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**BUILDING AND UTILIZING  
PHYSICAL INFRASTRUCTURE CAPACITIES:  
THE CASE OF THE KINGDOM OF MOROCCO**

by

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## I. INTRODUCTION

### 1.1 Objective

1. **Building and Utilizing Physical Infrastructure Capacities** in Africa is one of the priority areas which were identified in developing the Framework Agenda for Building Critical Capacities in Africa.<sup>1/</sup> As part of this exercise, several countries were selected as case studies for specific priority areas; the Kingdom of Morocco was selected for its experience in infrastructure development.

2. The objective of the study on Morocco is to review the sectoral policy and strategy for infrastructure building and maintenance in order to identify the key factors contributing to the success and sustainability of capacity building in the country, as well as whether and how the experience of Morocco may be applicable to other African countries in their efforts to develop their infrastructure capacity.

### 1.2 Methodology

3. The case study is based on interviews with high-level policy makers in the key government ministries, managers of major public enterprises and chief executives of public enterprise boards. The purpose of the above interviews and consultations was to identify capacity parameters affecting the productivity or performance of these institutions and assess the on-going capacity building initiatives in the country. The list of officials met in the country is attached as **Annex I** to this report.

4. Supplemental information was also obtained from correspondence with certain organizations in the country, government reports as well as staff assessment reports.

### 1.3 Scope

5. The provision of adequate infrastructure is one of the prerequisites for attaining sustainable economic development. The structure of the African economies dictates that a regional integrated systems approach be adopted for the development and better utilization of existing capacities of electrical power grids, natural gas pipelines, transport networks, as well as river and lake basin development. While recognizing that capacity-building efforts will vary among countries, depending on unique national priorities and endowments, there is however general consensus as to what constitutes the key policy actions which are required for building development capacities<sup>2/</sup>.

These are policy and institutional framework, human resources development, regional cooperation and resource mobilization.

6. As regards policy and institutional framework, there is a need for a reassessment of existing institutional structures in particular countries, as some of them might not be suited to the prevailing

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<sup>1/</sup> Resolution 771 (XXIX) of the ECA Conference of Ministers, 2-5 May 1994.

<sup>2/</sup> ECA: Progress Report on a Framework Agenda for Building and Utilizing Critical Capacities in Africa: Document E/ECA/CM.21/5, 1995

social and economic needs. The role of government and the State must be revised as necessary so as to create a conducive environment for participatory development by all sectors of society. Specifically, the State must create a fair, transparent and stable policy environment through the appropriate legal and regulatory framework to support private involvement in the maintenance of the existing infrastructure and in the provision of new infrastructure services.

7. The policy measures which must be taken in the area of human resources development include emphasis on education and training at all levels so as to raise the technical capability of staff and better utilization of existing human resources. The use of national institutions of higher learning, as well as regional institutions must be encouraged, to be supplemented by any technical assistance which might be available from Africa's external development partners.

8. In view of the current trend to global markets made up of regional trading blocs, Africa simply has no other alternative but to follow the path of regional cooperation and integration as envisaged in the **Abuja Treaty** establishing the **African Economic Community**. Efficient physical infrastructures would be required for effective integration in Africa.

9. The final aspect which underlines the whole effort of capacity building is that of resources. The resources required to bring Africa's infrastructure capacities to levels which are needed to support sustainable economic development are enormous. It is evident that African Governments, which have in the past assumed the burden of the development of all economic sectors, will not be in any position to provide the necessary resources for this purpose. Therefore, public-private partnership must be developed in order to generate the necessary financing.

10. Thus, the experience of Morocco in developing the various infrastructure sectors will be reviewed within the above framework: policy and institutional framework; human resource development; financing; and regional co-operation. Its successes and shortcomings can provide the basis for drawing lessons for the other African countries.

11. The infrastructure sectors covered in the study include the following economic infrastructures which were selected on the basis of availability of information:

- (i) **Transport** - Roads and road transport; railways; air transport; maritime ports.
- (ii) **Water** - Potable water supply and distribution networks; irrigation schemes.
- (iii) **Energy** - Hydro-thermal electricity

## II. GENERAL MACRO-ECONOMIC FRAMEWORK

12. Situated in the extreme North-West corner of Africa, the Kingdom of Morocco has coastlines on both the Mediterranean Sea and the Atlantic Ocean. Its terrain ranges from the Atlas Mountains in the East to the coastal areas in the North and West. Its population was estimated at 25.5 millions in 1992, with about 50 per cent urban. The main economic activities are agriculture, mining and manufacturing.

13. By the beginning of the 1980s, Morocco's macro-economic performance was steadily deteriorating to the extent that the country's gross official foreign exchange reserves were nearly exhausted and the country was forced to seek rescheduling of its external debt. In order to reverse this trend, the country embarked on a series of adjustment programmes starting in 1981, aimed at achieving a sustainable growth rate and viable balance of payments position. Two key elements of the adjustment strategy were 3/:

- (i) to align aggregate demand with available resources as well as shift resources away from the government sector to support the growth of private sector investment; and
- (ii) To dismantle government controls to allow market forces to play a greater role in resource allocation, and, in that context, to switch from an inward-oriented import substitution to an outward-oriented export-led growth policy stance.

14. The adjustment strategy adopted by the government had two phases:

- (a) Phase I: 1980-1985 The emphasis of this phase was on fiscal adjustment to improve competitiveness.
- (b) Phase II: 1985-1993 The policy gave greater emphasis on structural reforms to ensure sustainability, including public enterprises.

15. The adjustment efforts since 1980 have been supported in part by nine (9) IMF arrangements committing a total of SDR 3.04 billions between 1980 to 1993 under stand-by and extended arrangements. Support also came from the African Development Bank, the World Bank, the Paris Club as well as commercial bank credits. 1993 was the first year the country did not draw on the IMF stand-by facilities.

16. Most of the infrastructure sector in the country is run by public enterprises (offices, régies and sociétés nationales). The "Moroccanization" drive initiated in 1973 was aimed at reducing the influence of foreign capital interests. Wholly-owned government enterprises enjoyed a monopoly in basic utilities (energy, water supply, posts and telecommunications), railroads, air transport and petroleum refining. As part of the adjustment programme, steps were taken to restructure these enterprises, supported by the World Bank's Public Enterprise Restructuring Loan (1985). The restructuring programme encompassed measures to 4/:

- (i) Improve the financial performance of public enterprises so as to reduce the budgetary burden;
- (ii) Develop their administrative autonomy and accountability;
- (iii) Reduce the role of the Government in the economy through the privatization or liquidation of targeted enterprises.

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3/IMF: Resilience and Growth through Sustained Adjustment The Moroccan Experience (1995).

4/IMF: Resilience and Growth Through Sustained Adjustment: The Moroccan Experience (1995)

17. The reform programme also envisaged changes in utility tariffs and pricing policies as well as strengthening of the planning, evaluation, and monitoring of investments. Accordingly, starting in 1985, the tariffs for electricity, water, and transportation were substantially increased. In addition, a first set of three-year performance contracts, which established and rationalized investment programmes and operating procedures, was signed with eight public enterprises during 1985-93. At the end of 1993, 13 enterprises were operating under performance contracts, and programme negotiations were at an advanced stage with a number of additional enterprises.

18. Changes were also effected in the institutional framework regarding the management and supervision of public enterprises. The Department of Public Enterprises and Participation (DEPP) of the Ministry of Finance was strengthened, and a permanent committee, the Interministerial Committee for Public Enterprise and State Participations (CIPEP), was created to address and make decisions concerning major issues of public enterprise strategy and to approve performance contracts. The performance contracts negotiated by CIPEP established financial objectives, investment programmes, and operating procedures for each enterprise; the performance of the enterprise would then be evaluated on the basis of those objectives. Thus, the Government's role has evolved from that of controlling public the functions of enterprise to that of holding the management responsible for performance objectives.

19. Accordingly, a comprehensive policy framework for privatization was developed in 1985. Under this framework, studies were undertaken to identify: (a) those enterprises that were not performing well and that needed restructuring; (b) those that should be liquidated; and (c) those that were engaged in activities which could be better carried out by the private sector. Based on those studies, 112 enterprises were targeted to be sold to the private sector before the end of 1995. The legal framework for this privatization program was adopted in 1989, but implementation started in earnest only in 1993, with the privatization of 10 enterprises, yielding DH 2.1 billion in revenue. Five additional enterprises were sold in the first quarter of 1994, and the auditing process that precedes the offer for sale has been concluded for another 35 enterprises. The privatization exercise is being conducted through direct negotiations and tenders, as well as through the stock market.

20. The privatization policy has been conceived and implemented as an instrument of economic and social modernization. Over and above the simple transfers ensuring additional resources to the State, it is a deep reform process inducing multidimensional changes which have been accepted as a viable economic policy. The Ministry of Privatization and State Enterprises has been set up to oversee this process. Prior to their transfer, the Ministry submits these enterprises to independent external valuation. Transparency is maintained at all stages as required by law: transparency in managing and carrying out transfers; transparency about the properties and shares being sold; and transparency towards the private purchaser<sup>5/</sup>.

21. As a result of these actions, the financial burden imposed by public enterprises on the budget in the form of subsidies, etc. has declined substantially; total current and capital transfers from the Government to public enterprises, which amounted to 3.2 percent of GDP in 1982, declined gradually to 1.7 percent of GDP in 1993.

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<sup>5/</sup>Transfers - The Journal of Privatization in Morocco, June 1995.



22. However, it was not until 1993 that steps were initiated to open some of the infrastructure sectors to private participation, notably:

- (i) Power generation;
- (ii) Telecommunications - New services;
- (iii) Water distribution;
- (iv) Transportation.

23. Finally, it is worth noting that the development of physical infrastructure is one of the seven key areas singled out by Morocco in order to improve the competitive position of the country within the World; the other six are macro-economic dynamism, finance, markets, trade, human resources and technology <sup>6/</sup>. These are the factors which determine, to a large extent, the decisions to invest in a country. Compared to other countries at similar levels of development, the infrastructure in Morocco may be described as generally weak. While the access to ports facilities, air transport and railways may be considered as average, the energy, road transport and telecommunication sectors are rather weak. However, recent efforts in the electricity sector are beginning to bear fruit. Energy, water, transport and communications sectors together contributed a total of about 14 percent of the country's gross national product in 1992 (Table 1).

24. It is within the above macro-economic environment that the experience of Morocco in the development of its physical infrastructure will be examined in some detail in terms of policy and institutional framework, human resource development, regional cooperation and financing capacity for sustained growth.

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<sup>6/</sup> Observatoire de la Compétitivité International de l'Economie Marocaine (1994).

**Table 1. Gross Domestic Product by Sector of Origin**

	1987	1988	1989	1990	1991	1992
(In millions of Moroccan dirhams at current prices)						
Primary sector	24,075	31,347	33,370	37,675	48,010	36,031
Agriculture, livestock, and fishing	24,075	31,347	33,370	37,675	48,010	36,031
Secondary sector	51,511	60,558	64,335	70,050	75,685	79,364
Mining	3,992	5,377	5,172	5,343	5,313	4,991
Energy and water	11,538	14,223	14,067	13,069	15,467	17,282
Manufacturing	28,587	31,391	34,554	40,284	42,845	45,051
Construction and public works	7,394	9,567	10,542	11,354	12,060	12,040
Tertiary sector	63,286	70,420	73,417	80,736	89,470	96,797
Commerce	20,657	21,878	21,552	24,152	27,534	28,381
Transport and communications	10,510	12,030	12,735	13,205	14,066	15,191
Other services	20,093	22,476	22,912	24,002	24,958	27,872
Indirect taxes less subsidies	12,025	14,035	16,217	19,378	22,912	25,353
Government	17,818	19,906	22,809	25,211	28,482	30,296
Gross domestic product (GDP)	156,690	182,230	193,931	213,803	241,647	242,488
(In percent of GDP)						
Primary sector	15.4	17.2	17.2	17.6	19.9	14.9
Agriculture, livestock, and fishing	15.4	17.2	17.2	17.6	19.9	14.9
Secondary sector	32.9	33.2	33.2	32.8	31.3	32.7
Mining	2.6	3.0	2.7	2.5	2.2	2.1
Energy and water	7.4	7.8	7.3	6.1	6.4	7.1
Manufacturing	18.2	17.2	17.8	18.8	17.7	18.6
Construction and public works	4.7	5.3	5.4	5.3	5.0	5.0
Tertiary sector	40.4	38.6	37.9	37.8	37.0	39.9
Commerce	13.2	12.0	11.1	11.3	...	...
Transport and communications	6.7	6.6	6.6	6.2	5.8	6.3
Other services	12.8	12.3	11.8	11.2	...	...
Indirect taxes less subsidies	7.7	7.7	8.4	9.1	...	...
Government	11.4	10.9	11.8	11.9	11.8	12.5
Gross domestic product (GDP)	100.0	100.0	100.0	100.0	100.0	100.0

Source: IMF - Resilience and Growth Through Sustained Adjustment: The Moroccan Experience. (1995).

### III. TRANSPORT SECTOR

#### 3.1 Sector Organization, Policy and Strategy.

25. The transport sector plays an important role in the development of Morocco's economy. It provides direct support to industrial, mining and agricultural development, plays a key role in trade and supports the growth of tourism. The land transport system is well developed and in 1992 consisted of about 60,000 km of roads (fifty per cent of which was paved) and 1,900 km of railways. There are nine major ports and 12 international airports handling scheduled flights.<sup>7/</sup>

26. Transport infrastructure and services are currently organized under the following government ministries:

- (i) **The Ministry of Public Works, Vocational and High Level Training** is in charge of road transport and port physical infrastructural transformation (planning, building and maintenance of infrastructures), training and port operations. The ministry is organized into several directorates and institutions:

- Direction des Routes et de la circulation routière (DRCR);
- Directions régionales des Routes (DRR);
- Direction des Affaires du Personnel et de la Formation (DAPF);
- Direction de la Planification et des Etudes (DPE);
- Régies pour entretien des Routes;
- Ecole Hassania des Travaux Publics (EHTP);
- Laboratoire de contrôle de qualité (LBTP);
- Administration de la Formation Professionnelle (AFP);
- Direction de la formation des cadres (DFC);
- Direction de la Météorologie Nationale (DMN);
- Office de la Formation Professionnelle et de la Promotion du Travail (OFPPT);
- Banque de données routières (BDR);
- Fonds Routier (FR);

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<sup>7/</sup> Annuaire Statistique du Maroc, 1993; Direction de la Statistique.

- Centre National d'Etudes et de Recherches Routières (CNER);
  - Institut de Formation aux Engins et à l'Entretien Routier (IFEER);
  - Société Nationale des Autoroutes (SNA).
- (ii) **Ministry of Transport** is responsible for the management and operations of road, rail, air and maritime transport. It is organized into the following directorates:
- Direction des Transports terrestres;
  - Direction des Affaires Administratives;
  - Direction des Etudes, de la planification et de la coordination des Transports;
  - Direction de l'Air;
  - Direction de la Formation Professionnelle;
  - Office National des Transports (ONT) in charge of public road transport;
  - Comité National de Prévention des Accidents de la circulation (CNPAC);
  - Office Nationale des Aéroports (ONDA);
  - Compagnie Nationale des Transports Aérienne - Royal Air Maroc (RAM);
  - Office National des Chemins de Fer (ONCF);
  - Division des Transports Maritimes.
- (iii) **Ministry of Interior**, which, through the local administrations, is responsible for communal roads.

27. The infrastructure development in the early 1990s was supported by the World Bank as part of the Bank's programme for structural adjustment in Morocco designed to rationalize and increase the efficiency of priority investments and maintenance in the roads sector.<sup>8/</sup> Public investment in the transport sector reflected the change in emphasis as summarized in Table 2.

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<sup>8/</sup> Staff Appraisal Report, Kingdom of Morocco, Highway Sector Project, January 8 1990 (World Bank Report No. 7983-Mor.)

Table 2.

Transport Sector Public Investments

Sector		1973-1980	1981-1987	1988-1992
Roads	DH million	2,701	5,919	11,044
	Percent	29.5	32.8	45.6
Rail	DH million	1,964	3,984	4,159
	Percent	21.4	22.1	17.2
Maritime	DH million	3,354	6,032	5,005
	percent	36.6	33.5	20.6
Air	DH million	1,142	2,083	4,034
	Percent	12.5	11.6	16.6
Total	DH million	9,161	18,018	24,242
	percent	100	100	100

DH = Moroccan Dirham.

SOURCE: IBRD Staff Appraisal Report, Kingdom of Morocco, Highway Sector Project, January 8, 1990

28. Within the framework of the structural adjustment programme and the sector development projects for roads and ports, focus was on the following issues<sup>9/</sup>:

- (i) improvement in the planning of investments and their coordination among modes across sectors;
- (ii) better use of existing facilities and services through trade facilitation and logistics, improved management of public enterprises, stepped-up deregulation, greater accountability of resource utilization, and decentralization of decision-making process;
- (iii) gradual elimination of subsidies by the Government and cross-subsidies among users through a more flexible tariff system, and correct pricing of resources used; and
- (iv) increased budgetary allocations for the rehabilitation and maintenance of infrastructures.

<sup>9/</sup> Staff Appraisal Report, Kingdom of Morocco, Port Sector Project, November 29, 1990

29. Overall, government policy towards public enterprises has changed with emphasis on reducing budget dependence, increasing managerial efficiency, and transferring some of their operations to the private sector. In effect, the Government realized that excessive control and interference in the management of the public enterprises, support for low priority or premature investments, limitations on market entry and below-cost tariffs have created distortions in the transport market, and excessive costs to the economy.

30. In 1985, the Government took an initial step to reduce its intervention on the road transport market by raising the limit of trucks under route and freight assignment control by the Office National des Transports (ONT) from 5.5 to 8 tons. Further progress is now contemplated with a gradual change in ONT's role away from control of regulations towards freight forwarding and the provision of information on the road transport market on an optional basis.

31. In the railway subsector, the Government established a Contract Plan with ONCF defining respective responsibilities and objectives. Railway restructuring was implemented under the World Bank's Public Enterprise Restructuring Loan (PERL) operations.

32. In the port subsector, in 1984, the monopoly granted to the cargo handling company was abolished. A reorganization study was carried out with World Bank financing under the Ports of Casablanca and Mohammedia Project which made recommendations for decentralization of port operations and streamlining of ODEP's organization. In addition, a Contract Plan between ODEP and the Government was established.

### **3.2 Roads and Road Transport.**

#### **3.2.1 Infrastructure Capacity and Demand.**

33. As is the case in most parts of Africa, road transport is the dominant mode of transport in Morocco, accounting for over 90 per cent of passenger traffic and 75 per cent of goods traffic (not including phosphates, which is exclusively carried by rail).

34. In 1992, the road network totalled 59,790 km. of classified roads of which 29,626 km (49 per cent) was asphalted. The conditions of the paved roads were generally satisfactory in 1992, with over 60% of the principal and secondary roads classified as being in good and acceptable conditions against 13% in very bad condition. The corresponding figures for tertiary routes were 50% good/acceptable, and 14% very bad. At the same time, an investigation carried out in the same year found that on 38,000 km. of gravel roads, up to 82% was in very bad condition, out of which 30% could not be used for more than 30 days in a year. Table 3 shows the trend in the development of roads between 1988 and 1992.

## Road Infrastructure

**Table 3**

	1988	1989	1990	1991	1992
Principal Roads of which paved	10,882 9,235	10,907 9,577	10,907 9,577	10,914 9,584	10,914 9,584
Secondary Roads of which paved	8,806 6,244	9,367 6,438	9,367 6,438	9,434 6,579	9,434 6,579
Tertiary roads of which paved	39,483 12,756	39,178 13,126	39,178 13,126	39,442 13,463	39,442 13,463
<b>Total Roads</b> of which paved	<b>59,171</b> 28,235	<b>59,452</b> 29,141	<b>59,452</b> 29,141	<b>59,790</b> 29,626	<b>59,790</b> 29,626

SOURCE : Annuaire Statistique du Maroc, 1993

35. The road network is classified into four categories: national, regional, provincial and communal roads. The national roads total 10,370 km and the regional network has 10,545 km. The Ministry of Public Works is responsible for the first three categories of roads, while the communal roads are the responsibility of the communities.

36. The number of motor vehicles in circulation has increased steadily from 871,185 in 1988 to 1,105,822 in 1992, at an average annual growth rate of over 6% per year. Table 4 summarizes the growth in vehicle fleet from 1988 to 1992. In terms of daily traffic, this has grown from an average of 23,860 vehicles per day in 1989 to 31,260 vehicles per day on the nation's roads in 1993, with about two-thirds of this traffic occurring on the principal roads.

**Table 4**

### Composition of Vehicle Fleets/Véhicules en circulation

	1988	1989	1990	1991	1992
Motorcycles/Motocyclettes	19,201	19,286	19,409	19,487	19,592
Automobiles/Voitures de tourisme	588,895	634,431	669,637	707,148	778,880
Utility Vehicles/Véhicules utilitaires	263,089	272,393	282,945	295,465	307,350
<b>Total</b>	<b>871,185</b>	<b>926,110</b>	<b>971,991</b>	<b>1,022,100</b>	<b>1,105,822</b>
<b>Growth Rate</b>		<b>6.3%</b>	<b>5.0%</b>	<b>5.2%</b>	<b>8.2%</b>

SOURCE : Annuaire Statistique du Maroc, 1993

### **3.2.2. Policy and Institutional Framework.**

37. The policy for developing this subsector focuses on the following three objectives:

- (i) Safeguarding the existing road infrastructure through maintenance and rehabilitation;
- (ii) Expansion of road network to better respond to the increasing demand (7% per year growth rate in traffic); and
- (iii) Extension of roads so as to open up rural zones.

38. The following strategies were accordingly adopted in pursuance of the above objectives:

- (a) Maintenance of existing facilities;
- (b) Upgrading and rehabilitating the existing network;
- (c) Progressive expansion of the road network with the view in particular to open up the interior of the country;
- (d) Promotion of the development of cost effective highway network for North-South links (Europe) as well as East-West links (Maghreb).

39. An action programme consistent with the above objectives and strategies was drawn up for the period 1994-1998 consisting of the following:

- (i) upgrading of 5,400 km of roads at an estimated cost of DH2970 millions;
- (ii) laying asphalt on 4,400 km of roads at an estimated cost of DH1,145 millions;
- (iii) rehabilitation of 75 culverts estimated at DH425 millions;
- (iv) maintenance of existing road infrastructures estimated at DH 1,500 millions;
- (v) Upgrading 3,040 km. of narrow roads at DH990 millions (excluding maintenance cost);
- (vi) improvement of routes at DH 60 million;
- (vii) construction of by-passes around big cities such of Fès, Rabat-Sale, Agadir-New airport, at an estimated cost of DH200 millions;
- (viii) upgrading 1000 km. of the existing highway network over the next 10 years at an estimated cost of DH20 billions; these are:



- Rabat-Tangier: 225 km;
- Tetouan-Sebta: 40 km;
- Rabat-Fès: 180 km;
- Casablanca-Settat: 45 km;
- Casablanca- El Jadida: 90 km;
- Settat-Marrakech: 170 km;
- Marrakech-Agadir: 250 km;

- (ix) expanding in the next seven years 10,000 km of the road network at an estimated cost of DH730 millions, consisting of 3,500 km. of asphalt roads and 6,500 km. of gravel roads.

40. The roads and road transport subsector is managed under three ministries which are organized as follows:

- (i) **Ministry of Public Works, Vocational and Higher Training** which is responsible for the design, construction and maintenance of classified road network. It has set up field organizations which have a large degree of operational autonomy so that the headquarters deals only with matters of general planning, coordination and supervision.
- (ii) **Ministry of Transport** which has three departments dealing mainly with transport planning and road transport regulation: the Department of Transport Studies, Planning and Coordination; the Land Transport Department; and the Vocational Training Department.
- (iii) **Ministry of Interior**, which, through local Administrations, is responsible for community roads.

41. A new principle for managing the road network was introduced in 1993. Major activities were devolved to the regions, such as the National Programme for Construction of Rural Roads in which 10,000 km. of rural roads are to be constructed. Such a policy of decentralization reinforces the national objectives of providing services to society in the fight against poverty and unemployment, and reduction of transport costs.

42. Inter-urban bus and truck services are operated mainly by small private companies or cooperatives. The trucking industry is entirely private, with vehicle utilization and load factors for most inter-urban transport averaging about 60%. The trucking market is broken down into three segments:

- (i) Private operators with small trucks of up to 8 tons gross weight; these account for 40% of the market;

- (ii) Own-account operators with trucks in excess of 8 tons gross weight and account for 36% of the market;
- (iii) Public for-hire operators, which are affiliated with ONT and handle 24% of the market; ONT acts as a marketing agency for these operators.

### **3.2.3. Human Resource Development.**

43. MPW, which is in charge of coordinating vocational training and staff training in the country, is fully equipped in terms of pre-employment facilities for the public works sector, with one engineering school (Hassania), four technical centres (Agadir, Marrakech, Rabat, Oujda) and a large network of Vocational Training Centres and Institutes of Applied Technology within the Office of Vocational Training and Employment (OFPPT). The Personnel and Training Department (DAPF) organizes systematic continuing training for engineers in project analysis, economics, technical matters and management and for technicians through sensitization seminars.

44. MOT ensures the training of its staff in charge of road transport on an informal basis, on-the-job, using bilateral assistance, and training abroad.

45. DRCR's Studies Division is responsible for preparing major highway projects. Two autonomous agencies complement DRCR's engineering capability: the National Centre for Pavement Evaluation and Road Research (CNER) is a public agency in charge of pavement design analyses, structural condition surveys, and related applied research; and the semi-public Material Tests and Studies Laboratory (LPEE), which can carry out soil and material tests required for civil works as well as engineering studies.

46. CNER was established in 1979 for promoting and spearheading studies on the roads network, as well as assessing and testing new technologies to facilitate their application at the operational stage. In 1989, it launched a new technology for monitoring the road network, which charts out the predicted road degradation for the entire network every two years as well as highly effective monitoring equipment for the assessment of superficial and structural road characteristics (Box 1).

47. As a further emphasis on training, DRCR also established l'Institut de Formation aux Engins et a l'Entretien Routier (IFEER), which is a training centre for the roads department. The technicians are trained in the use of various maintenance equipment and their repair, as well as in road maintenance itself (Box 2).

48. The supervision of construction is carried out by DRCR regional staff, assisted by LPEE for necessary soils and materials tests. LPEE also undertakes some specialized parts of the supervision. For major road construction, DRCR establishes a special supervision office with engineers and other specialists permanently assigned to the supervision of the road.

49. The country also has a well-developed contracting industry, with several local firms fully up to international contracting standards. Construction works are normally carried out under unit price contract awarded after competitive bidding.

**Box 1****MONITORING  
A Tool for Management and Designing  
the Road Network**

Since independence, the Kingdom has witnessed a considerable increase in its paved roads, and the construction of new roads in particularly hostile environments such as mountains and the desert. Major undertakings are today part and parcel of the national road policy: development of international road links Rabat - Cairo and Tangier - Lagos, the opening up of remote areas, improvement of the quality of current networks service.

The consolidation and improvement of road network resources is made possible by sustained technical advancement, increasing performance of procedures in application, increasingly thorough knowledge of the network, its condition and immediate surroundings.

The effort to consolidate and develop Morocco's road technology is based on ever closer collaboration with the various road partners coordinated by the Directorate of Roads and Road Traffic (DRCR). Ten years have already elapsed since the DRCR set up a scientific tool for the revitalization of the road sector; the National Centre for Road Studies and Research (CNER), responsible for promoting and spearheading studies on the roads network, as well as assessing and testing new technologies to facilitate their application at the operational stage.

In 1989, the DRCR launched a new methodology for monitoring the road network, which charts out the predicted road degradation for the entire network every two years as well as highly effective monitoring equipment for the assessment of superficial and structural road characteristics.

The CNER is a public, financially independent organization operating under the official patronage of the DRCR. The orientation and evaluation of its operations are effected in the framework of a Management Committee and a Technical Committee which constitute the CNER's partners.

**Box 2**

**ROAD MAINTENANCE AND ENGINEERING TRAINING INSTITUTE - IFEER**

Mindful of the importance of continuing training of its personnel and of the public works sector's growing need for skilled technical staff, the Direction des routes et de la circulation routière (Department of roads and road traffic, DRCT) has established the Institut de formation aux engins et à l'entretien routier (Road Maintenance and Engineering Training Institute - IFEER).

IFEER opens new horizons for retraining and readaptation of road maintenance staff and construction equipment management and maintenance personnel.

The institute is intended for government departments, local authorities and private-sector entities connected with public works projects. It is an avenue of motivation designed to optimize the utilization of human-resource capabilities and adapt them to the imperatives of the professional environment in which they operate. An occupational and curriculum-development board consisting of representatives from various sectoral entities monitors the adaptability of training programmes to the needs of users.

The institute functions autonomously; training fees are determined exclusively on the basis of operational costs.

**TRAINING CURRICULUM:**

The training curriculum is centred on four basic modules which may be supplemented by special modules on request:

**MECHANICS MODULE:** For technical personnel engaged in maintenance and repair of various machines used in public works projects.

**EQUIPMENT MANAGEMENT MODULE:** For equipment and spare parts management personnel.

**ROAD MAINTENANCE MODULE:** Training in road maintenance mechanisms (carrying out and supervising projects), includes instruction on workshop organization and management.

**MACHINE OPERATORS MODULE:** Training in machine operation (public works machinery) under various conditions of work, includes instruction on elements of safety in the workplace.

### 3.2.4 Financing Road Development.

50. Road maintenance and rehabilitation is given very high priority in the investment programme of the country. The expenditures planned during the Fourth Highway Sector Project (1988 - 1992) allocated funds as follows<sup>10/</sup>:

(i)	Rehabilitation	44.0 %
(ii)	Maintenance	30.0 %
(iii)	Construction/Modernization	25.0 %
(iv)	Miscellaneous	<u>1.0 %</u>
	<b>TOTAL</b>	<b><u>100.0 %</u></b>

51. In 1993, over 80 per cent of the sector expenditures was devoted to maintenance of roads. Specific activities carried out in this regard included reinforcement of 1,047 km. of roads; resurfacing of 1,638 km. and repairs and rehabilitation of 10 culverts. In contrast, only 13 per cent of the budget was allocated for new roads development during the year. A total of 284 km. of roads was brought into service and 5 culverts were constructed.

52. In implementing the strategy to eliminate subsidies by the Government and increase expenditures on rehabilitation and maintenance of infrastructure, a **Road Fund** was established by an act of Parliament in 1988. It derives its revenues from **axle-taxes**, from **fuel tax** (Taxe Interieure sur la Consommation - TIC) and **vehicle registration fees**. The **Road Fund** is exclusively for maintenance and rehabilitation (in accordance with the requirements set out in the Road Fund Law) and was expected to account for about 40 per cent of the planned annual budget.

53. Furthermore, a **Solidarity Fund** from fuel taxation revenue and general taxation finances about 80 per cent and local governments finance about 20 per cent of the infrastructure expansion programme. It should be noted here that a study conducted by the MPW in 1988 showed that revenues from all sources of road use exceed the expenditures on road maintenance and construction. All vehicles generate revenues to the economy far in excess of the costs imposed on the roads sector.

54. The highways (auto routes) are financed mostly (94 per cent) from toll charges, with 6 per cent from public sources, mostly for studies. The Société Nationale des Autoroutes is responsible for the development and management of the highways system.

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<sup>10/</sup> Staff appraisal Report, Kingdom of Morocco, Highway Sector Project, January 8, 1990; World Bank

### **3.2.5. Regional Cooperation.**

55. In a world of communications and rapid information exchanges, the primary role played by roads is to facilitate the unencumbered movement of goods and persons, thereby contributing to the country's economic growth. Since independence, the Kingdom has witnessed a considerable increase in paved roads and construction of new roads in particularly hostile environments such as mountains and desert.

56. Development of international road links is a major part of the national road policy. The major international links are the Rabat-Cairo, the Lagos-Tangier and the fixed link over the Strait of Gibraltar to Spain.

### **3.2.6 Observations**

57. There are several aspects of development of the roads sector which are particularly noteworthy; these are:

- (i) Morocco has developed a balanced programme of maintenance and rehabilitation on the one hand, and the expansion of the network with special emphasis on opening up the rural areas on the other hand. It is to be noted that the World Bank has supported this approach through the Highway Sector Project (1990).
- (ii) The establishment of the Road Fund has provided significant resources for road maintenance activities. Thus, a road fund, if properly administered, can contribute effectively to the maintenance budget.
- (iii) Private sector participation has been encouraged both in the construction and transportation activities.
- (iv) Morocco has a well developed training, research and development facilities which form the foundations for sustainable development of the sector.
- (v) The involvement of the local administrations in rural roads development enhances the sense of ownership in the local communities.

### 3.3. Railways.

#### 3.3.1 Infrastructure Capacity and Demand

58. Railways is operated by L'Office National des Chemins de Fer (ONCF), a public corporation. The network totalled 1,907 km. in 1993, of which 1003 km. is electrified, and 271 km. double track. This includes 97 km. dedicated lines for transport of merchandise, mainly phosphates from the mines to the ports. The railways serve three markets: passenger transport, general freight and phosphates.

59. A large percentage of the network is old (more than 60 years) and renewal of 40% of the network is long over-due; about 50% was built at the turn of the century with old technolog and the signal system in a half of the network is from the 1940s, with the notable exception of the Casablanca - Rabat and Nouasseur - Jorf Lasfar sections. Table 5 summarizes the key statistics on the railways.

Table 5

#### Key Statistics of Railways Transport

YEAR	1998	1985	1990	1991	1992	1993
Network length (Km)	1,983	1,893	1,893	1,893	1,907	1907
Voyageurs transportés/ Passengers transported (10 <sup>6</sup> /)	11.6	11.8	12.0	12.0	11.4	9.5
Tonnes transportées (10 <sup>6</sup> ) Tonnes of freight	33.1	24.2	29.0	26.0	28.4	25.5
Total revenues (DH 10 <sup>6</sup> )	1,711	1,655	1,769	1,724	1,931	-
Total expenses (DH 10 <sup>6</sup> )	1,745	1,827	1,937	2,154	2,332	-
Net (Loss)	(33)	(172)	(141)	(430)	(401)	-

SOURCE: Annuaire Statistique du Maroc, 1993.

ONCF Rapport d'Activité, 1993.

60. The rolling stock fleet consisted of a total of 257 locomotives (including 104 electric), 644 passenger couches and 9,832 wagons. In general, the rolling stock is old, with an average age of 25 years for the locomotives and 40 years for the wagons.

61. Despite the rather old system, ONCF management still operates the system at ratios of efficiency which are comparable to those in the neighbouring European countries, with an average on-time performance of 82%. This is a result of good maintenance practices.

62. The number of rolling stock declined slightly to 9,713 in 1993 compared to 9,832 in 1992 due to higher rate of amortization (Table 6).

**Table 6**                      **Inventory of Rolling Stock.**

Year	1988	1989	1990	1991	1992	1993
Locomotives	244	244	256	266	257	256
Passenger Couches	615	624	579	642	644	566
Wagons	9,548	9,708	9,898	9,757	9,832	9,713

SOURCE: Annuaire Statistique du Maroc 1993.  
Rapport d'activités de l'ONCF, 1993.

63. In 1993, the system carried a total of 1.9 million passenger-kms a significant decline from the comparative figure of 2.2 million passenger-kms in 1992. However, the corresponding number of passenger train circulation increased from 29,350 trains in 1992 to 34,129 trains in 1993. As a result, the occupancy rate fell from an average of 42 % in 1992 to only 34% in 1993. Similarly, merchandise traffic in 1993 totalled 25.5 million tons in 1993 against 28.4 million tons in 1992, while the volume of phosphates which constitutes most of the traffic was 17.0 million tons in 1993 compared to 18.7 million tons the year before. This decline in rail traffic in 1993 is partially attributed to the draught experienced in the country during that year.

64. The railways network serves five major ports, namely, **Casablanca, Safi, Tanger, Kenitra and Jorf Lasfar**. Projects which are currently under consideration include the extension of the rapid transit system now running between Rabat and Casablanca to El-Jadida, as well as a rail link between Taourirt and Nador in the north-east. new rail connections have been completed linking King Mohamed V International Airport with Casablanca, Rabat and Kenitra. Rehabilitation and modernization are undertaken as part of the programme for the development of the network.

65. Railway transport is facing serious competition from road transport, partly because road transport has been significantly deregulated and liberalized, while railways is still operated as a public enterprise and continues to be influenced by social constraints.

### 3.3.2. Policy Objectives and Institutional Framework.

66. The policy for the development of railways in Morocco is based on the fact that it is regarded as a strategic sector and therefore will remain a public enterprise as promulgated during the nationalization of the system in 1963.

67. A Programme of Action for 1993-1999 is on course, supported by an investment of US\$1.0 billion targeted at rehabilitation and modernization of the network in order to improve railways transport as soon as possible. This programme would achieve an average growth in rail transport



of 4.5% per year and create a total of 13,000 jobs and is designed to achieve the following objectives:

- (i) ensure continuous maintenance of the network;
- (ii) encourage development of traffic as well as quality of service;
- (iii) improve the management and efficiency of ONCF through active and relevant training programmes at all levels of specialisation;
- (iv) reform the tariff system towards cost recovery and attainment of sustainable self-financing capacity of the ONCF;
- (v) establish an efficient coordination in the development of land transport infrastructures and equipment so as to avoid unnecessary wastage of resources and guarantee quality and profitable public service;
- (vi) Take the necessary measures in order to put railway and Road transport subsectors under similar competitive conditions.

68. In order to meet management requirements, ONCF has established two main principles for maintenance of the railways network, namely:

- (i) To progressively adapt installations to the increased requirements regarding loading, speed and traffic volume; and
- (ii) To reduce to the minimum possible the cost of network maintenance through mechanization techniques and introduction of new technologies such as use of long-molded rail without length limitations, progressive replacement of steel sleepers by concrete ones, etc.

69. The following institutions are involved in railways development and operations:

- (i) **Ministry of Transport** which is responsible for setting policies and overseeing the development of the sector;
- (ii) **Office National des Chemins de Fer (ONCF)** which operates and manages the railways system under a **contract plan** with the government ministry of transport; and
- (iii) **Private contractors**, providing maintenance and construction services.

70. The **Contract Plan** which is currently in force between the Government and management of ONCF calls on management to achieve the following objectives: restructure and redeploy staff members; reduce significantly operating costs; improve revenues; and raise tariff levels by 26% for phosphate and 8% to 10% for passengers and other goods.

**Box 3**

**MAIN PRINCIPLES OF ONCF MAINTENANCE POLICY**

In order to meet the management requirements, the maintenance policy of the ONCF network equipments is based on two principles. These are : meeting the increased requirements regarding loads, speed and traffic volume through a progressive adaptation of equipments to these requirements; and containing to the minimum possible the maintenance cost of the network through mechanization and introduction of new techniques.

The use of new technologies led to the following results :

- adaptation of the long-molded rails without length limitation;
- introduction of flexible connection with controlled elasticity between rails and sleepers;
- progressive replacement of metallic sleepers by concrete ones;
- choice of rails based on UIC profile which are able to sustain over 20 tons of axle load at a speed of 160 km/h;
- Improvement of the network through more rigorous maintenance which led to increased longevity for fixed equipments as well as for rolling-stock.

Action was also undertaken for safety equipments. In this regard, all stations were equipped with luminous signs and a programme of progressive replacement of mechanical signs by luminous panels in the network was carried out.

In the same way, parallel to the network construction/rehabilitation works, important signalization activities were implemented which allow ONCF to have reliable signalization systems.

**3.3.3. Human Resource Development.**

71. Since the nationalization of railways in Morocco and the creation of ONCF in 1963, the human resource policy has been geared to a full Moroccanization of ONCF. In 1956, there were over 4,000 expatriates running the railways services in the country. The Moroccanization programme was fully implemented by 1986.

72. In order to make the Moroccanization policy effective, emphasis was laid on training at all levels: basic training, refresher courses, retraining of staff, seminars and training abroad. The allocation of up to seven per cent (7%) of its staff costs to training is a strong testimony of its commitment.

73. In order to achieve the objectives set by the ONCF which aimed at increasing the efficiency of the staff within the overall framework of the modernization and expansion of the railway network, the following actions have been undertaken so as to prepare the staff for the work of the future:

- (i) Recurrent professional training courses in order for each staff to maintain and develop his/her professional skills;
- (ii) Sensitization of the decision makers in order for them to appreciate their leading role in the management of human resources;
- (iii) Better definition of the objectives of ONCF and development of skills at all levels through a participatory approach and monitoring of the relevance of the training programmes offered;
- (iv) Reorientation of the training of "involvement" to include "human relationship" management and total quality with a view to enhancing working relationships and identifying areas of possible improvement;
- (v) Completing the training of department heads and staff in the professional category as a means of exposing them to the realities outside the ONCF curriculum, mainly in general economics and modern management techniques; and
- (vi) Problem of foreign languages relevant to some categories of staff.

74. To carry out the above activities, ONCF invested in setting up several training centres including: The Railway Training Centre at Rabat (Centre de Formation Ferroviaire); The General Training School at Rabat-Agdal (Ecole de Formation Générale); The Apprentice Centres at Méknès and Casablanca (Centres d'Apprentissage); The Transport School in Casablanca (Ecole de transport); and The Operations School (Ecole de Mouvement MT) also In addition, ONCF organizes overseas training in specific fields.

75. As concerns the utilization of human resource capacity, the productivity of the staff of ONCF, as measured by the ratio of combined units - km (VK + TK)- is generally superior to those of neighbouring Maghreb railways and comparable to those of Europe as shown in Table 7.

TABLE 7 Productivity of Railways Staff

RESEAUX/R AILWAYS	EFFECTIF MOYEN/ AVERAGE NO. STAFF				UNITES/UNITS - KM (Millions)				PRODUCTIVITE/PRODUCTI VITY ( 10 <sup>3</sup> )			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
ONCFM	13460	13757	13693	13820	7779	6687	7234	6872	579	486	528	497
SNCF	204508	206444	202082	198627	116824	118858	1134	1157	571	576	561	583
							38	66				
RENFE	52747	50184	49724	48923	30081	29108	2943	2800	570	580	592	572
							6	6				
SNCB/NMBS	44199	46703	45205	44479	15353	15842	1606	1629	347	339	359	366
							7	9				
SNCFT (TUNISIE)	8734	9057	9130	9636	3170	3103	2839	2852	363	343	311	296
SNTF (ALGERIE)	16500	17629	17766	18104	5253	5426	5665	5909	318	308	319	326

SOURCE: Statistiques UIC.

76. It is also worth noting that at ONCF, particular attention is placed on social activities through its social plan which aims at improving the living conditions of the staff and their families by providing affordable private housing, medical service, social security and retirement funds.

### 3.3.4. Financing Railways Development.

77. ONCF is facing serious financial problems. It has experienced increasing deficits over the last five years, which reached about DH401.7 millions (or about \$US40 millions) in 1992; the main reasons of this being that:

- (i) the railway transport tariff is regulated and is insufficient for cost recovery;
- (ii) ONCF is not compensated for its public service (which cost ONCF about US\$6 millions in 1992);
- (iii) non-recovery of some credits to public establishments; and
- (iv) ONCF has a heavy debt burden which was about \$US200 millions in 1992.

78. Being a public enterprise, all the activities of ONCF are supported by the Government, either through loan guarantees, direct financial interventions or through public debt. The Programme of Action calls for specific policy actions in this respect, namely:

- (i) proceed as soon as possible with increases in tariffs for passengers, freight and phosphates;
- (ii) provide ONCF with adequate equipment taking into consideration the constraints imposed on it to provide social services and recognize the need for equal treatment between roads and railways;
- (iii) reorganize and improve the financial position of ONCF.

### 3.3.5 Regional Cooperation.

79. ONCF maintains cooperation relationship with some sub-Saharan African countries, members of the Arab Union of Railways as well as with some European railways companies, namely, French National Railways Company (SNCF), Belgian National Railways Company (SNCB), Maghreb Railways Transport Committee (CTFM), Algerian National Railway Company (SNCF) and the Trans Gabonese Railway Office (OCTRA).

80. The cooperation activities include: organisation of training and missions for ONCF workers to the French and Belgian railway companies; inspection by SCNF and SNCB on behalf of ONCF, of items bought from French and Belgian suppliers as guarantee of the best quality; and supply of some rolling-stock spare parts.

81. Similarly, on the basis of a 1979 agreement with OCTRA (Gabon), ONCF provides technical assistance to OCTRA by sending a detachment of experts for temporary service to OCTRA as well as providing control services and follow-up of the delivery of supplies ordered in Morocco by OCTRA.

### **3.3.6. Observations.**

82. ONCF is a public enterprise which is increasingly being managed in a commercial manner as a result of the government policy to rationalize all public enterprises. Despite the reduction of government support, ONCF has managed to operate at a high rate of capacity utilization which can be attributed in part to the sound policies adopted with regard to the following main aspects of capacity building and utilization:

- (i) Maintenance and upgrading of permanent ways and rolling stock.
- (ii) Well established training programme for technical and management staff at all levels;
- (iii) Manufacturing a high percentage of equipment used for maintenance and upgrading of both the permanent way and rolling stock.

83. It could be noted that experience of ONCF in regional cooperation not only with African railways, but also with European railways is a practical demonstration of North-South and South-South cooperation.

### **3.4. Maritime Ports.**

#### **3.4.1 Infrastructure Capacity and Demand.**

84. Maritime transport accounts for over 90% of Morocco's volume of foreign trade. Trade with Europe dominates, with traffic split between the Atlantic area (70%) and the Mediterranean area (30%). Morocco's port infrastructure expanded accordingly from nine (9) ports in 1961 to 20 ports in 1990 to cope with increased maritime transport demands. As a result, the country's ports capacity has reached about 60 million tons, while the traffic in 1993 totalled 41 million tons, implying capacity utilization of 68 per cent.

85. The 20 ports consist of 11 big commercial ports and 9 small ports devoted to fishing activities and pleasure sports. The commercial ports form three groups: a northern Mediterranean group comprising Tangier and Nador; a central Atlantic group comprising Kénitra, Mohammedia, Casablanca and Jorf Lasfar; and a southern Sahara group.

86. Some ports are specialized: petroleum products are mostly handled at Mohammedia; phosphate products at Jorf Lasfar and Safi; and passenger traffic at Tangier. There are several fishing ports as well. All the major ports use either mobile or fixed cranes for vertical lifting of general cargo. Specialized equipment is available for solid bulk commodities, such as minerals and cereals.

87. While the infrastructure capacity is sufficient for requirements in the near future, there is need for continuous adaptation of port facilities to handle the rapid growth in container and roll-on-roll-off (ro-ro) traffic. The situation is particularly critical at the container terminal at the port of Casablanca where

congestion results from insufficiency of handling equipment. Similar congestion is experienced at the port of Tangier during the summer months when a steady flow of trucks coincides with the peak passenger traffic.

88. The import-export traffic has remained fairly stable from 1988 to 1993, ranging between 36 and 40 million tonnes per year. Casablanca is the largest port, handling over one third of the nation's port traffic. Passenger traffic is on the increase, with practically all of it at the port of Tangier. Table 8 shows the evolution of port traffic between 1988 and 1993.

**Table 8.**

**EVOLUTION OF PORT TRAFFIC (10<sup>6</sup> Tonnes)**

Total	1988	1989	1990	1991	1992	1993
Exports	23.4	19.5	20.2	18.3	18.5	18.4
Imports	16.4	15.1	17.6	17.9	21.9	22.1
Total Merchandize	39.8	34.6	38.8	36.2	40.4	40.5
By major ports						
Casablanca	16.8	15.0	16.0	14.9	15.8	14.8
Mohammedia	4.9	5.5	5.9	5.7	7.5	8.1
Passengers (millions)	1.0	1.2	1.2	1.1	1.4	1.6

SOURCE: Les Travaux Publics en Chiffres, 1993; Annuaire Statistique du Maroc, 1993.

### 3.4.2. Policy Objectives and Institutional Framework.

89. Port development objectives focus on the following priority areas:

- (i) Establishment of regional ports as a basis for efficient economic and social development of rural zones;
- (ii) Encouraging private sector involvement in port development;
- (iii) Developing quality training programmes at all levels;
- (iv) Regular update of port tariffs consistent with policy and traffic orientations;

- (v) Improvement of ports safety and environmental protection in ports;
- (vi) Regarding passenger port berthing infrastructures and services:
  - involvement of private sector through encouragement of "contract plan";
  - involvement of local communities is encouraged;
  - distribution of traffic to under-utilized port infrastructures;
- (x) Encouraging regional cooperation in all aspects of port development (infrastructure, training centers, safety, maintenance and dredging ...etc).

90. The major actions carried out by the port management in 1993 concentrated on maintenance of the infrastructure; adaptation of equipment to the requirements of traffic (containerization and RO-RO), and improvement of quality of service. Maintenance operations amounted to 26 per cent of the total budget in 1993.

91. The following entities are in charge of port development and management in Morocco:

- (i) **Ministry of Public Works, Vocational and High Level Training:** The Ministry retains the overall responsibility for port administration, planning, construction, maintenance, dredging as well as safety. These functions are performed by DP and DPCM;
- (ii) **Direction des Ports (DP) and Direction des Ports de Casablanca Mohamedia (DPCM):** The Ports Directorate is in charge of maintenance of breakwaters, dredging and all harbour master functions. It also plans investments in new infrastructures, mostly breakwaters and quays. It has devolved the responsibilities for the ports of Casablanca and Mohammedia to DPCM.
- (iii) **Office d'Exploitation des Ports (ODEP)-** The Office for Port Operations is an autonomous public enterprise which was created in 1984 to carry out all commercial port activities. It is responsible for port operations, especially cargo handling, maintenance of all port infrastructure (except breakwaters and dredging), collection of revenues (cargo handling tariffs and port dues), and construction of new port infrastructure if requested to do so by the Government.
- (iv) **DRAPOR** is a wholly-owned subsidiary of ODEP for carrying out dredging in all the ports on behalf of the Government.
- (v) **Private sector operators** carry out piloting services in the ports.



92. ODEP is managed by a Board of Directors, chaired by the Minister of Public Works and includes representatives from nine other ministries, customs, DP and users such as ship operators, freight forwarders and prominent shippers. A **contract plan** is in effect between management and the Government.

### **3.4.3. Financing Ports Development.**

93. Port financing is mainly ensured by the Government through general tax revenues as well as borrowings. However, there is increased private sector involvement in port development, especially pleasure port facilities. Of course, retained earnings from ODEP's operations constitute a major component of investment financing.

94. Since the creation of ODEP in 1985, its investment has varied between US\$35 millions to US\$45 millions per year, with main focus on modernization of facilities and the rehabilitation of storage areas and warehouses. This is in addition to Government investments in ports infrastructure. Regular adjustments of tariffs enable ODEP to generate positive financial results and pay back fees to the Government as cost recovery on its investments in infrastructure development. Loans from the World Bank and African Development Bank are guaranteed by the Government.

### **3.4.4. Observations.**

95. The high level of private sector participation in various aspects of port development and operations is noteworthy. It is a result of a clear policy which encourages private sector operators in very specific areas of activity by providing modern and adequate facilities, such as the fishing and recreational ports.

96. Another notable impact of clear policy formulation is in the area of tariffs. The regular adjustments of port tariffs, which is clearly stated in the government policy, enables the ODEP to generate positive financial results and pay back fees to Government as recovery of its cost of investments in infrastructure investment.

97. The current over capacity in the ports is a result of a deliberate future oriented policy to invest early in order to create demand, rather than as a response to projected demand.

## **3.5. Air Transport**

### **3.5.1. Infrastructure Capacity and Demand**

98. Air transport makes a substantial contribution to the economy of Morocco by promoting tourism. Because of its proximity to Europe, Morocco is a favourite tourist destination. Of the over 5.6 million tourists to the country in 1992, about 1.3 million (or 25 per cent) arrived in the country by air, with a half of that arriving through the airport Mohammed V in Casablanca. **Table 9** summarizes the evolution

of air transport in Morocco, indicating the market share of Royal Air Maroc, the national carrier. Of course, there are several foreign airlines which operate in the country as well.

99. There are about thirty runways equipped with both aeronautical and meteorological instruments of international standards. Some of the runways are in fact classified as international airports.

**Table 9** **EVOLUTION OF AIR TRANSPORT**

	1988	1989	1990	1991	1992	1993
Number of Passengers (,000)	4,103	4,256	4,567	3,401	4,105	
of which RAM (,000)	1,657	1,879	2,033	1,687	2,113	
Freight (Tonnes)	45,785	44,150	48,500	48,241	47,029	
of which RAM (Tonnes)	21,553	20,584	23,843	25,884	27,214	
Post (Tonnes)	1,948	2,228	-	-	2,506	
of which RAM (Tonnes)	672	706	767	1,086	922	

SOURCE: Annuaire Statistique du Maroc, 1993

Table 10 DOMESTIC AND INTERNATIONAL AIRPORTS IN MOROCCO

AIRPORT	RUNWAY LENGTH AND WIDTH
AGADIR*	2910 X 450
AL-ROCEIMA*	2160 X 45
BENI-MELLAL*	1400 X 150
CASA/ANFA*	1830 X 45
CASA/MOHAMED V*	3720 X 45
CASA/TIT-MELLIL	944 X 150
DAKHLA	3000 X 45
EL JADIDA	1400 X 50
ESSAOUIRA	1800 X 50
ERRACHIDIA	3000 X 30
FES/SAISS*	3200 X 45
FES/SEFROU	1000 X 30
IFRANE	2100 X 35
KENITRA	800 X 50
KHORIBGA	2400 X 45
LAAYOUNE*	2700 X 45
MARRAKECH*	3100 X 45
MEKNES	2820 X 50
NADOR	1200 X 45
OUJDA*	3000 X 45
OUARZAZATE*	3000 X 45
OUZANE	1200 X 60
RABAT/SALE*	3500 X 45
SAFI	1720 X 50
SMARA	
SIDI IFNI	2000 X 45
TANGER*	3500 X 45
TAN-TAN	2000 X 45
TETOUAN	1700 X 60
TAROUDANT	1700 X 50
TAZA	1600 X 45
	1200 X 45

\* International Airports

### 3.5.2. Air Transport Policy and Institutional Framework

100. Air transport falls under the purview of the Ministry of Transport and is organized in four parts:
- (i) **Centre National du Contrôle de la Sécurité Aérienne (CNCSA)**- Situated in Casablanca, Nouasser. CNCSA operates all air safety control systems with ground -to-air and radio-navigation equipment as well as radar coverage of the whole national territory and all the airspace which is under the responsibility of Morocco, according to the ICAO arrangements on air navigation. The Centre coordinates air traffic among all the control towers at all the different airports as well as the military traffic of the **Centre National de Défense Aérienne (CNDA)**.
  - (ii) **Direction de l'Administration de l'Air**- A central administration made up of two directorates:
    - (a) **La Direction de l'Aéronautique Civile**; and
    - (b) **La Direction des Bases Aériennes**.
  - (iii) **Office National des Aéroports (ONDA)** which was established in 1991 for the management of all national airports and airspace.
  - (iv) **Royal Air Maroc (RAM)**, the national airline, which has a fleet of about 30 aircraft serving the international market including USA, Europe, Africa and the Middle East.

101. The **Direction de l'Administration de l'Air** was created in 1961, first under the name **Direction de l'Air** until it was incorporated into the Ministry of Transport in 1977. From then until 1990 it covered three distinct sectors in civil aviation administration, namely: civil aviation, airports and meteorology. The meteorology function was later transferred to the Ministry of Public Works in 1991, and the other two sectors were transformed respectively into the present Royal Air Maroc and the Office National des Aéroports (ONDA).

102. The activities of the **l'Administration de l'Air** currently are limited to studies of regulations, conventions and international agreements on air transport and often to the formulation of policies of the Ministry of Transport regarding:

- (i) Maintenance of a high level of air safety;
- (ii) Disenclavement of the distant provinces;
- (iii) Search for new air connections with other countries in order to promote foreign investments in the country.

103. Thus the following are the major objectives for developing air transport in the country:

- (i) Maintenance of airport infrastructure;
- (ii) Upkeep of all the international airports;
- (iii) Strengthening and modernization of the commercial fleet of Royal Air Maroc.

104. On the other hand and within the framework of developing industrial activities in the air transport sector, competition has been introduced in order to enable RAM to curb/control its costs while preserving the quality of service to its customers.

105. The Office National des Aéroports (ONDA) is a public enterprise with financial autonomy. It was first established in 1980, specially to respond to the need for a dynamic management, capable of achieving/attaining global and coordinated development of air transport. It's original purpose was limited to the management of the three air transport infrastructures in Casablanca (Aéroport Mohamed V, Aéroport Casablanca/Aufa and l'Aérodrome de Tit-Mellil), and was then known as l'Office des Aéroports de Casablanca (OAC).

106. Ten years of experience from 1980 to 1990) in this type of management warranted the expansion of the mandate of OAC to cover all the nation's airports as well as the airspace, and thus the formation of ONDA. Under the mandate given to it by the State, ONDA is responsible for:

- (i) management, operation, maintenance and development of the airports;
- (ii) Provision of safety and reliability of air navigation;
- (iii) Planning for and installing the necessary equipment.

107. From 1960 up to the establishment of ONDA in 1990, the airports and navigation services were operated under the classical management of a régie under the direct control of the Civil Aviation Directorate (la Direction de l'Aéronautique Civile).

108. Royal Air Maroc (RAM) is the national airline with exclusive monopoly of traffic rights for international operations. It currently serves over thirty countries and fifty destinations, accounting for over 50% of the total traffic in Morocco. Besides its commercial fleet of 31 planes, it has 16 single or double engine planes based at the Casablanca/Aufa airport and used for training pilots.

109. RAM is one of Africa's prominent international carriers, with a large modern fleet and capability to provide comprehensive maintenance and training for both its own personnel and of other airlines. It has total in-house capability for maintenance of Boeing 737 aircraft, engine test cell facilities and corresponding modular engine overhaul shop, and a new general Boeing 737 flight simulator for pilots and technicians. Table 11 shows the fleet composition in 1995.

110. Domestic service is also provided by RAM and a number of authorized air transport companies called Air Taxis (Taxis aériens). About fifty towns and cities in the country have air services.

111. In addition, private and business aviation has also increased significantly in recent years, with 46 planes registered to date. The State has also promoted the establishment of specialized air operators such as agriculture, aerial photography and advertising. A total of 35 such crafts are currently in service. The Administration has also provided moral and material support to sports aviation. There are over a dozen air sports clubs in the major cities with a total of 24 planes of different models. Finally, the government authorities have also begun using single-motor and bi-motor plans for special missions to the interior of the country.

112. The development of air transport, particularly the airports in the country is greatly influenced by developments in Europe since the majority of its traffic is to and from Europe. Consequently, the National Airports Authority (l'Office National des Airports - ONDA) invested over US\$150 millions between 1988 and 1992 for the extension, up-keep of installations and renewal of equipment in the key airports of Casablanca, Rabat, Marrakech and Onarzazate. This is in addition to the construction of the new airport at Agadir which was constructed by the Ministry of Transport at a total cost of US\$175 millions.

### ROYAL AIR MAROC FLEET SUMMARY 1995

Table 11

Type of Aircraft	Number
B.707-320C	2
B.727 - 200 Advanced	6
B.737 - 200 Advanced	4
B.737 - 200 C Advanced	2
B.737 - 400	6
B.737 - 500	5
B. 747 - 200 Combi	1
B.747 - 400	1
B.757 - 200	2
ATR42 - 300	2
Total	

SOURCE: African Airlines, May/June 1995

### 3.5.3. Human Resource Development.

113. Training in the air transport sector is carried out in specialized institutes organized as follows:

- (i) **Centre de Formation des Techniciens de l'Aéronautique Civile et de la Météorologie (CFTACM)**- Which is under the Directorate of Professional Training in the Ministry of Transport.

- (ii) **Institut de Formation en Gestion et Exploitation Aéroportuaire**, management training centre in ONDA.
- (iii) **L'Ecole Nationale des Pilotes de Lignes (ENPL)**, the pilot training school run by RAM.
- (iv) **Centre de Formation Professionnelle**, also run by RAM.

114. RAM provides and finances all training related to air transport in the country. The pilot training school, which was created in 1970, has a capacity of 50 trainees per year. It has 11 single-motor planes (9 TB20 and 2 CAP10), four double-motor planes (2 BE 55 and 2 BE200), and three TB20 static simulators. There are a total of 21 instructors, only two of which are foreigners. At present, a total of 200 pilots and co-pilots have been trained at ENPL.

#### 3.5.4. Observations on air transport.

The centralization of all air transport administration under one over all organ, **l'Administration de l'Air**, enables effective coordination of technical operational aspects and the policy aspects of air transport development. This effectiveness is further enhanced by the existence of a clear delineation of roles among the various organizational units (RAM, ONDA, CNDA, CNCSA).

### IV. WATER RESOURCES AND IRRIGATION

#### 4.1 Water Sector Policy and Strategy

115. Because of the varied geographical nature of the country, effective storage and efficient distribution of water are required in order to compensate for the seasonal and irregular rainfall. The high level of urbanization of the country (50 per cent) also adds to the need for piped water. The government therefore lays great emphasis and has well-established data on national water resources.

116. Agricultural use accounts for over 90 per cent of the water resources, with the remaining 10 per cent for potable water supply. However, due to limitations of groundwater from aquifers near to the urban areas, surface water resources are increasingly exploited. This requires construction of dams, conveyance over greater distances, as well as the provision of pumping stations, treatment plants, and large transmission pipelines.

117. Whereas investments were originally geared to the development of water production to cope with the rapidly growing urban water demand, later investments have been aiming at improving the use of production facilities, particularly by increasing the efficiency of distribution networks. This approach is consistent with the policy to concentrate on investments that maximize the return on existing facilities and depend less on allocations from the national budget, and to delay implementation of costly new investments in large water production and conveyance schemes. Both the ongoing and the proposed projects aim to ensure that new investments in water production and distribution facilities are the result of coordinated, rational planning between ONEP and the Régies. Greater efforts are also being made to

find, in the medium term, a more equitable trade-off between investments in urban areas and those in rural agglomerations.

118. Government sector strategy for the urban population is to make potable water accessible through house connections to 90 per cent and 98 per cent of the population, respectively, in 2000 and 2020, which compares with the current situation where 90 per cent of the urban population has access to piped water: 76 per cent through house connections and 14 per cent through public standpipes. The remaining 10 per cent and 2 per cent would be supplied through public standpipes in 2000 and 2020, respectively.

119. Government sector strategy for the rural population is to make potable water accessible to 80 per cent of the population by the year 2010: 10 per cent through house connections, 40 per cent through public standpipes and 30 per cent through public wells. These figures compare with the current situation where 14 per cent of the rural population has access to potable water: 2 per cent through house connections, 6 per cent through public standpipes and 6 per cent through public wells.

120. The Government policy is aimed at ensuring development of water sector as part of the country's socio-economic development programme through achievement of the following key objectives<sup>11/</sup>:

- (i) widespread access to potable water and improvement of the living conditions and well-being of the population, in particular those groups living in the most disadvantaged areas;
- (ii) contribution to the improvement of agricultural production, thereby guaranteeing food security;
- (iii) development of hydropower resources;
- (iv) protection of the environment and of public health;
- (v) protection of water resources and their optimum utilization;
- (vi) development of the technical and financial capacities of the institutions in charge of water management.

#### **4.2. Institutional Framework of Water Resource Management and Development**

121. Given its importance, the management of water resources involves several ministries and agencies. The key ones are:

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<sup>11/</sup> Strategy Letter from the Office of the Prime Minister to the President of the World Bank regarding the Fifth Water Supply Project (1993).



- (i) **The Prime Minister's Office** - A Special Commission allocates water resources among various consumers.
- (ii) **The Ministry of Public Works and Vocational Training**, through: (a) **Administration de l'Hydraulique (AH)**, which has the responsibility for studies and development of water resources, as well as for the operation, maintenance and control of all major dams; and (b) **Office National de l'Eau Potable (ONEP)**, which is responsible for production of potable water and conveyance to the larger conglomerates;
- (iii) **Ministry of Agriculture and Rural Administration;**
- (iv) **Ministry of Interior**, which oversees the (a) **Water and Sanitation Directorate;** and (b) **Public Utilities Directorate** which supervises the local utility enterprises called **Régies;**
- (v) **Conseil Supérieur de l'Eau et du Climat (CSE)** is the highest consultative body in the area of policymaking for the water sector.
- (vi) **Private engineering and consultancy enterprises.**

122. The institutional capacity of the country was developed over several years with support of the World Bank through several Water Supply Projects:

-	First Water Supply Project (1972 - 1980)	US\$ 48 Million
-	Second Water Supply Project (1979-1978)	US\$ 49 million
-	Third Water Supply Project (1981 - 1989)	US\$ 87 million
-	Fourth Water Supply Project (1987 - 1993)	US\$ 60 million
-	Fifth Water Supply Project (1993 - 1998)	US\$160 million

123. The World Bank project is only part of a larger scheme, estimated at US\$354m. which will focus on the restructuring of regional water authorities in Casablanca, Fez, Rabat, Kenitra, Meknès and Marrakesh as well as ONDA. The scheme also covers rehabilitation and expansion of water supply systems. Co-financing for the project was obtained from ADB and Japan Overseas Economic Cooperation Fund. Local financing will also be an important component of the programme.

#### 4.3 Human Resources Development

124. At its start in 1972, ONEP employed 51 expatriates, mostly in line management, among a total of 1,300 employees. By 1991 however, with almost 4,000 employees of which 100 were in line management, there were no expatriate staff.

125. The staff development is carried out at a training centre offering one-year to two-year training courses for mechanics, treatment plant operators, and equipment specialists. It graduates about 120 students each year. The centre also runs 3-month refresher courses. Similarly, the Ministry of the Interior also runs a training centre for the staff of Régies. It has a capacity of training 350 staff per year.

#### **4.4 Financing Water Resources Development**

126. As indicated above, water development has been supported by loans from the World Bank as well as from ADB and other bilateral sources. Investments in ONEP and the Régies have been guaranteed by the Government.

127. ONEP has performed satisfactorily since 1987 with steadily improved operating income and net cash flow generation averaging 24 per cent of its investment programme. It earns its revenues mostly from bulk sales of water to the Régies. In contrast, the Régies have not performed well in terms of their finance, due partly to the fact that they are compelled to provide water to certain unprofitable areas as a matter of public service. The Government has signed operating agreements, called "protocoles d'accord" with ONEP and each of the Régies in order to improve their management. An outline of a sample letter of agreement between the Government and RAD, one of the Regies, is shown in Box 4.

**Box 4: AGREEMENT BETWEEN THE STATE AND RAD  
1994-1998**

**SUMMARY**

**PREAMBLE**

**TITLE I: GENERAL ARRANGEMENTS**

- Article 1: Parties to the Agreement
- Article 2: Mission
- Article 3: Administrative System
- Article 4: Financial System
- Article 5: Entry into force and duration of the Agreement

**TITLE II: RESPONSIBILITIES OF RAD**

- Article 6: Investment programme
- Article 7: Relations with Subscribers
- Article 8: Efficiency of the Network
- Article 9: Management
- Article 10: Administrative Management, Finance and Accounting
- Article 11: Personnel Management
- Article 12: Financial Objectives
- Article 13: Tariffs Study

**TITLE III: RESPONSIBILITIES OF THE STATE**

- Article 14: Issues of Control
- Article 15: Auditing Arrears
- Article 16: Tariffs Adjustments
- Article 17: Investment Financing

**TITLE IV: OTHER ARRANGEMENTS**

- Article 18: Monitoring the Protocol
- Article 19: Management Report
- Article 20: Audits
- Article 21: Modalities for Implementation and Revision of the Agreement

**Annexes to the Agreement**

#### **4.5. Irrigation.**

##### **4.5.1. Irrigation Policy and Strategy.**

128. Morocco's farmers have traditionally used irrigation to compensate for low and inconsistent rainfall, bringing 800,000 ha under small-scale systems. Since the 1970s, Morocco has made modern, large-scale irrigation the centerpiece of its agricultural development and has rapidly built or modernized nearly 500,000 ha. The whole irrigation sector currently contributes one fourth of gross value of total agricultural production. In addition to boosting food production, this strategy has also increased rural employment, promoted agroindustry and helped stabilize domestic production.

129. The Government's strategy for Large Scale Irrigation (LSI) was based on building modern irrigation systems that took advantage of abundant water and land resources. The country's nine LSI schemes are state-of-the-art systems that include storage dams, lined canals, pressurized pipes, pumping stations, and automatic flow control. The schemes provide year-round irrigation and equitable water distribution. About half of public investment in agriculture between 1970 and 1985 was directed to LSI. LSI currently contributes about one fifth of gross value in agriculture, and provides two thirds of Morocco's sugar and half of its milk consumption. LSI has also raised productivity significantly by bringing modern agriculture to 125,000 poor, small farm families, and, in several areas, has reversed the flow of people from rural to urban areas while protecting semi-arid land from overgrazing.

130. The strategy was again reviewed at the end of 1992 to address the economic and social impact of reoccurring droughts and exploit the unutilized irrigation capacity resulting from recent dam construction. A National Irrigation Programme was prepared to expand LSI areas and to modernize small- and medium-scale irrigated areas covering 250,000 ha between 1993 and 2000, while 200,000 ha of old LSI systems would be simultaneously rehabilitated.

131. The irrigation strategy for LSI entered a new phase in the mid-1980s. Increasing attention was given to improving small- and medium-scale irrigation (SMSI) through low capital investment while the LSI focus shifted from expansion to rehabilitation, maintenance and efficiency improvements. The World Bank supported this shift in priorities with two loans directed to SMSI projects.

132. Morocco's nine LSI schemes involve capital-intensive public investments for hydraulic infrastructure. They are almost entirely based on surface water stored behind large dams. Out of a total LSI area of 485,800 ha, the modern irrigation systems cover 408,300 ha or 84 percent, of which 294,800 ha is surface irrigation and 114,300 ha sprinkler irrigation. The remaining 77,500 ha are improved traditional schemes.

133. The Government's LSI strategy has promoted industrial cash crops and intensive animal production in combination with traditional food crops. Overall cropping intensity was 102 percent in 1990, with the best performance achieved in Doukkala and Tadla with 125 percent and above.

134. Most farms in LSI areas are small and privately owned; 77 percent of farms are 5 ha or smaller, and average farm size areas is 3.9 ha. A significant portion of holdings above 20 ha are state-owned and operated by parastatals or farmer cooperatives supervised by the Government. Most of these lands are currently being privatized. Although the small size of the farm can be seen as an incentive to agricultural intensification, the continuous fragmentation of the holding due to the increasing pressure of the rural population is becoming an obstacle to modernization, exacerbated by the persistence of traditional forms of collective ownership ("indivision" and "terres collectives").

#### 4.5.2. Institutional Framework.

135. The LSI subsector involves a combination of Government bodies and public enterprises at central and regional levels, and private farmers, input suppliers and output processors. The institutional and legal framework for LSI was established in the late 1960s on a strongly centralized and government-dominated basis, but, since the mid-1980s, has moved toward decentralization and state divestiture.

- (i) **Ministry of Agriculture and Agrarian Reform (MARA)** plays a pivotal role in the LSI subsector; it has full responsibility for building and operating irrigation facilities (except dams) and supervising agricultural research and development.
- (ii) **Regional Agricultural Development Authorities (ORMVA)**- MARA has delegated operational responsibility for building, operating, and maintaining LSI systems to nine ORMVAs. The ORMVAs also provide agricultural extension and support services to farmers. Their legal status is that of administrative public enterprises, placed under MARA's technical supervision and the Ministry of Finance's (MOF) financial control.
- (iii) **The Ministry of Public Works and Vocational Training (MOPW)** is responsible for water resource planning, development and allocation to all sectors, including agriculture. It also constructs and operates dams and monitors equifers and water quality.
- (iv) **The National Bank of Agricultural Credit (CNCA)** together with an increasing network of commercial banks are responsible for delivering rural finance.
- (v) **The Ministry of Interior (MOI)** coordinates and supervises environmental protection.
- (vi) **The Ministry of Finance (MOF)**, through the Directorate of Budget (DB) for capital expenditures and the Directorate for Public Enterprises and Participation (DEPP) for recurrent expenditures, carries out budget allocation to, and financial control of the ORMVAs. DEPP is responsible for public enterprise restructuring and in particular, the negotiation of programme contracts and management improvements plans (MIPs) signed by the Governments and selected public enterprises.

### **4.5.3 Financing**

136. Morocco is a leader among developing countries in having a legal and institutional framework in place for significant recovery of both operating and investment costs in irrigation. Current legislation calls for full recovery of operations and maintenance costs and up to 40 per cent of initial investment costs, including dams and conveyors.

137. LSI legislation comprises a series of laws ("dahirs") and regulations ("décrets"), embodied in The Agricultural Investment Code (AIC). They set out Government and farmer roles in public investment for LSI and, in particular, lay down the basis for cost recovery through water charges, the status and role of the ORMVAs, and farmer cultivation obligations. The basic legislation was issued in 1969 to support a development strategy based on an intensive Government intervention in the agricultural sector, especially in LSI. Under LSII-2, parts of AIC would be revised to reflect the liberalization policies recently adopted by the Government. Under current legislation, water is considered a public good and subject to charges for private use except in the traditional schemes (Haouz, Ouarzazate and Tafilalet), where old water rights still apply and public investment costs are not recovered. In 1990, Morocco promulgated a law which provides a legal basis for irrigators to establish water user associations and participate in system operation and maintenance.

138. Water charges are divided into three parts: a volume charge to cover all direct operating costs and depreciation, exclusive of pumping costs, plus 10 per cent of investment costs; a separate pumping charge, also volume-based, to encompass energy costs; and a landbetterment levy, to recover 30 per cent of initial investment costs.

139. ORMVA expenditures cover three main activities: (a) building and rehabilitating irrigation schemes; (b) scheme operation and maintenance; and (c) supporting agricultural development. Only the operations and maintenance activities are designed to generate income and the legislation mandates that these activities be self-financing and recover all associated costs through water charges from farmers and other clients. Support services are seen as public service activities that should be financed by budgetary allocations.

### **4.6 Observations.**

140. Given its varied geography, Morocco attaches high priority in developing its water resources. The consistency of this priority is recognized by its development partners which have supported several projects for improving water supply and irrigation systems in the country over the years. A clear national policy in this regard has been useful in developing capacity.

## V. ENERGY

### 5.1 Capacity and Demand

141. Morocco depends on foreign sources for more than 85 per cent of its energy requirements. The cost of imported petroleum products absorbs almost 25 per cent of its export earnings; petroleum products are practically all imported since national production of crude oil is negligible.

142. In 1992, the consumption of primary energy exceeded 6.8 millions TEP, 85 per cent of which was for petroleum products, 16 per cent coal and 4 per cent from hydro-electricity. Meanwhile, the use of traditional sources of energy such as charcoal and firewood remains extensive, but it is difficult to estimate the extent of such consumption.

143. Coal production reached a half million tons in 1992, over 60 per cent of which is used for thermal power generation. Coal is produced by the Charbonnages du Maroc, a public enterprise.

144. Electricity is mostly produced by l'Office National d'Electricité (ONE), which accounts for over 90 per cent of the market, the rest being produced in captive plants owned by major manufacturers. Only 40 per cent of the potential capacity of 5 billion Kwh of the hydro-electricity capability is in use for power production. Over 85 per cent of electricity is produced in thermal plants fuelled with oil and coal.

145. The recent evolution of electricity production and consumption is summarized in Table 12.

**Table 12 Electricity Production, 1988-1992.**

	1988	1989	1990	1991	1992	1993
Production	8.3	8.5	9.3	9.2	9.7	
By ONE	7.0	7.6	8.0	8.1	8.4	
Consumption	7.5	7.6	8.5	8.7	9.5	
Distributed by ONE	6.4	6.8	7.4	7.7	8.4	

SOURCE: Annuaire Statistique du Maroc, 1993

### 5.2 Policy and Institutional Framework

146. The long-term objective of the Government is to reduce oil imports while meeting the current demand in a cost-effective manner. In this regard, it would pursue policies to:

- (i) Liberalize the market for energy supply; in this respect local and foreign suppliers are encouraged through concessional contracts either through an operating contract to operate existing national energy production facilities, or through Build-Operate-Transfer arrangements in which the suppliers would establish, at their own cost, new energy plants and operate them for about thirty years before they become government property and it would be up to the government to subsequently call for new bids for a new concessional contract. The suppliers would be required to sell exclusively to the Office National de l'Electricité all the energy produced under concessional contracts in order to ensure that the distribution of the electric power remains under government control. The Government believes that the efficiency of the concessional contract would depend on the extent to which country's interest as well as the investors' interests are safeguarded through the basic bidding document that they would agree upon.
- (ii) Re-structuring and institutional development of energy sector with the view of optimizing energy supply and production.
- (iii) Diversification of energy consumption, particularly by reducing the high share of petroleum products and putting more emphasis on local energy sources such as hydro electric dams, coal and oil shales, provided that such sources are cost-effective.
- (iv) Undertake price and fiscal reforms with the view to: establishing competitive and profitable energy pricing system indexed on international market prices; encouraging appropriate imports; ensuring stable energy tax revenue; and encouraging flexible level of local energy production.

147. The following institutions are involved in energy development operations:

- (i) **The Ministry of Energy and Mines**, the policy organ for the sector;
- (ii) **Office National de l'Électricité (ONE)** is responsible for nearly all public power generation, transmission and distribution to all high voltage customers and to medium and low voltage customers in some cities and rural areas.
- (iii) **Régies** which are responsible for distribution in their respective regions.
- (iv) Captive plants which are operated by industries for their own use, but occasionally sell to ONE as well.

148. In line with the liberalization of the economy, **ONE** negotiated with two foreign private consortia in 1994 to build and operate two power stations, thus permitting the expansion of capacity without committing public funds. **ONE's** national energy development programme had proved expensive, and public budget constraints prevented **ONE** from increasing its public debt. Coupled with



two successive years of drought which drastically reduced hydro-power production, ONE had to turn to the private sector in order to meet rising demand for power.

149. The two privately constructed and operated power stations will sell electricity under long-term contracts to ONE, which will continue to have a monopoly over power distribution.

### **5.3 Regional Cooperation.**

150. Regional cooperation in the energy sector is undertaken within the framework of the Arab Maghreb Union. For instance, Morocco has cooperation agreement with Algeria for the construction of the Algeria-Morocco-Spain Euro-Maghreb gas pipeline to transport Algerian gas to Europe through Morocco. Morocco also imports electricity from Algeria through connections into the Algerian electricity grid.

### **5.4. Observations.**

151. The involvement of the private sector in energy production in Morocco demonstrates the benefits of private-public partnership in infrastructure capacity building and utilization. However, such partnership requires a clear policy framework. In the case of Morocco, ONE retains the monopoly over distribution of electricity in view of the strategic nature of the sector, while production by private operators is allowed.

152. This sector also illustrates the benefit of regional cooperation: Algeria is able to export its gas through Morocco.

## **VI. CONCLUSIONS**

153. It is evident from the foregoing that infrastructure development has consistently been given high priority by the government. As a result, the financial institutions, namely the World Bank and the African Development Bank, have provided significant financial support to the various infrastructure sectors. Such support has enabled the country to develop not only the physical capacity, but most importantly, the institutional and human resource capacity for sustainable development of its infrastructure.

154. A good example of the capacity for sustainable development may be found in the road sector. Technical institutions such as CNER and IFEER have been established to conduct research and provide high level training for road design, construction and maintenance. Similarly, private sector participation and autonomous operations by public enterprises illustrate the level of maturity of the sector.

155. The decentralization of operations to regional public enterprises, the Regies, for the distribution of energy and water appears to be an effective strategy for improving the performance of these enterprises and achieving regional balance in infrastructure development.

156. From the development made in the context of this report it appears that the Government of Morocco has managed to ensure sustainable development and maintenance of the country's physical infrastructures. In doing so, the government has taken appropriate measures such as:

- (i) clear assessment of problems of each sector;
- (ii) clear statement of policy and strategic objectives;
- (iii) establishing priority on human resource development and utilization;
- (iv) improved institutional arrangements (legal framework, management and liberalization as appropriate ....etc).
- (v) diversification of financing sources, with increased private sector participation and greater cost sharing by users.

157. The building of development capacities for physical infrastructures may be effectively anchored around the four axes: policy and institutional framework; human resource development; regional cooperation; and resource mobilization. Consequently, the success of Morocco in building its physical infrastructure capacity may be assessed in this context.

## **6.1 Policy and Institutional Framework**

158. The development of the physical infrastructure capacity in Morocco, particularly from the early 1980's to the present, was undertaken as part of the broader policy framework for reform of the national economy. Supported by major international multi-lateral and bilateral financial institutions and agencies, the policy objectives of the restructuring programme aimed at improving the financial performance of public enterprises, developing their administrative and financial autonomy, and thus reducing the role of government through the encouragement of private sector participation in development activities. As a result of the reform actions, total current and capital transfers from Government to public enterprises declined from 3,2 percent of GDP in 1982 to 1.7 percent of GDP in 1993.

159. The institutional framework adopted in the country for developing and managing the various infrastructure sectors are similar: policies are established by the Ministries; implementations are monitored and coordinated by the appropriate directorates; autonomous public enterprises operate at national (offices) and regional (Régies) levels along with the private sector; and customers are involved at the community level.

160. It is worth noting that the privatization policy was conceived and implemented as an instrument of economic and social modernization and not as a policy objective. This is an important lesson particularly in Africa where privatization is generally viewed as a policy objective, often fostered by external development partners, and are therefore resisted or at best, grudgingly accepted and subsequently not effectively implemented, all to the detriment of the national economy.

161. Morocco also effected several changes in the institutional framework regarding the management and supervision of public enterprises. An inter-ministerial committee for public enterprises and state participation was specifically created to make decisions concerning major issues of public enterprise strategy and to approve performance contracts.

162. Performance contracts were drawn up for all the major public enterprises, with clear definition of the key parameters: expected results, guidelines parameters within which to operate, required resources (human, financial, time), accountability standards, and consequences in terms of rewards.

163. Another policy aspect of interest is the devolution of responsibilities to the regions and communities for the development and management of some components of the infrastructure and services, such as in roads where the National Programme for Construction of Rural Roads has been establish to construct 10,000 km. of rural roads under regional supervision. Similarly, the régies are regional enterprises for the distribution of water and electricity.

164. In all infrastructure sectors, government policy has shifted emphasis from expansion to maintenance and rehabilitation of existing infrastructure. However, there is still a significant level of expansion, consistent with the ability of the particular sector to generate resources for capacity expansion. This policy has generally improved capacity utilization of the national infrastructure and services.

165. Since road transport is the dominant form of transport in the country, accounting for over eighty per cent of passenger and freight movements and providing the only access to most rural areas, it is noteworthy that the government accords special emphasis to roads development. The responsibility for roads development is clearly defined between the Ministry of Public Works being responsible for all aspects of infrastructure development (including maintenance and human resource development) of national roads, and the Ministry of the Interior, through regional administrations, being responsible for community roads. In particular, significant progress has been made in establishing the four building blocks for sustainable road maintenance as identified in the RMI programme<sup>12/</sup>:

- (a) Involving road users in the management of roads - especially community roads;
- (b) Securing enough money for regular maintenance - the Road Fund;
- (c) Ensuring that all parties know what they are responsible for - the Ministry of Public Works and the Ministry of Interior;
- (d) Establishing a system for managing road programmes, with clear accountability.

166. Finally, government accords special importance to the development of the nation's infrastructure as a strategic sector to improve its global competitive position.

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<sup>12/</sup> Road Maintenance Initiative.....

## **6.2 Human Resources Development**

167. Human resources development appears to be adequately addressed in all the major infrastructure sectors in the country. Basic and technical training are provided in all the sectors, and the road sector in particular has established the centre for studies and research - **Centre National d'Etudes et de Recherches Routière (CNER)**.

168. The development of human resources was always an integral part of all sector loans obtained from the World Bank. With well-developed national institutions of training and higher education, there is little need for expensive overseas training or the use of expatriates.

169. The Ministry of Public Works, Vocational and High Level Training supervises several technical and research centres and schools for training experts in roads and ports infrastruc. Similarly, the Ministry of Transport also has several directorates for specialized training in various transport operations. In water management, the country operates a training centre for mechanics, treatment plant operators and equipment specialists and was able to eliminate dependence on expatriates. The country also has a well developed contracting industry.

## **6.3 Regional Co-operation**

170. Regional cooperation forms an integral part of the country's policy and strategy for its over all economic development, and in particular for infrastructure sectors. This cooperation is first within the framework of the Arab Maghreb Union (UMA), but also importantly with the neighbouring European countries as well as with the rest of Africa. Key sectors of regional cooperation are roads (Trans-African Highways, the Trans-Maghreb Highways and the Fixed Link on the Straits of Gibraltar), railways (Maghreb Railways), air transport and energy (Algeria-Morocco-Spain Gas Pipeline and the Algerian Electricity Grid).

## **6.4 Resource Mobilization**

171. The country has obviously been very successful in mobilizing the required resources for its infrastructure development as evidenced by the many large projects financed by the World Bank and the African Development Bank, among others. The fact that the multilateral banks have been willing to finance so many infrastructure projects implies that the national development priorities are clear and consistent with the over-all economic and social development programmes.

172. The public enterprises have consistently improved their financial performance as a result of some institutional restructuring and reforms carried out as part of the projects supported by the banks. Thus, a reasonable percentage of investment expenditures are financed from internally generated funds. The government policy has also promoted private sector participation.

173. With regards to the roads sector, emphasis has been placed on maintenance and rehabilitation and a special Roads Fund was established specifically for this purpose and is expected to provide up to 40 per cent of the annual cost of maintenance and rehabilitation.

174. Although infrastructure sector continues to receive public financing, policy has been put in place for regular adjustments of tariffs so as to gradually shift an increasing share of cost from the public to the users. For example, in the water sector regular but controlled tariff increases have been allowed, with particular emphasis on cost recovery in the irrigation uses.

**LIST OF OFFICIALS MET**

- M. Chakib BENMOUSSA, Directeur des Routes et de la Circulation Routière - Ministère des Travaux Publics.
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- M. Ottman FASSI FIGHRI, Directeur des Etudes et de la Planification au Ministère des travaux publics.
- M. Hamza OTTMANI, Directeur des Etudes, de la Planification et de la Coordination des transports au Ministère des Transports.
- M. BENCHEKROUN, Directeur de l'Energie au Ministère de l'Energie et des Mines.
- M. Mohamed JELLALI, Directeur de l'Administration de l'Hydraulique au Ministère des Travaux Publics.

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