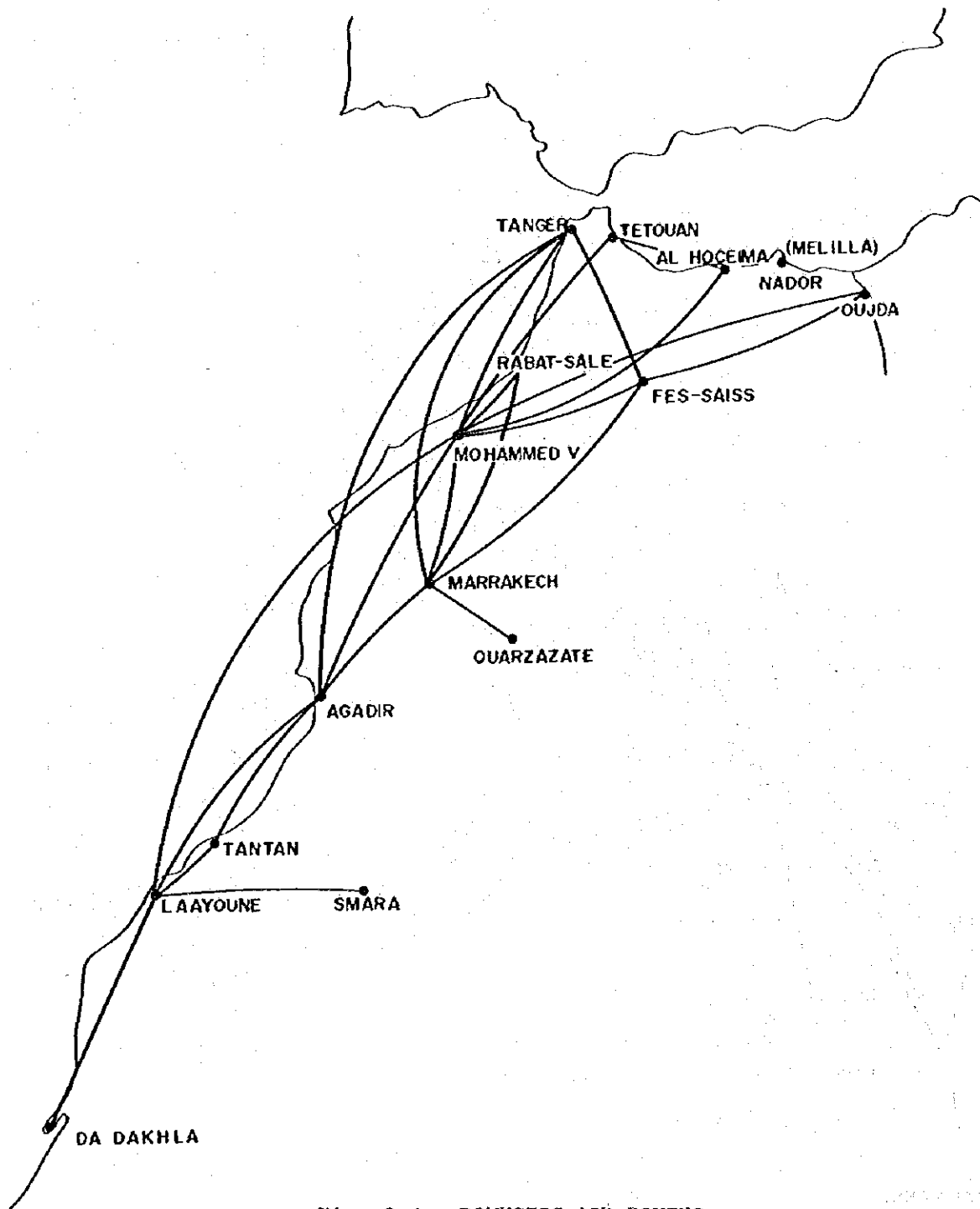


Fig. 2-4 DOMESTIC AIR ROUTES

## **2.3 NATIONAL AND REGIONAL DEVELOPMENT PLAN 1981 — 1985**

Since independence in 1956, the Government of Morocco has directed economic and social development through successive national development plans.

Following the Three-Year Development Plan 1978-1980, the (7th) Five-Year Development Plan 1981-1985 is being implemented to realize the following four (4) major objectives:

- Defense of the territorial integrity
- Revival of economic growth
- Reduction of social disparities
- Regional and national development

For the implementation of this Plan, DH110.9 billion are to be provided during the five-year period, of which DH76.3 billion are for the private sector and DH34.6 billion for the public sector. The investment structure of the public sector indicates that the Government gives priority to agricultural development, education, regional development and infrastructure.

## **2.4 SOCIO-ECONOMIC SITUATION OF ORIENTAL REGION**

The Oriental Region composed of Nador, Oujda and Figuig Provinces, which has been isolated and deprived of the influence of the activities of the Atlantic coast, is one of the underdeveloped areas of the country.

Summary table of the investment budget during the Five-Year Plan for three (3) provinces in the Oriental Region is shown in Table 2-5.

Table 2-5 INVESTMENT BUDGET DURING THE FIVE-YEAR DEVELOPMENT PLAN FOR THREE (3) PROVINCES IN THE ORIENTAL REGION

Sector	(Unit: DML,000)					
	Nador Province (%)		Oujda Province (%)		Figuig Province (%)	
Education	547,148	(33.0)	549,025	(44.4)	57,060	(21.6)
Agriculture	204,958	(12.4)	109,814	(8.9)	42,903	(16.3)
Irrigation	70,000	(4.2)	-	(0.0)	-	(0.0)
Energy	8,750	(0.5)	-	(0.0)	-	(0.0)
Industry	201,405	(12.2)	1,705	(0.1)	-	(0.0)
Tourism	7,697	(0.5)	-	(0.0)	-	(0.0)
Mining & Geology	50,000	(3.0)	116,000	(9.4)	2,333	(0.9)
Housing, Urbanism and National Development	3,483	(0.2)	6,461	(0.5)	233	(0.1)
Drinking Water Supply (ONEP)	10,000	(0.6)	9,400	(0.8)	4,100	(1.6)
Road Construction and Transport	81,094	(4.9)	106,794	(8.6)	43,900	(16.6)
Port Construction	69,500	(4.2)	40,000	(3.2)	-	(0.0)
Railway Transport	30,000	(1.8)	8,900	(0.7)	-	(0.0)
Air Transport	-	(0.0)	12,589	(1.0)	-	(0.0)
Telecommunication	27,614	(1.7)	53,898	(4.4)	4,450	(1.7)
Information & Mass Media	205,600	(12.4)	9,500	(0.8)	15,600	(5.9)
Others	139,900	(8.4)	212,626	(17.2)	93,150	(35.3)
<b>TOTAL</b>	<b>1,657,149</b>	<b>(100.0)</b>	<b>1,236,712</b>	<b>(100.0)</b>	<b>263,729</b>	<b>(100.0)</b>

Source : Plan de Développement Economique et Social 1981-1985, Provinces de Nador, Oujda et Figuig.



### 2.4.1 Population

The total population of the Oriental Region as estimated in 1982 was 1,475,000. The population of the Region was distributed as shown in Table 2.6.

Table 2-6 POPULATION OF THE ORIENTAL REGION

Province	Area (km <sup>2</sup> )	1971		1982		Growth Rate (%)
		/* Population	Density per km <sup>2</sup>	/* Population	Density per km <sup>2</sup>	
Nador	6,130	480,517	78.4	593,255	96.8	1.9
Oujda	20,700	587,189	28.4	780,762	37.7	2.6
Figuig	55,990	88,252	1.6	101,359	1.8	1.3
Region	82,820	1,155,958	14.0	1,475,376	17.8	2.2
Morocco 1982	710,850	15,379,259	21.6	20,419,555	28.7	2.6

Note: /\* Population including foreigners.

The above table reveals that the population density of the Region is below that of the whole country and also there exists a striking disparity among the three (3) Provinces. The area of the Region accounts for 11.7% of the total, while the population occupies only 7.2% of the total of the country

The population of Nador Province is estimated to be about 593,000 as of 1982, and the average annual growth rate during the 1971-1982 period was rather low at 1.9%, the reason being that people emigrated to Europe (more than 100,000 emigrants from Nador Province) seeking jobs and better standard of living.

The urbanized population ratio of the Region was 39% in 1982, which is below the national average of 43%. As for the Nador City, its population (municipality) estimated at 62,040 in 1982 is supposed to reach 186,000 in the year 2000 based on the average annual growth rate of 6.3% recorded during 1971-1982 period.

#### 2.4.2 Physical Situation

Situated at the eastern extremity of the country (about 700 km from the metropolitan area on the Atlantic coast), the Oriental Region stretches out over more than 500 km from north to south, with the three (3) characteristic types of relief: Low plains, mountainous areas and high plateaux.

The climate of the Region is, as a whole, a continental one, except for the northern part, which is under the influence of Mediterranean climate. The yearly swing is about 23°C. The precipitation is relatively abundant in the country with rainfall of about 400 millimetres per year.

#### 2.4.3 Agriculture

Among the different sectors of economic activities, agriculture occupies the first place absorbing 38% of the total active population.

In the irrigated zone of Nador Province (32,400 ha), sugar-beet, sugar-cane, vegetables, barley, wheat and maize are cultivated. In addition, Nador Province is the major producing area of citrus fruits, grapes, olives and almonds. In the rain-fed zone, agriculture is vulnerable to irregular rainfall and crop yields are low and very irregular from year to year. With the realization of the Nekor Dam which is under construction, 3,500 ha of land are expected to be newly irrigated.

The irrigated land of Oujda Province consists of various small and middle-size farms totaling 15,000 ha. Traditional agriculture is mainly of subsistence form. In the large irrigated plain of the low Moulouya, the intensive culture of vegetables, cereals, industrial crops and fruit plantations are being continually expanded.

In Figuig Province, agriculture is practised only in the irrigated areas of the Oued Guir Valley and Figuig Oases. In this area, livestock raising has an important place among traditional rural occupations.

#### 2.4.4 Industry

The non-agricultural sector, including industry, commerce, services etc. is also playing a very important role in the Oriental Region.

In Nador Province, industrial activities are concentrated in Nador City and Guelaia Circle, surrounding the city. In Selouane, an ironworks complex (final capacity : 420,000 tons/year) is under construction with investment cost of DH800 billion and is expected to be in operation from the spring of 1984.

Industries in Nador Province specially concern mining (tapping of iron deposits at Ouiksane) and production of building materials. However, the construction of two (2) huge industrial zones is now being projected : one in Selouane and the other by the side of the Port of Nador. With their completion, Nador Province is expected to contribute significantly to the economic development of the Oriental Region.

In Oujda Province, most of activities of the non agricultural sector are concentrated in the cities : Oujda-Banlieue, Jerada and Berkane. On the other hand, Figuig Province, handicapped by its remote location from the sea is still less developed in these activities.

#### 2.4.5 Infrastructure

##### 1) Railway

The Oujda-Casablanca railway transports passengers and goods, while the Oujda-Bouarfa and Oujda-Hassi Blal lines are destined mainly to transport mineral products.

In connection with the setting up of the first ironworks complex (SONACID) in Morocco at Nador, the Taourirt-Nador (125 km) mining railway is projected to connect the Port of Beni Enzar and the iron ores production site of Taourirt via Selouane.

##### 2) Road

Keeping pace with the recent industrialization of the Region, improvement works of the road network are being carried out step by step. Widening (or lane doubling) works of the road between the Port of Nador and Selouane (34 km of Route P39) are being conducted with a view to meeting the increasing traffic demand due to the industrialization and tourism development in this area. This double-lane road is projected to be extended in the near future up to the site of the Nador New Airport.

The road network in the Nador Province consists of :

- 2 main roads	: 214 km
- 4 secondary roads	: 167 km
- 20 tertiary roads	: 438 km
Total	: 819 km

##### 3) Port

The Port of Nador (Beni Enzar), presently under construction and extension is ranked the 4th port of Morocco in view of its cargo handling capacity. The Port of Nador handled 546,000 tons in exports and 384,000 tons in imports, accounting for only 3 % of the total cargo handled at 12 ports of the country in 1980.

#### 4) Airport

In the Oriental Region, there exists only one airport, Oujda-Angads Airport, having facilities for international services. However, taking into consideration the sphere of influence of the New Airport Construction Project, traffic data on Al Hoceima Airport (about 170 km from the Nador City) are also analyzed in this Section.

Passenger and cargo traffics at the two airports of Oujda-Angads and Al Hoceima are shown in Table 2-7. Since 1979, the number of passengers continued to decrease and in 1982 it was 140,447 at Oujda-Angads Airport and 35,390 at Al Hoceima Airport, accounting for only 4.3 % and 1.1 % of the national total, respectively. The cargo traffic of the Oujda-Angads and Al Hoceima airports is insignificant, accounting for barely 1.1% and 0.1% of the total, respectively.

Conditions of two (2) Airports are outlined hereunder :

	<u>Oujda-Angads Airport</u>	<u>Al Hoceima Airport</u>
- Area (ha)	443	80
- Length of Runway (m)	3,000	2,160
- Capacity of parking area	2 B-727 + 2 Caravelle	3 B-737
- Capacity of terminal building	100,000 passengers/ year	30,000 passengers/ year
- Aeronautic equipment	ILS-VOR One transistorized marker	VOR One transistorized marker
	DME High intensity marker	

#### 5) Water Supply

Water source is abundant in this Region thanks to the Oued Moulouya River and the Mohammed V Dam constructed on it in 1967. The Mohammed V Dam which has a storage capacity of 730 million m<sup>3</sup> can supply 60 m<sup>3</sup>/sec. of water on an average and irrigate more than 61,000 ha of land.

On the other hand, the Mechra Houmadi Dam which has the storage capacity of 42 million m<sup>3</sup> is supplying, through its two pipelines, 18 and 17 m<sup>3</sup>/sec. of water respectively.

Table 2-7 PASSENGER AND CARGO TRAFFICS OF OUJDA-ANGADS AND AL HOCEIMA AIRPORTS

Year	Oujda-Angads		Al Hoceima		Total of 12 Main Airports	
	No. of <sup>/</sup> * Passengers	Cargo (tons)	No. of <sup>/</sup> * Passengers	Cargo (tons)	No. of Passengers	Cargo (tons)
1973	70,939	69.6	28,829	3.6	1,887,063	18,420.5
1974	73,618	60.6	31,327	1.9	1,891,649	19,162.4
1975	141,827	100.7	29,825	0.1	2,187,686	17,762.3
1976	148,199	278.7	43,160	3.0	2,371,592	20,833.3
1977	160,330	152.5	43,046	7.5	2,861,014	21,815.0
1978	164,958	158.5	45,833	7.2	2,972,550	23,482.6
1979	157,892	154.5	45,366	10.0	3,189,464	27,196.4
1980	150,860	179.3	39,851	11.1	3,185,133	29,069.51
1981	150,178	229.2	34,602	7.3	3,202,849	31,194.9
1982	140,447	332.9	35,390	8.5	3,297,932	30,737.3

Source : Analyse du Trafic des Aéroports Marocains, 1982,  
Ministère des Transports, Administration de l'Air.

Remarks: Twelve (12) main airports are : Agadir, Al Hoceima, Marrakech,  
Oujda-Angads, Rabat-Salé, Tanger, Fès-Saiss, Ouarzazate,  
Mohammed V, Casa-Anfa and Laayoune.

: <sup>/</sup>\* Commercial Traffic Passengers



## 6) Electrification

The region has a power station at Jerada (output : 165 MW, 1,138 GWh per year), hooked to the network of 225 kV.

The transmission lines of high (60 kV and 225 kV) and medium (22 kV) voltages pass through the North region.

In the southern rural area, the National Office of Electricity (ONE) supplies electricity from its generating sets (15 kW to 180 kW).

## 7) Tourism

The Mediterranean coast is limited on the east by the Algerian border and on the west by the Oued Kert. The Coastal touristic zone extends over about 10 to 30 km from the coast to the interior of the Region.

The most attractive beaches are lying at Saidia (14 km), and then at Kariet Arkmane, Ras El Ma and Sebaa Aioune.

Moreover, the Region possesses many historical and touristic sites, such as the mountainous zone of Taforalt-Zegzel and oasis zones. However, for the development of tourism in the Region, it is required to improve lodging accommodations and to develop those touristic sites, by equipping them with adequate infrastructures including facilities of transport.

## 2.5 NECESSITY OF THE NADOR NEW AIRPORT

### 2.5.1 Problems of Existing Airport

Although an airport is being located close to Nador City, it was constructed 50 years ago by Spain and has not been in use for regular flights for a long time. The runway lacks the necessary length for today's commercial planes and the navigation aids system is inadequate or inexistent. Its location within the city does not allow any expansion and noise nuisance will cause serious problem (See Fig. 2-5).

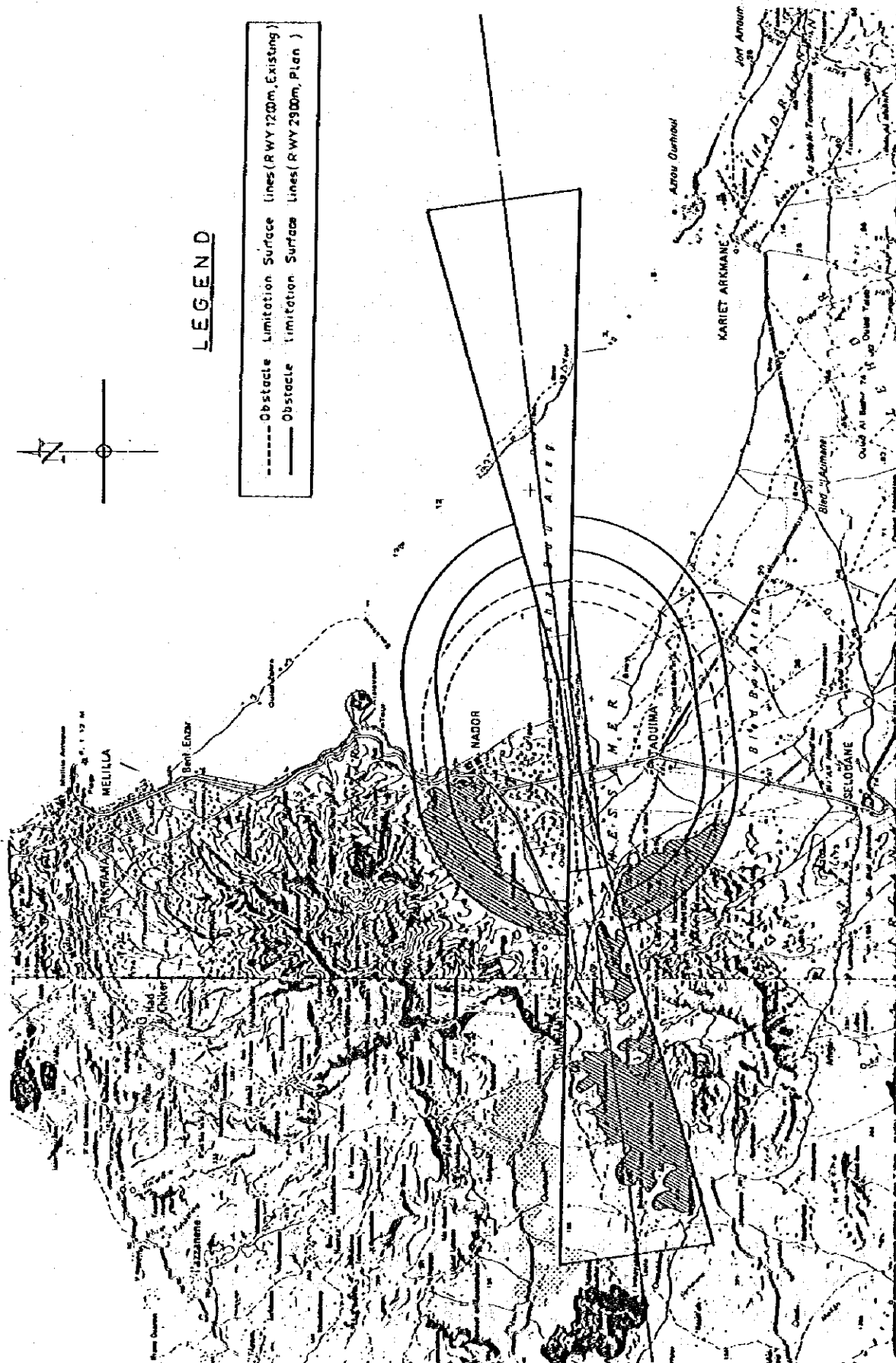


Fig. 2-5 LOCATION OF OBSTACLES OF EXISTING NADOR AIRPORT

### 2.5.2 Necessity of a New Airport

The Moroccan Government has designated the Oriental Region as a preferential zone for new investments in its Five-Year Development Plan (1981-1985). Priority has been given to improve infrastructures such as transport network, communication circuits, administrative structures and socio-cultural installations.

Among the Regions, the Oriental Region is the less developed areas of the country. In order to reduce the regional disparities and establish an equilibrium among the Regions, the Five Year Plan contemplates the creation and development of poles in the various Regions. The projects being carried out in the Oriental Region are aimed at improving the productivity, income and standard of living of the population.

With many on-going development projects such as the ironworks complex, the extension of the seaport, the creation of industrial zones, and other mining activities, it is anticipated that demands for air traffic will increase in the future. The Region is also blessed with many tourism assets which can attract international tourists. The Nador Province is also an area from which many people emigrate to Europe for better living. In such circumstances, to further facilitate movements of people and goods, Nador needs an airport nearby because the existing one, Oujda-Angads, is as far as 140 km away.

A study on potential travellers shows that about half of the passengers using Oujda-Angads Airport and about 10% of those using Melilla Airport originate from Nador Province. The number of passengers passing through these two airports amounted to 185,000 in 1981 (Refer to Table 2-7).

Although the present population of Nador Province is about 600,000, it is anticipated that it will grow to 1,500,000 in 2000. With the increase of the population, with more economic activities, with the development of tourism and with more cultural and commercial exchanges, the needs of a new airport at Nador will arise, particularly because the airports in the area are remote, causing great inconveniences to passengers from Nador, and will become overflowed by traffic demands within a short period.

There is no doubt that the realization of a new airport will not only help to ease air travel, but will have a direct bearing on the social and economic benefits of the Region and enhance the development of the area.

A general development plan of Nador Province is given in Fig. 2-6.

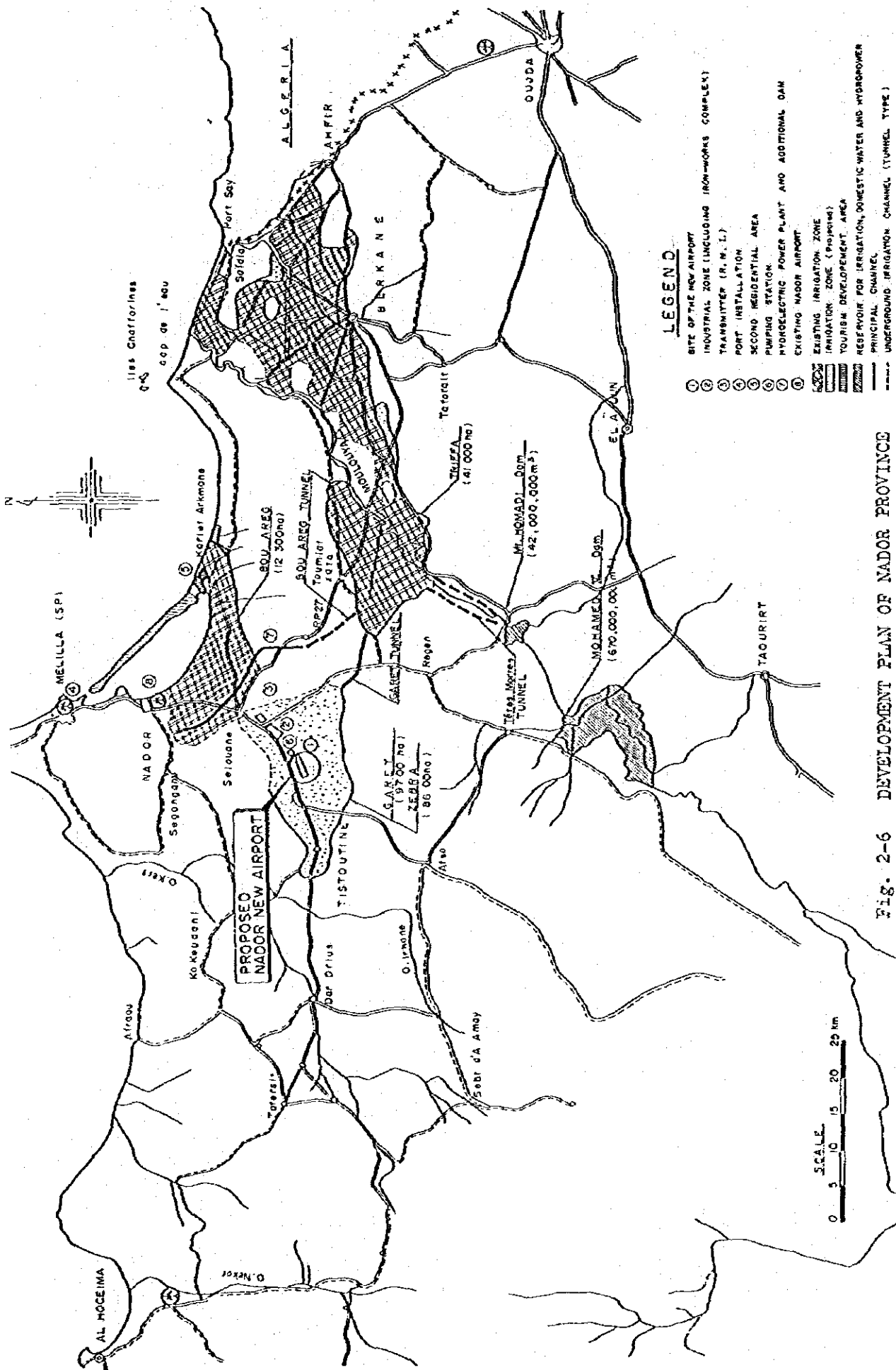


Fig. 2-6 DEVELOPMENT PLAN OF NADOR PROVINCE

