Morocco

Road Improvement Project (MR-P7)

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Field Survey: February-March 2006

1. Project Profile and Japan's ODA Loan

The landscape of the project site before construction works

The landscape of the project site after construction works(Courtesy of DRCR)

1.1 Background

Morocco is located on the northernmost edge of the African continent facing the Atlantic Ocean and Mediterranean Sea and has a total land area of 446,000km^2 (approximately 1.2 times the size of Japan) and a population of approximately 30 million (2003, about one-fourth that of Japan). The plains along the northern coast have a Mediterranean climate, the inland area a continental climate, and to the east side of the Atlas Mountains a desert climate.

While the diversification of transport sector of Morocco is slow, the road sector remains high at the level of 90% share of this sector, and road traffic has been increasing year by year. The road network has been expanded due to increasing road development projects, while the maintenance and repair of roads were focused to roads with heavy traffics and therefore, repair of regional roads has been delayed. There were several problems; only a low proportion of the entire length of the road were paved, the roads' widths were generally insufficient, and the general situation of road maintenance were not favorable. At the time of appraisal, 41% of the roads were found to be in a bad condition, and it was acknowledged that a large-scale maintenance and repair of the roads was required.

1.2 Objective

The objective of this project is to repair and modernize second-class and third-class roads (provincial roads and prefectural roads) in the five out of seven

provinces of Morocco, with the two exceptions of the East and South Provinces, and to promote improvement of services for road users and local development by improving and expanding the road network, and thereby contribute to economic and social development in those provinces.

1.3 Borrower/Executing Agency

The Government of the Kingdom of Morocco/Direction des Routes et de la Circulation Routiere: DRCR, Ministère de l'Equipement et des Transports

1.4 Outline of Loan Agreement

Loan Amount/ Disbursed Amount	7,741 million yen/6,267 million yen
Exchange of Notes Loan Agreement	March 1995/ March 1995
Terms and Conditions - Interest Rate - Repayment Period (Grace Period) - Procurement	 3.0 % 30 years 10 years General untied
Final Disbursement Date	July 2003
Main Contractors	—
Consulting Services	—
Feasibility Study (F/S) etc.	DRCR(1993)

2. Evaluation Result

2.1 Relevance

2.1.1 Relevance at the time of appraisal

In the National Development Plan (1993-1997), the promotion of economic and social development by improving the road network in the rural areas was raised as one of the priority subjects. Also, in the Road Sector Development Five-Year Plan (1993-1997), a policy was proposed for stimulating the rural economy by making the rural distribution of good smoother through the improvement of existing roads and rural road networks. Furthermore, in the Plan for the National Regional Road 1 (PNRR-1) (1995-2004), the new extension of the regional road (12,000km) was planned to promote economic and social development in rural areas. This project was consistent with the policies presented in the above three plans and had high

relevance in light of its purpose of improving rural roads which contribute to meeting the demand for road transportation that grew at a high rate of 3% to 7% in the 1990s and the enhancement of the economy in rural areas.

2.1.2 Relevance at the time of evaluation

In the National Development Plan (2000-2004), a target was set for maintaining, modernizing, and expanding of the existing roads, and the economic development in the rural areas through the road development, and promotion of social and economic development was raised as an important issue. Also in the Road Sector Development Plan (2000-2004), an objective was established for stimulating the rural economy by making the rural distribution of goods smoother through the improvement of rural road networks. Furthermore, in the Plan for the National Regional Road II (PNRR-2) (2005-2015)[1], as 54% of the rural population have access to roads in 2005, a target was set for 67% by 2010 and 80% by 2015. This project responds to the demand for road transportation and thereby contributes to the revitalization of rural economy; therefore, it still has high priority.

2.2 Efficiency

2.2.1 Outputs

The project outline and outputs are shown in Table 1. This project was the sixth comprehensive road project of the Government of Morocco including the improvement of the road sector, to which the World Bank provided a loan and yen loan was co-financed.

The yen loan covered a 1,587 km section of (2) and surveys regarding enhancing the maintenance of the network of roads of (3). For (3), high-priority surveys such as the feasibility study research for network of roads and the strengthening of the regional administrating department were carried out. Because government policy promotes the entry of private enterprise, certain activities including technical support were entrusted to the private sector.

The portion covered by the World Bank loan were (1), a 913 km section of (2), (3) and (4). The reason a little discrepancy occurred in (1) was that there were some sites where planned work became unnecessary during construction as a result of the change of its priority due to a decrease in traffic volume etc. For (3), the loan of the World Bank was used to purchase emergency vehicles and equipment and

[1] PNRR-2 is complementing the National Initiative for Human Development(2005) which aims to improve the access to basic social service for the socially vulnerable(mainly the poor) in both rural and urban area. In this initiative, improving access to the roads in the rural area is raised as one of the priority issues.

snow-removal trucks.

Table 1. The Project Outline and Outputs

Item	Plan (At the time of appraisal)	Performance	Donor agency
(1) Repair and modernization of priority farm road New construction of paved road	1,000km 235km	713.8km 231.65km	The World Bank
(2) Repair, widening and maintenance of second-class and third-class road	2,449km (Yen loan: 1,624km; The World Bank: 825km)	2,500km (Yen loan: 1,587km; The World Bank: 913km)	Yen loan/The World Bank
(3) Improvement of the management system of the road network (surveys and technical assistance for strengthening the maintenance of the road network,		Nearly as planned	Yen loan
purchase of vehicles, roadwork/snow-removal equipment, etc.)			The World Bank
(4) Road safety (improvement and maintenance of high-accident locations and intersections etc.)		As planned	The World Bank

2.2.2 Project period

The actual implementation period was from March 1995 through July 2003 (for 100 months), while the planned implementation period at the time of appraisal were from March 1995 through July 2000 (for 64 months). The reason of the extended period (156% of the plan) was because a huge budget was required for an emergency relief plan in 1995-1996 during which it had been planned to start the construction work, due to the severe dry weather which had continued since 1994;

the budget allocated to the executing agency was thus not distributed according to plan. Also in 1995 and 2001, the budget allocation in local currency decreased substantially as a result of the budget determination and allocation being delayed due to the change of the budget fiscal year. The budget needed for implementing the project was not anticipated as a result, and the executing agency had to postpone a tendering announcement until the following year. Other factors behind the delay were that time was required for procurement preparation, evaluation, etc., because the number of contracts extended reached 73 and repair works were carried out in 135 places in the project, and it took a long time to conduct the transaction of business because two other road projects and repair works in the government budget were proceeding in parallel with this project.

2.2.3 Project cost

Although the total planned project costs at the time of appraisal was 23,904 million yen (7,741 million of which was a yen loan), actual cost was 20,327 million yen (6,267 million of which was a yen loan). The reason of the lower project cost was due to the introduction of an enterprise qualification system in 1994 by which government classified the enterprises which are eligible for tenders of public work projects. Through this system, domestic enterprises started to set concrete target and it resulted in promotion of capacities and competitiveness of enterprises.

Furthermore, the quality and experience of the domestic enterprises that contracted road construction and repair works has been improved as a result of World Bank, JBIC, and African Development Bank projects for upgrading regional roads that have been going on since 1994; as a result, competition between enterprises has been rising and costs of construction have fallen.

2.3 Effectiveness

2.3.1 The travel vehicle-kilometers per year on the second-class and third-class roads in the target areas of the project

Table 2 shows the travel vehicle-kilometers per year on the second-class and third-class roads in the target areas of the project. The actual value of the travel vehicle-kilometers in 2002 increased by 127% compared with the actual value in 1995, and increased by 25% compared with the planned value in 2002. According to DRCR, the traffic volume on the roads has been increasing after the completion of the project. It is thought that this has been influenced by the reduction of customs

duties on imported vehicles[2] and the liberalization of transportation business as well.

Table 2. The Travel Vehicle-Kilometers Per Year on the Second-Class and Third-ClassRoads

(Unit: one million vehicles x km/year)

	1995	1997	1998	1999	2002
Planned	N/A	31,600	37,500	43,000	53,500
Actual	29,429	30,203	35,171	44,046	66,865

2.3.2 The access to the second-class and third-class roads in the target areas of the project

The number of residents who are able to gain access to the roads constructed by this project exceeds one million. The DRCR figure shows that the percentage of the access to the regional roads is 54% in 2005.

Table 3. The number of residents who gained access to the second-class and third-class roads in the target areas of the project[3]

(Unit: 1,000 people)

1997	1998	1999	2002
61	134	260	1,008

（Source: DRCR(2002)）

The percentage of unpaved roads in 2001 was about 50%, and it is reported that many roads often become impassable due to the bad weather. The project increased the percentage of paved roads by 20%, and it can be evaluated that this project contributed to the improvement of services for the road users, which is a significant priority of the road sector in Morocco as well as the objective of this project. Also, more than 10% of the target for the extension of regional roads and improvement which was set in PNRRI (1995-2004) was achieved in this project.

[2] The import customs on European-made vehicles have been lowered from 32.5％ to 29.25％ (2004), 26％ (2005), and 22.75％ (2006), and are scheduled for abolition in 2013. However, a tariff is put on vehicles other than European-made.

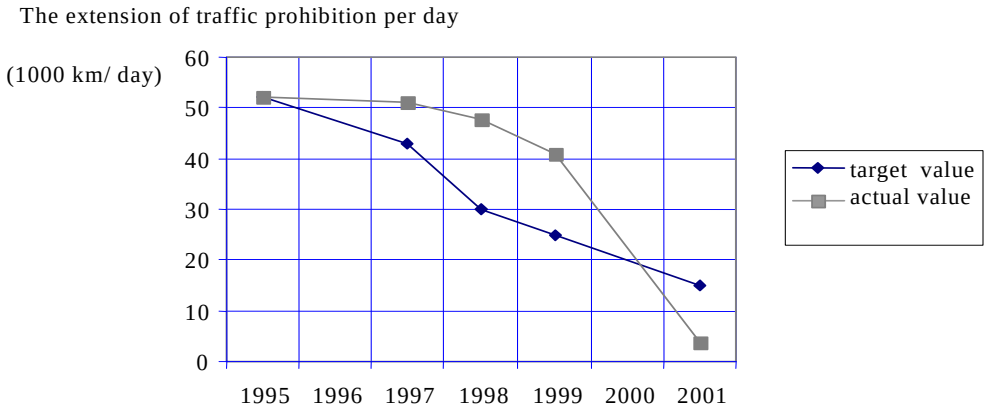
[3] When people live in villages which have more than 50 houses and the villages are located within 1km of the paved road, it is deemed that they have access to the roads.

Table 4. Unpaved Roads in the Target Areas of the Project[4] (Unit: km)

Area	1995	2004
Central Area	4,200	3,474
North-west Area	2,350	1,928
Tensift Area	2,350	1,821
Central-North Area	2,450	2,060
Central-South Area	2,750	2,128
Total	14,100	11,411

Figure 1 shows the changes in traffic prohibition per day extended on the target roads of this project. This is an indicator that shows the extension of roads which become unavailable due to the heavy rain or landslides. In Morocco, the roads frequently become impassable because the concentrated downpour in the rainy season covers the roads with water. Although the traffic prohibition index on regional roads was 52,301km/day in 1995, it decreased to 3,647km/day as of 31 December 2001. It is acknowledged that the original target in the project was achieved well in advance, although there were delays in the first three years of the implementation period of the project. DRCR states that the road improvement in the project was particularly effective in alleviating the economically isolated state of some households in mountainous areas.

Fig. 1 The Extension of Traffic Prohibition Per Day (DRCR)



2.3.3 Economic Internal Rate of Return (EIRR)

The EIRR is generally 12% or more in each section, both at the time of appraisal and at the time of ex-post evaluation. According to DRCR's economic analysis in which the investment amount is regarded as a cost and cost-savings of vehicle operation cost and the reduction of maintenance costs are regarded as quantitative

[4] The total extension of the second-class and third-class roads in 1995 and 2005 is the same.

benefits, the EIRR is 70% or more in about half of 135 places where work is being carried out, 100% or more in 52 places and 12% or less in four places. Generally, when an EIRR is high, reasons that may be given are that investment costs have decreased and that traffic volume highly exceeds the estimation. Although at some places, the EIRR is 12% or less, it may be considered that the investment was valid because those places had a relatively large increase in traffic, and contributions to the region, such as the vitalization of the regional economy, were high.

2.4 Impact

2.4.1 Fatalities from traffic accidents

The fatalities from traffic accidents on second-class and third-class roads are summarized in Table 5. Although the number of fatalities has been increasing because the number of vehicles possessed and the traffic volume of the country are growing rapidly, the fatalities per 1,000 vehicles are decreasing compared with the value in 1995. DRCR identifies high-accident locations and carries out traffic safety countermeasures, such as the installation of road signs.

Table 5. Fatalities from Traffic Accidents on Second-Class and Third-Class Roads

(Number of persons)

		1995	1997	1998	1999	2002
Fatalities	Actual	N/A	3,081	3,242	3,394	3,644
Fatalities per 1,000 vehicles	Planned	N/A	3.7	3.1	N/A	2.8
	Actual	4.1	3.1	3.1	3.1	3.1

2.4.2 The influence on the living environment

The regions that receive benefits from having roads repaired and widened by the project were extracted and interview-style beneficiary surveys were conducted in Ben-Surimane[5]. According to the results of the beneficiary surveys, there was a decline in prices of groceries and agricultural inputs, and improvement in access to vicinity markets and public facilities such as agriculture support centers and hospitals, improvement of public services, etc. resulting from the road upgrading. The school enrollment rate of children has improved across the country, and it is thought that this is largely owing to the national strategy which sets the regional road project as a major issue for the nation. The improvement of the school enrollment rate is also confirmed in beneficiary surveys. More than thirty percent of the respondents answered that opportunities for school attendance have improved

[5] Ben-Surimane is a region of 44,000 of the population (2004) and the number of valid responses was 116.

both for boys and girls by the improvement of the services of shared taxies and route buses. Furthermore, the shortening in commute times to school is confirmed. Commute times of 30 minutes or less are most frequent; before road upgrading, 36% of respondents answered that their commute times were 30 minutes or less, while after the project, 42% answered that their commute times were 30 minutes or less.

The World Bank evaluates that by virtue of the investment of the project, access to public services and markets has been improved and that the project gives considerable benefits to the poor in the rural areas. Also, it is reported that because the traffic prohibition caused by rainfall and flood has been substantially reduced in terms both of the number of occurrences and in duration, rural communities have become less isolated and access to public facilities such as hospitals has been obtained throughout the year.

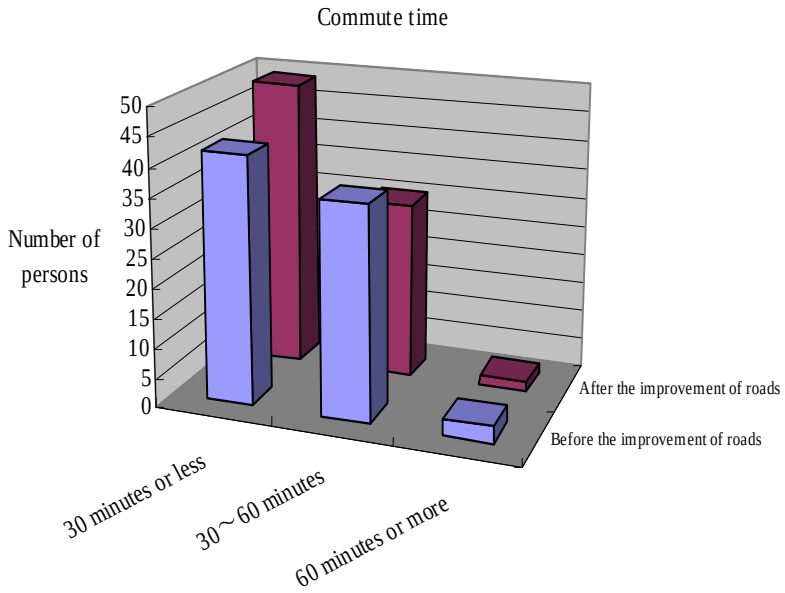
Table 6. The Gross Enrollment Rate in Elementary and Secondary Education[6]

(Unit: %)

	1995	2000	2003	2004
Elementary	72.3	93.2	106.1	105.9
Secondary	N/A	38.7	44.3	46.9

[6] Source: The World Bank; secondary education corresponds to 12-14 years old.

Fig. 2 Commute Time to School



When changes in incomes before and after the road improvement are analyzed on the basis of the result of beneficiary surveys, 38 (33%) of 116 respondents answered that their incomes rose after the improvement. It is confirmed through the answers that opportunities of employment and trade have been improved by the road improvement, although the causality is not yet established.

Furthermore, according to the executing agency, no major problems have been seen in terms of air contamination or noise in the project, because the main work of the project consists of the repair or widening of regional roads. Land acquisition and relocation of residents have not occurred.

A roadside store whose delivery was improved

The scene of a beneficiary survey

2.5 Sustainability

2.5.1 Executing agency (DRCR)

2.5.1.1 Technical Capacity

The head office and local offices conduct inspections of the domestic road condition etc. periodically and set up a plan for maintenance on the basis of the data from the inspections (For details, see 2.5.2 “Operation and Maintenance status” as mentioned below). DRCR carries out the road repair and improvement work for more than 2,000km road every year. Due to decentralization, the state offices are responsible for carrying out the repairs and maintenance for the road.

2.5.1.2 Operation and Maintenance system

DRCR has more than 5,200 office staff . The head office of DRCR is composed of eight sections, in addition to CNER(National Institute for Road Research)[7]. Sixteen state offices and 29 prefectural offices have been established because of the promotion of decentralization by which the responsibility for planning road improvements is transferred to the local governments and DRCR branches; under these offices, 45 regional offices are established. To ensure that authority be smoothly transferred to the state offices, DRCR is conducting capacity building at these state offices.

2.5.1.3 Financial status

As shown in Table 7, the budget that is allocated to the maintenance of roads has been growing since 1995 along with the increase in the annual budget for DRCR; it is now about 600-800 million dirham (DH) which corresponds to about 20% of the budgets for a year. Part of the budget is allocated periodically on the basis of the work plan of each state associated with the decentralization.

Table 7 Total Budget of DRCR

(Millions of DH)

2002	2003	2004
2,377	2,510	3,755

Also Caisse de Financement Routier: CFR(Road Development Finance) was introduced in 2005 that was established under the Regional Road Development Plan

[7] It is comprised of eight departments: the Administrative Department; Personnel Department; Project and Plan Department; Road Operation and Safety Department; Repair Department; Civil Engineering Work Department; Research and Development Department; and Planning Department.

2 to be a source of revenue other than the national budget. CFR is financed by the donor funding and domestic borrowing and the funds are allocated to the maintenance and widening of regional roads. Furthermore, Fond Special Routier (Road Fund), whose sources of revenue include gasoline taxes, was established in 1995; its fund is allocated to the maintenance and repair of roads (see Table 8).

Table 8. Annual Budget for the Fond Special Routier

（Million DH）

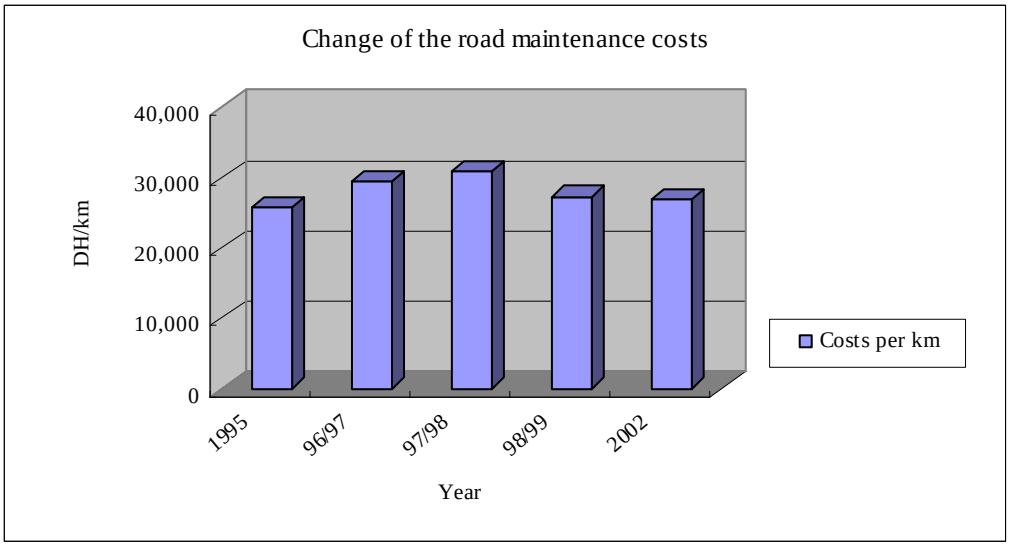
2002	2003	2004
1,460	1,605	1,630

2.5.2 Operation and maintenance status

It is specified in the current road maintenance target that the section which is acknowledged as being in a good condition should be maintained at 65% of the overall network, and the present performance value is 66%. The decline in construction costs (see Figure 3) and improvements in efficiency are also due to the introduction of the qualification system for companies. Through the policy of utilizing the private sector, the private sector is undertaking all repair work and about 50% of maintenance at present.

Fig. 3 Changes in Road Maintenance Costs

(Unit: DH)



The selection of the repair work place is conducted by using the road maintenance support system (SYGER). This system is conducted to accurately

check the road conditions, and indexes the roads' and road shoulders' current state on the basis of the visual examination, measured data, etc. and prioritize the work plan. It also investigates changes in the service level of rural roads in order to advance smoothly the maintenance of the rural roads that were repaired within the framework of the nation farm road plan, and sets the investment project regarding new road construction and pavement of unpaved roads on the basis of the result. As part of these efforts, DRCR conducts a visual examination of the roads which were repaired within the framework of the development plan of 2002.

The World Bank regards this project as highly sustainable. Reasons for the rating are that the maintenance costs are allocated at the level which was agreed at the time of the appraisal, that a great deal of work has become possible through the regular budget because the unit prices of road construction costs etc. have fallen, and that the condition of the road network has been improved.

3.Feedback

3.1 Lessons learned

None

3.2 Recommendations

Because the responsibility for the formulation and implementation of the road improvement program of the DRCR has been transferred to local offices through decentralization, it is necessary for the head office of DRCR to continue to provide technical support to those offices.

Comparison of Original and Actual Scope

Item	Plan	Actual
(1) Outputs		
・ Repair and modernization of priority firm roads	1,000km	713.8km
New construction of paved road	235km	231.65km
・ Repair, widening and maintenance of second- and third-class road	2,449km (yen loan:1624km the World Bank:825km)	2,500km (yen loan:1587km the World Bank:913km)
・ Improvement of the management system of road network (surveys and technical assistance for strengthening the maintenance of road network, purchase of vehicles, roadwork/snow-removal equipment, etc.)		Nearly as planned
・ Road safety (improvement and maintenance of high-accident locations and intersections etc.)		As planned
(2) Project Period	March 1995-July 2000 (64 months)	March 1995-July 2003 (100 months)
(3) Project Cost		
Foreign currency	5,183 million yen	12,113 million yen
Local currency	5,484 million yen	6,680 million yen
Total	10,665 million yen	18,780 million yen
Yen Loan Portion	7,741 million yen	6,267 million yen
Exchange rate	1 DH＝11.7 yen	1 DH＝12.0 yen