Kingdom of Morocco

Ex-Post Evaluation of Japanese ODA Loan

Marrakech-Agadir Motorway Construction Project

External Evaluator: Machi KANEKO, Earth and Human Corporation

0. Summary

The objective of this project was to respond to the increasing demand for transportation by constructing a motorway linking Marrakech and Agadir, which are centers of economic activities and tourism in Morocco, thereby contributing to the promotion of trade both domestically and with Europe, etc., and to the revitalization of Morocco's economy by promoting tourism. With respect to this objective, the Government of Morocco regarded transportation and trade, and tourism as key sectors to boost the domestic economic growth both at the times of project appraisal and the ex-post evaluation of the project, and thus has been systematically committed to development of infrastructures including motorways. Japan has also focused on assistance to promotion of sustainable economic growth through development of economic and social infrastructures. Therefore, this project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

The implementation of the project more or less achieved the expected targets of effectiveness: the annual average daily traffic increased as planned in all the sections including the Argana to Ameskroud section subject to the project. In addition, the section concerned plays a crucial role while the domestic logistics network has been expanding. As for the tourism sector, the project helped shorten the traveling time in the section, giving positive impacts on enhancing the attraction to not just foreign tourists but also tourists within the country. In line with these, this project has largely achieved its objectives. Therefore, its effectiveness and impact is high.

The project cost was within the original cost, but the project period was slightly extended, so the efficiency of the project proved to be fair About the perspective of sustainability, Société Nationale des Autoroutes du Maroc (hereinafter referred to as "ADM"), the executing agency of the project, has established an appropriate operation and maintenance system, so it is concluded that the motorway and auxiliary facilities are operated and maintained basically in a sound manner. Therefore sustainability of the project effect is high.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description

The motorway network of Morocco and the section subject to the project (Marrakech-Agadir)

Motorway constructed under the project (the Argana to Ameskroud segment financed by the project)

1.1 Background

Morocco has been actively promoting trade liberalization. It became a member of the General Agreement on Tariffs and Trade (GATT) in 1987, and participated in the World Trade Organization (WTO) in 1994. It also concluded a partnership agreement with the European Union (EU), the largest trade partner, in 1996, based on which it has been gradually abolishing tariffs. In 2004, it concluded Free Trade Agreements with the United States and Turkey, respectively, taking advantage of these agreements to expand its overseas markets and promote exports.

At the same time, to strengthen the domestic transport infrastructure, the Government of Morocco has been developing roads, railways, airports and harbors and ports while taking into account geographical conditions of individual regions. To promote foreign trade further, however, cargo transport must be streamlined and industrial competitiveness must be enhanced. To this end, developing transport infrastructure was a pressing issue. Accordingly, in 1991, the Government of Morocco prepared the Motorway Master Plan, aiming to develop the east-west route linking Casablanca, Rabat and Oujda, and the north-south route linking Agadir, Tangier and Tetouan by 2010 (see Map on page 1).

In particular, the Port of Tangier, located at the northern end of the country and about 14km to the EU zone, was expected to be developed as an important logistics hub for exports of agricultural, marine and other products in the southern part of the country to the EU markets. Moreover, the Casablanca Mohammed V International Airport and the Port of Tangier serve as gateways for tourists from EU countries. Because development of major transport bases and means of traveling among tourist cities would increase tourists, the government prioritized the development of domestic roads including motorways.

In such circumstance, the implementation of the project to build a motorway linking Marrakech and Agadir was expected to boost economic growth through promotion of cargo transport and tourism, and thus the Government of Morocco requested the Government of Japan to provide assistance.

1.2 Project Outline

The objective of this project is to respond to the increasing demand for transportation by constructing a motorway of a total of 234km linking Marrakech and Agadir, which are centers of economic activities and tourism in Morocco, thereby contributing to the promotion of trade both domestically and with Europe, etc., and to the revitalization of Morocco's economy by promoting tourism.

The entire project[1] was divided into four subprojects, each of which was financed and undertaken by Japan or other donors. Japanese ODA loan covered the Argana-Ameskroud segment (46km).

[1] The construction work for the project was carried out by dividing the entire route into four segments: Segment 1: Marrakech to Chichaoua (84 km); Segment 2: Chichaoua to Argana (92 km); Segment 3: Argana to Ameskroud (46 km), the segment financed by this project; and Segment 4: Ameskroud to Agadir (12 km). The construction of these segments is financed by Segment 1: the Islamic Development Bank (IDB) and the Arab Fund for Economic and Social Development (AFESD); Segment 2 the African Development Bank, AFESD and the Kuwait Fund for Arab Economic Development (KFAED); Segment 3: JICA; and Segment 4: AFESD, respectively.

Loan Approved Amount/ Disbursed Amount	17,726 million yen / 17,725 million yen	
Exchange of Notes Date/ Loan Agreement Signing Date	March 2006 / March 2006	
Terms and Conditions	Interest Rate:	1.5%
	Repayment Period: (Grace Period)	30 years (10 years)
	Conditions for Procurement:	General untied
Borrower / Executing Agency	Société Nationale des Autoroutes du Maroc (ADM)	
Final Disbursement Date	July 2011	
Main Contractor	Dogus Insaat ve Ticaret (Turkey)	
Main Consultant	Conseil, Ingenierie et Developpement (Morocco)	
Feasibility Studies, etc.	Special Assistance for Project Formation (SAPROF) on Marrakech-Agadir Motorway Construction Project (2005)	

2. Outline of the Evaluation Study

2.1 External Evaluator

Machi KANEKO, Earth and Human Corporation

2.2 Duration of Evaluation Study

Evaluation study was made on the following schedule for this ex-post evaluation.

Duration of the study: September 2013 – September 2014

Duration of the Field studies: January 17 – February 11 and April 17 – May 11, 2014

2.3 Constraints during the Evaluation Study

Because the entire route between Marrakech and Agadir is divided into four segments, each of which was financed and constructed by different donors, the project generates its effects only after completion of all the subprojects. Thus, although it is appropriate to set numerical targets covering the entire Marrakech-Agadir route as indicators for the operation and effects of the project, it should be noted that these indicators show not just the project effects generated by Japanese ODA loan but also effects of assistance of other donors.

3. Results of the Evaluation (Overall Rating: A[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Relevance to the Development Plan of Morocco

At the time of project appraisal, the Government of Morocco was working on a new national development plan next to the Economic and Social Development Plan (2000-2004) and thus implemented

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[3] ③: High, ② Fair, ① Low

various investment projects in accordance with the 2005 Budget Law. The law set out development of a motorway network as one of the priority areas[4] that would contribute to sustainable economic growth. The country also formulated in 1991 a sector plan, the Motorway Master Plan, which set the goal of constructing a motorway network[5] of approximately 1,500 km by 2010 that would cover the entire country including the route subject to the project.

At the time of ex-post evaluation, however, the Government of Morocco did not formulate any national development plan but announced development plans and development strategies for individual sectors. The sector plan related to this project is the Motorway Master Plan cited above, which extended the target year to 2015 with a target of making the total length of motorways 1,800km. After the completion of the Marrakech-Agadir route (234km) thanks to the project, the total length of motorways became 1,416km in 2010.

As described above, projects for motorway development were among priority areas of the national development policies and the sectoral plan contributing to sustainable economic growth of the country both at the times of project appraisal and ex-post evaluation, and thus this project has been highly relevant. By working together with other financing organizations, it has been also relevant to have enabled support to such a large-scale project which would have been difficult for the Japan International Cooperation Agency (hereinafter referred to as "JICA") alone.

3.1.2 Relevance to the Development Needs of Morocco

At the time of project appraisal, the project team examined Morocco's economic growth rate, increases in tourist demand in major tourist cities of Marrakech and Agadir, and other factors to forecast traffic demand on National Road No. 8 (NR8) that links the two cities. The forecast showed that, if no motorway was constructed between Marrakech and Agadir, the annual average daily traffic (AADT) on a certain section of NR8 would be increased from 4,000-5,000 vehicles/day in 2003 to 10,000 vehicles/day in 2015, which was above the capacity of the national road.

Moreover, the section of NR8 was in precipitous mountains but the road was narrow with some long and steep zones, although heavy vehicles accounted for some 60% of all the traffic of the road. Because of this, the average number of accidents on NR8 (between Marrakech and Agadir) was recorded high, 104.2 accidents on average, compared to the number of vehicle accidents nationwide, 64.2 accidents per 100 million kilometrage. Thus, measures against traffic accidents were an imminent challenge.

Together with the increased traffic, upcoming market integration with EU was another factor for the country to deal with motorway development. Securing efficient routes for exports of agricultural, marine and other products to EU countries was a crucial task. In particular, Agadir has a good fishery port and the country's foremost production sites of tomatoes and citrus fruits. It was necessary to transport these

[4] Three specific measures are: (1) sustainable economic growth contributing to employment creation and improvements in living conditions of the entire people; (2) strengthening of social infrastructure through equal opportunity; and (3) implementation of measures contributing to modernization of the economic system and production facilities.

[5] North-south route: Marrakech-Agadir (234km) financed by this project; Casablanca-Marrakech (202km); Casablanca-El Jadida (86km); and Casablanca-Tanger-Tetouan (367km). East-west route: Rabat-Fez (167km); and Fez-Oujda (320km).

agricultural and marine products to Casablanca and the Port of Tangier at the earliest possible time.

At the time of ex-post evaluation, three years had passed since the Marrakech-Agadir motorway constructed under the project opened. During the course, the AADT has been increasing as expected in general (to be described in the section of Effectiveness). The number of automobiles in the country has been increasing over the years: the number increased some 20% from 2008 to 2011. As for traffic accidents, the motorway developed under the project enjoys a lower traffic accident rate than that on NR8[6].

The Government of Morocco also published a National Strategy for the Development of Logistics Competitiveness (2010-2015), developing logistics infrastructure facilities in major rural cities across the country. Marrakech and Agadir particularly grew their importance as cargo transport bases after the motorway was developed under the project and various terminals are being developed in these cities. The development of "Tangier Free Zone" and the Tangier-Mediterranean (Tangier-Med) Port is in progress in Tangier in northern Morocco. In other words, the cargo transport network linking Agadir, Marrakech, Casablanca and Tangier is being streamlined on the initiative of the national government.

The number of tourists from abroad was increasing, totaling 9.83 million in 2012. Ancient cities of Marrakech and Fez, and Agadir and other beach resort areas remain popular among tourists.

The traffic demand for the Marrakech-Agadir route was increasing at the time of project appraisal, so it was predicted to exceed the traffic capacity of NR8 in future. Thus, the needs for the development of a motorway on this route had been high. At the time of ex-post evaluation, the AADT on the motorway developed under the project increased as planned in general. At the same time, the Government of Morocco regards cargo transport and trades with foreign countries as key sectors for the domestic economic growth, and thus is committed to streamline the cargo transport network including the section developed under the project. In line with this, the development of logistics infrastructure including this project was highly needed also at the time of ex-post evaluation.

3.1.3 Relevance to Japan's ODA Policy

The JICA Medium-Term Strategy for Overseas Economic Cooperation Operations (April 2005) placed priority on assistance to Morocco to the sector of "infrastructure development for sustainable growth," and placed emphasis on support for the promotion of sustainable economic growth through economic and social infrastructure development, including motorway construction. As for Morocco, in particular, the JICA strategy regarded as a priority area "development of economic and social infrastructure for transportation, tourism, etc."

In line with this, this project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

[6] The traffic accident rate on RN8 was decreasing, compared to the time when project appraisal was conducted.

3.2 Effectiveness[7] (Rating: ③)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) Annual average daily traffic (AADT)

Table 1 shows the target and actual volumes of the AADT on the road segment financed by Japanese ODA loan. While the target was 6,396 vehicles/day, the actual volumes were 6,141 vehicles/day in 2012 and 6,621 vehicles/day in 2013, respectively. The target was more or less achieved. The actual volume in 2012 fell slightly below the target because the motorway was opened five months later than initially planned, but still the achievement rate is 96%. The impact of the delay is considered to be minor.

Table 2 shows the AADT of the entire project including the road segment financed by Japanese ODA loan. The target has been more or less achieved in all the sections.

Table 1 Annual Average Daily Traffic on the Road Segment (46km) Financed by Japanese ODA Loan

Indicator	Target	Actual traffic volume			
	2012 (2 yrs. after project completion Note 1)	2010 Note 2 (Year of project completion)	2011 (1 yr. after project completion)	2012 (2 yrs. after project completion)	2013 (3 yrs. after project completion)
Annual average daily traffic (AADT) (vehicles/day)	6,396	3,219	5,664	6,141	6,621

Source: ADM data

Note 1: The target volume was determined at the time of project appraisal.

Note 2: The entire route was opened in June 2010. Initially, the route was scheduled to be opened in January 2010.

Table 2 Annual Average Daily Traffic on the Entire Route and Ratio of Heavy Vehicles

(Unit: vehicles/day)

Segment	Target of the entire project Note 1 (2 yrs. after opening)	Category	Actual traffic volume			
			2010	2011	2012	2013
Marrakech-Chichaoua	5,977	Total	3,269	5,800	5,972	6,518
		Percentage of HV Note 3	23.0	17.5	15.4	13.0
Chichaoua-Imintanoute	7,204	Total	3,123	5,402	5,581	6,073
		Percentage of HV	46.0	53.5	48.3	47.4
Imintanoute-Argana		Total	3,102	5,441	5,824	6,397
		Percentage of HV	62.5	70.2	67.7	64.8
Argana-Ameskroud Note 2	6,962	Total	3,219	5,664	6,141	6,621
		Percentage of HV	22.73	26.36	26.2	25.3
Ameskroud-Agadir		Total	4,028	6,499	7,166	7,577
		Percentage of HV	24.5	27.4	27.1	26.0

Source: ADM data

Note 1: The target of the entire project was set by ADM. The date when it was set out is unknown.

Note 2: Data in thick frames is for the segment financed by Japanese ODA loan.

Note 3: HV stands for heavy vehicles.

[7] Sub-rating for Effectiveness is to be put with consideration of Impact.

(2) Reduction of vehicle operating cost (VOC)

Table 3 shows the target and actual values of "reduction of vehicle operating cost (VOC)" on the entire route of the project. While the target was 406.2 MAD, the actual values were 354.4 MAD in 2012 and 409.6 MAD in 2013, respectively. The actual value in 2012 fell below the target because the AADT in the year slightly fell below the target, but still the achievement rate is 87%. The target of this indicator has been more or less achieved.

Table 3 Benefits from Reduction of Vehicle Operating Cost (VOC) on the Entire Route [Note 1]

(in terms of MAD)

Indicator	Target	Actual value	
	2012	2012	2013
Reduction of VOC [Note 2] (MAD [Note 3])	406.2	354.4	409.6

Source: ADM data

Note 1: The target of the indicator is addressed to the entire route (Marrakech-Agadir) under the project.

Note 2: VOC stands for vehicle operating cost

Note 3: The benefits are calculated in terms of the currency of Morocco, dirhams (MAD).

(3) Reduction of travel time

Table 4 shows the target and actual values of "reduction of travel time" on the entire route of the project. While the target was 96.8 MAD, the actual values were 119.9 MAD in 2012 and 166.0 MAD in 2013, respectively. The target of this indicator has been achieved.

Table 4 Benefits from Reduction of Travel Time on the Entire Route [Note 1] of the Project

Indicator	Target	Actual value	
	2012	2012	2013
Reduction of travel time (MAD [Note 2])	96.8	119.9	166.0

Source: ADM data

Note 1: The target of the indicator is addressed to the entire route (Marrakech-Agadir) under the project.

Note 2: The benefits are calculated in terms of the currency of Morocco, dirhams (MAD).

As shown in Table 5, the travel time from the entrance to the motorway in Marrakech to the exit in Agadir by ordinary passenger car is two hours and 45 minutes, which is shorter than the travel time on NR8 by one hour and 15 minutes. The travel time of truck and bus is reduced from five hours to three and a half hours, shorter than the travel time on NR8 by one and a half hours.

A beneficiary survey[8] conducted as part of the ex-post evaluation reveals that all the 107 respondents opt to use the motorway when asked which they would chiefly use, the motorway or NR8. Moreover, they all gave affirmative replies when asked whether or not the travel time on the route was shortened. Users of the motorway feel higher convenience of the motorway.

[8] The beneficiary survey was conducted and received replies from a total of 107 users of the motorway developed under the project, including 29 transport businesses, 52 tourism businesses; 14 agricultural product suppliers; and 12 parties in unknown industries.

Table 5 Travel Time of the Route by Vehicle Type

Segment	Light vehicle		Heavy vehicle	
	RN 8	Motorway	RN 8	Motorway
Marrakech junction- Agadir	4 h 00 min	2 h 45 min	5 h 00 min	3 h 30 min
Marrakech junction-Chichaoua	1 h 45 min	1 h 05 min	2 h 15 min	1 h 35 min
Marrakech-Chichaoua	1 h 20 min	1 h 15 min	1 h 50 min	1 h 45 min
Chichaoua-Imintanoute		18 min		27 min
Imintanoute-Argana		36 min		48 min
Argana-Ameskroud [Note 1]	35 min	30 min	55 min	45 min
Ameskroud-Agadir	11 min	7 min	15 min	10 min

Source: ADM data

Note 1: Segment in the thick frame was financed by Japanese ODA loan.

(4) Reduction of traffic accidents

Table 6 shows the target and actual values in relation to "benefits of reduction of traffic accidents[9]" on the entire route of the project. While the target was 66.7 MAD, the actual figures were 64.0 MAD in 2012 and 69.7 MAD in 2013, respectively. The actual figure in 2012 fell below the target because the AADT in the year slightly fell below the target, but still the achievement rate is 96%. The target of this indicator was more or less achieved.

Table 6 Benefits from Reduction of Traffic Accidents on the Entire Route of the Project [Note 1]

Indicator	Target	Actual value	
	2012	2012	2013
Reduction of traffic accidents (MAD [Note 2])	66.7	64.0	69.7

Source: ADM data

Note 1: The target of the indicator is addressed to the entire route under the project.

Note 2: The benefits are calculated in terms of the currency of Morocco, dirhams (MAD).

Tables 7 and 8 show time series of traffic accident rates and rates of casualties in traffic accidents on the motorway developed under the project and the existing NR8. At the time of project appraisal, the development of the motorway was expected to reduce the traffic volume to some extent and the accident rate on NR8.

Table 7 indicates that the accident rate and the rate of casualties in traffic accidents on the segment financed by Japanese ODA loan are higher than other segments of the route. But according to ADM, this is chiefly because of many accidents involving heavy trucks due to the presence of a long steep zone on the segment. Even so, ADM says that the accident rate was gradually decreasing, compared to the time when the route was initially opened because ADM performed enlightening activities and an increasing number of drivers were beginning to become more familiar with the traffic caution points

On the other hand, in comparison with NR8 (the Imintanoute-Agadir section), the accident rate on the motorway and NR8 was 11.68 - 51.5 accidents per 100 million vehicle-km and 61.73 accidents per 100

[9] The benefits from reduction of traffic accidents are calculated from social loss due to traffic accidents in accordance with the accident rate.

million vehicle-km, respectively in 2011: the risk of accidents was lower on the motorway. At the time of project appraisal in 2003, the accident rate on the entire NR8 between Marrakech and Agadir was 104.2 accidents per 100 million vehicle-km. The rate was particularly high on the Chichaoua-Imintanoute section, 135.7 accidents per 100 million vehicle-km. But as Table 8 indicates, the rate on the same section of NR8 in 2011 was 18.03 accidents per 100 million vehicle-km. This suggests that the development of the motorway alleviates heavy traffic on NR8 and eventually contributes to a reduction in accidents on the national road. According to the beneficiary survey to transport businesses, tourism businesses and agricultural product suppliers that use the motorway constructed under the project, 91% of these respondents (97 out of 107 respondents) felt that the number of traffic accidents on NR8 decreased.

Table 7 Accident Rates and Rate of Casualties in Traffic Accidents on the Entire Route of the Motorway (the entire route of the project) (accidents/100 million vehicle-km)

Segment	km	Category	2010 Note 2	2011	2012	2013 Note 3
Marrakech-Chichaoua	82	Accident rate	11.35	22.69	12.71	22.55
		Casualty rate	0	2.33	1.91	0.78
Chichaoua-Imintanoute	30	Accident rate	16.04	24.46	22.2	18.18
		Casualty rate	1.78	3.06	4.46	0
Imintanoute-Argana	60	Accident rate	22.59	24.18	16.79	24.33
		Casualty rate	3.08	9.85	-	2.03
Argana-Ameskroud Note 1	48	Accident rate	33.26	51.5	39.34	25.48
		Casualty rate	4.75	9.47	7.68	8.49
Ameskroud-Agadir	11	Accident rate	5.48	11.68	3.41	0
		Casualty rate	0	0	0	0

Source: ADM data
Note 1: Data in thick frames is for the segment financed by Japanese ODA loan.
Note 2: The service started in June 2010.
Note 3: As of September 30, 2013

Table 8 Accident Rates and Rate of Casualties in Traffic Accidents on NR8 (the entire route of the project) (accidents/100 million vehicle-km)

Segment	km	Category	2009	2010	2011	2012	2013
Marrakech-Chichaoua	137	Accident rate	71.76	69.66	71.97	N/A	N/A
		Casualty rate	23.39	9.66	10.17	N/A	N/A
Chichaoua-Imintanoute	33.5	Accident rate	69.21	44.29	18.03	N/A	N/A
		Casualty rate	3.05	3.56	2.03	N/A	N/A
Imintanoute-Agadir	60	Accident rate	86.1	37.04	61.73	N/A	N/A
		Casualty rate	37.07	6.61	7.12	N/A	N/A

Source: ADM data

3.3 Impact

3.3.1 Intended Impacts

(1) Increase of tourists to Marrakech and Agadir

An ancient city of Marrakech and a beach resort area in Agadir are among the most popular tourist places

in Morocco for foreign tourists.

As shown in Table 9, the number of foreign tourists to Morocco increased 50% from 2006 to 2012, totalling 9.83 million. The number grew only slightly after 2010 because of the Arab Spring, the European debt crisis, and other factors, but it should be specially noted that the number of foreign tourists continued to increase steadily over the years, though the growth rate remains low. Despite the steady growth of the number of foreign tourists, the tourist revenue in respect of foreign tourists remained more or less unchanged. The Marrakech Tourist Bureau attributed it to a decrease in revenue per tourist because of price competition among hotels and a decline in the number of nights stayed.

Table 9 Number of Foreign Tourists (10,000 people) and Tourist Revenue (100 million MAD)

Category	2006	2007	2008	2009	2010	2011	2012	Growth rate (2006-2012)
No. of foreign tourists	655.8	740.7	787.8	834.1	962.6	978.3	983.0	150%
Tourist revenue	524	595	554	528	566	591	579	109%

Source: Morocco Statistical Yearbooks 2012, 2008 and 2006

According to interviews at bus terminals and travel agencies, the shortened travel time between Casablanca and Agadir is the most substantial impact of the project, contributing to an increase in the number of foreign and domestic tourists to Agadir. Some respondents to the interviews say that the number of tourists from within the country has been increasing because the shortened travel time has made it possible to include Agadir in coach tours, and made it easier to travel from Casablanca to Agadir by private cars.

Table 10 shows the number of guests of accommodations in Marrakech and Agadir, according to which, the number of guests already started to increase in the year before 2010 when the motorway was opened, decreased slightly in 2011 but increased again in 2012. It is supposed that this trend is because of decrease in the number of nights stayed and places visited by foreign tourists because of the Arab Spring and European debt crisis, and also because of an increase in the number of foreign tourists who did not use hotels or other accommodations[10]. On the other hand, the ratio of domestic tourists (residents in Morocco) to the total number of tourists has been increasing each year. Travel agencies, hotels and other tourist businesses are beginning to prepare for increased demand for tourism in the hope that they will be able to have domestic tourists as a new demand source in low seasons when the number of foreign tourists is small if the number of tourist buses and private cars continues to steadily increase.

In line with this, this project constructing the motorway linking major tourist areas has contributed particularly to the attraction to not just foreign tourists but also domestic tourists.

[10] Recently, an increasing number of tourists chiefly from France and Spain use motor caravans for longer stays in Morocco. Even during the field survey, quite a few spaces especially for motor caravans were observed in Marrakech, Agadir and other tourist places. The Marrakech Tourist Bureau considers that an increase in long-stay tourists will vitalize the regional economy.

Table 10 Indicator related to Tourism in Marrakech and Agadir

Category	Location		2008	2009	2010	2011	2012
No. of guests of accommodations (1,000 persons)	Marrakech		1,567	1,590	1,782	1,587	1,661
	Agadir		725	699	783	781	812
	Morocco as a whole		5,411	5,371	5,936	5,517	5,834
No. of nights stayed (1,000 nights)	Marrakech	Total	5,573	5,533	6,357	5,754	5,918
		Of which, Domestic tourists (residents in Morocco)	756	894	1,035	1,180	1,329
		Ratio	14%	16%	16%	21%	22%
	Agadir	Total	4,653	4,468	4,807	4,487	4,499
		Of which, Domestic tourists (residents in Morocco)	575	630	657	742	816
		Ratio	12%	14%	14%	17%	18%
No. of hotels	Marrakech		-	823	904	1,017	1,160
	Agadir		-	9	96	98	112
	Morocco as a whole		-	1,806	2,003	2,188	2,521

Source: Morocco Tourism Annual Statistics

(2) Promotion of domestic logistics in Morocco

1) Logistics sector

The Agadir tollgate: A truck leaves in the late afternoon to arrive in Tangier in the early morning the next day. Night travel is effective for the temperature control of cargo.

As stated in the section of relevance, the Government of Morocco formulated the National Strategy for the Development of Logistics Competitiveness in 2010 to develop a domestic cargo transport network, and aims to achieve economic growth and employment creation through building a logistics platform including the development of a motorway network. The strategy regards Marrakech and Agadir as important logistics bases in the country, so the expansion of the north-south motorway network to Agadir under the project has contributed to promoting the country's logistics policy.

As shown in Table 11, Morocco saw an improvement of the logistics performance index[11] (hereinafter referred to as the "LPI") of the World Bank from a score of 2.40 points in 2007 to 3.03 in 2012, and was ranked 93 to 50 over the period. While the global economic divide between developed countries and developing countries in the cargo transport and trade sectors remains unsolved, where high-income, developed countries rank high and low-income, underdeveloped countries rank low, Morocco has been improving its logistics efficiency at a rate above the average, although it is counted as a lower-middle income country. The expansion of the motorway network including the route expanded under the project, improvements of the quality of logistics infrastructure, shortened transport time and reduction of traffic accidents have contributed to improvements in the elements of the LPI score including competitiveness and timeliness of logistics.

[11] The logistics performance index (LPI) is an indicator which multidimensional evaluates international logistics performance in accordance with more than 5,000 country assessments made by about 1,000 international logistics companies. The LPI enables to compare international logistics in 155 countries. Japan was ranked 8th in 2012.

Table 11 Logistics Performance Indicator (LPI) of Morocco

Category		2007	2012
Morocco's ranking among 155 countries in the LPI		93rd	50th
Overall LPI		2.40	3.03
Scores of individual indicators	Customs	2.20	2.64
	Infrastructure	2.33	3.14
	International shipments	2.75	3.01
	Logistics competence	2.13	2.90
	Tracking and tracing	2.00	3.01
	Timeliness	2.86	3.51

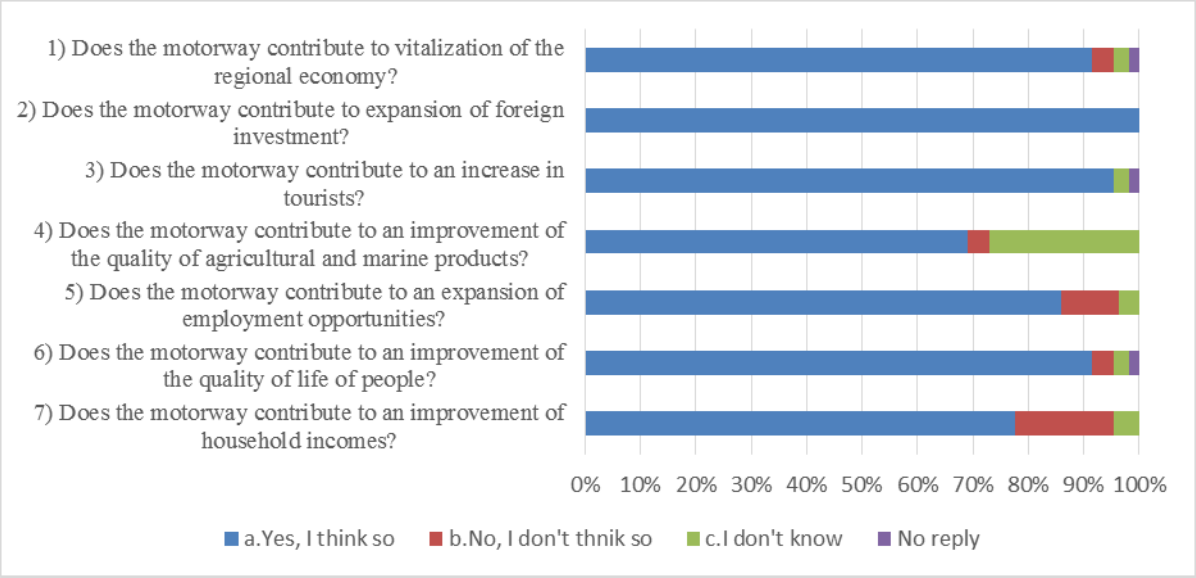
Source: The World Bank, Connecting to Compete: Trade Logistics in the Global Economy, The Logistics Performance Index and Its Indicators, 2007, 2012

Note: The ranking is the overall ranking based on the scores of individual indicators. The score ranges from 0 to 5.

2) Beneficiary survey

To find the impacts of the project, interviews were made to governmental agencies of Souss-Massa-Draa and agricultural product suppliers in Agadir, and quite a few persons interviewed stated that Agadir used to be isolated from any land route but was now unclosed. What they meant was, more specifically, that the south end of the country's motorway network used to be Marrakech, but the project extended the motorway to Agadir and linked the city with tourist cities of Casablanca and Marrakech, and logistics bases of Casablanca and Tangier, so the project had positive impacts on tourism (particularly domestic tourism) and cargo transport. Interviews to logistics businesses and agricultural product suppliers revealed that they used to have difficulty estimating arrival times when they used NR8 because of unforeseen incidents such as traffic congestion and road closure, but now can accurately estimate arrival times if they use the motorway, and decide when to leave Agadir to meet the schedules of ships departing from the Port of Tangier. They seemed to feel that they benefit from the motorways in terms of quality control and the shortened travel time.

Figure 1 below shows the results of the beneficiary survey addressed to transport businesses, tourism businesses and agricultural product suppliers. Asked if the development of the motorway linking Marrakech and Agadir contributed to the regional economy, foreign investment and increase of tourists, 90% or more of the respondents gave affirmative replies. As for an expansion of employment opportunities and an increase in household incomes, 11 and 19 out of all the 107 respondents, respectively, gave negative replies. This suggests that it is necessary to take further steps to make the motorway bring economic benefits to the individual level.



Source: The beneficiary survey conducted as part of this ex-post evaluation, February-May, 2014
Note: The beneficiary survey was conducted towards transport businesses, tourism businesses and agricultural product suppliers, and received replies from a total of 107 respondents.

Figure 1 Results of the Beneficiary Survey to Users of the Motorway Developed under the Project

3.3.2 Other Impacts

(1) Impacts on the natural environment

1) Formulation of environmental impact assessment (EIA) report, and planning and implementation of mitigation measures

At the time of project appraisal, an environmental impact assessment (EIA) report was formulated in compliance with the Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (2002). The project was also designed to incorporate measures to mitigate environmental impacts: that is, regularly measuring the quality of river water when bridges were constructed and taking measures if any problem arose with the water quality; and replanting twice as many Argan trees as those to be cleared for the construction work. As stated in the following sections 2) and 3), the measuring and analysis of the quality of river water and reforestation of Argan trees were implemented as planned.

2) Pollution control measures

The project appraisal found that air pollution and noises during the construction work of the project would have little impact on the environment, and an arrangement was made to require ADM to monitor the construction work and take steps if any problem arose. At the time of ex-post evaluation, the results of the monitoring activities were confirmed to ADM. As a result, no particular problem arose during the construction term, and thus ADM conducted no additional measures against air pollution or noises. AMD compiled monitoring results and submitted to JICA as regular monitoring reports.

As for water contamination, because ADM was required to measure the water quality at two points in Tassademt (PK111) and Imarside (PK118), it commissioned a laboratory to monitor and analyze the water quality. As a result, the water quality at the points showed no particular problem, so no water quality control measure was taken. The results of the monitoring activities were reported to JICA.

3) Reforestation

The construction work under the project required clearance of Argan trees on land of 360ha, but a total of 200,000 Argan trees were planted on land of 920ha, more than twice as large as the reforestation land area targeted.

A young Argan tree planted as part of the project

After the forestation, ADM reported that the Argan trees planted on land of 920ha were steadily growing, and that all the reforestation programs initially planned, as well as the acceptance inspections for all reforestation contracts, were completed. Currently, the reforestation area is under the management of La Direction Régionale des Eaux et Forêts du Sud-Ouest (hereinafter referred to as "DREF-SO") in compliance with a cutting area compensatory arrangement[12] between ADM and DREF-SO. Moreover, because it takes time for Argan trees to grow to adult trees, DREF-SO conducts additional forestation and reforestation in accordance with the progress of growing. It set out a medium-term target of reforestation as replanting of some 100 adult trees per 1ha.

4) Monitoring

As stated above, environment mitigation measures were implemented during the construction work as initially planned, and the results of monitoring of water quality, dust control, progress of rooting of Argan trees were regularly reported to JICA. Moreover, no particular problem has arisen in relation to these measures.

(2) Land Acquisition and Resettlement

The total area of land purchased by ADM for construction of the motorway segment financed by Japanese ODA loan was approximately 409ha, all of which was national land. The construction work has involved no resettlement of residents.

(3) Unintended Positive /Negative Impact

None.

The annual average daily traffic, the indicator for effectiveness of the project, achieved the targeted value, and the traffic volumes on the segment and the entire route constructed under the project are increasing as planned. The evaluation indicators for reduction of vehicle operation cost, reduction of travel time and

[12] The compensatory arrangement for the land of 920ha between ADM and DREF-SO was completed by 2010.

reduction of traffic accidents indicated that the relevant targets were achieved in general. The project appears to benefit motorway users as initially planned. Moreover, the accident rate on the motorway is lower than that on NR8, so the project also contributes to a reduction in the overall accident rate.

Meanwhile, while the development of the cargo transport and trade sectors was substantially advancing in Morocco compared to the time of project appraisal, the motorway route developed under the project now serves as an important logistics infrastructure, so contributes to regional economic development through promotion of cargo transport. In terms of the tourism sector, too, the motorway helps shorten the travel time from Casablanca to Agadir, contributing to attraction to not just foreign tourists but also tourists from within the country.

In line with these, this project has largely achieved its objectives. Therefore, its effectiveness and impact is high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

This ODA loan was addressed to the third segment – the Argana-Ameskroud segment (46km) – out of the entire Marrakech-Agadir route (234km). Table 12 shows differences between the plan and actual project performance, and the following sections give account of major modifications to the initial plan and the reasons for the modifications.

Cancellation of construction of service areas and auxiliary facilities (one overpass)

The locations of service areas on the entire route of the Marrakech-Agadir motorway were reviewed in consideration of road gradients, intervals of service areas and other aspects. The service area to be constructed was relocated to other segment (Chichaoua and Argana). Because of this, the construction of an overpass as part of the service area was cancelled.

Changes in the number of bridges and other passages

The numbers of bridges, automobile and pedestrian passages were changed from 2 to 3; 2 to 9; and 1 to 5, respectively.

According to the results of detailed design survey, ADM confirmed the necessity of increasing the number of bridges to be constructed from two to three for topographical reasons, and conducted the procedures for the change upon the approval of JICA.

In addition, automobile and pedestrian passages were constructed so that the motorway constructed would not interfere with movements of local citizens. For this purpose, the needs of local citizens were confirmed in advance.

Table 12 Comparison of Plan and Actual Performance of Project Output

Category	Initial plan	Actual performance
1) Construction of motorway	46 km (Two lanes each way)	46 km (Two lanes each way)
2) Service area	One each in both directions	Cancelled
3) Bridge	2	3
4) Passage		
a) Superior passage	6	5
b) Inferior passage	4	5
c) Passage for vehicle	2	9
d) Passage for pedestrian	1	5

As stated above, the project output was slightly modified from the initial plan but had no problems in terms of technical, environmental and cost perspectives. Thus, the modifications have proved to be appropriate.

3.4.2 Project Inputs

3.4.2.1 Project Cost

As summarized in Table 13, the original toral project cost was 30,097 million JPY and the original cost of the segment subject to the ODA loan was 17,726 million JPY. In practice, the actual project cost was 24,943 million JPY and the cost of the segment concerned was 17,725 million JPY, both lower than planned.

The difference between the original and actual costs of the segment financed by the ODA loan arose because, prior to commencement of the construction work, ADM changed the design of the entire route of the Marrakech-Agadir motorway including changes in the locations of auxiliary facilities. Development of facilities in appropriate locations helped to enhance the project effect, so the changes have proved to be appropriate.

Table 13 Comparison of Original Cost and Actual Project Cost

(Unit: million JPY)

Category	Original cost			Actual cost		
	Foreign currency portion	Local currency portion	Total	Foreign currency portion	Local currency portion	Total
[Item financed by ODA loan]						
Civil works	15,642	0	15,642	4 976	11,371	16,347
Price escalation	596	0	596	250	571	821
Physical contingencies	812	0	812	0	0	0
Consulting services	118	12	130	0	11	11
Land acquisition / compensation	0	0	0	0	0	0
Interest during construction	546	0	546	546	0	546
Subtotal	17,714	12	17,726	5,772	11,953	17,725
[Items not covered by ODA loan]						
Civil works	0	8,418	8,418	538	1,230	1,768
Civil work for auxiliary facilities (financed by AfDB)	0	1,379	1,379	0	979	979
Price escalation	0	513	513	78	179	257
Physical contingencies	0	451	451	0	0	0
Land acquisition / compensation	0	903	903	0	30	30
Administration cost	0	561	561	0	293	293
Taxes and duties (VAT and tariffs)	0	146	146	0	3,891	3,891
Subtotal	0	12,371	12,371	616	6,602	7,218
Total project cost	17,714	12,383	30,097	6,388	18,555	24,943

Note: Exchange rates: 1DH=12.2 JPY at the time of project appraisal (Oct. 2003), and 1DH=12.3 JPY for actual cost (on average)
Source: ADM data

(Reference information)

This project divided the entire Marrakech-Agadir section into four segments, each of which was financed by different financing organizations. The project effect does not emerge by completing only one of these subprojects. In other words, the project effect emerges only when all the subprojects between Marrakech and Agadir have been completed and ADM has commenced the services of the entire route. Therefore, it is not realistic to set indicators to measure the project effect for the segment financed by the ODA loan, but it is appropriate to confirm the emergence of the project effect in terms of indicators to see the operation and effect of the entire motorway route.

According to ADM, the project cost of the entire motorway route was originally 9,109 million MAD and actually 7,965 million MAD. Of these costs, as Table 14 indicates, 6,833 million MAD were financed by major financing organizations. These organizations conducted completion surveys, but had not completed any survey equivalent to the ex-post evaluation at the present moment.

Incidentally, the project was expected to produce a greater economic effect by expanding the motorway network in Morocco up to Agadir. Thus, confirmation of the economic effect of the entire motorway network, rather than that of the Marrakech-Agadir section, was considered to be important, and ADM planned on carrying confirmation of the effect. But as ADM had not assessed the effect yet, this ex-post evaluation was unable to confirm any economic effect of the project that successfully linked the Marrakech-Agadir section to the national motorway network in Morocco.

Table 14 Loan Amounts of Individual Financing Organizations for the Segments

Segment	Length	Financing organization	Loan amount (million MAD)
Segment 1: Marrakech-Chichaoua	84km	Islamic Development Bank (IDB) and the Arab Fund for Economic and Social Development (AFESD)	1,783
Segment 2: Chichaoua-Argana	92km	African Development Bank, AFESD and the Kuwait Fund for Arab Economic Development (KFAED)	3,161
Segment 3: Argana-Ameskroud	46km (Two lanes each way)	JICA	1,612
Segment 4: Ameskroud-Agadir	12km	AFESD	277

Source: ADM data

3.4.2.2 Project Period

The project period was scheduled to be 45 months starting in March 2006 and ending in November 2009, but the actual period was 49 months (109% compared to the planned period) starting in March 2006 and ending in March 2010, slightly longer than planned.

According to a report submitted by ADM, the difference between the planned period and actual period was chiefly attributable to the following reasons.

- Extension of civil work due to upward water movements
- Interruption of civil work due to the implementation of a work to stabilize embankments at places where embankments were unstable

The subprojects other than that financed by the ODA loan were carried out in mutual collaboration of the financing organizations concerned, completed in March 2010, and put into service in June 2010.

3.4.3 Results of Calculations of Internal Rates of Return (Reference only)

The internal rate of return (IRR) was recalculated in accordance with the conditions applied when it was initially calculated at the time of project appraisal. Both the economic internal rate of return (EIRR) and financial internal rate of return (FIRR) outnumbered those calculated at the time of project appraisal, because the traffic volume in the previous one year of the ex-post evaluation increased more than expected, though the project started about six months later than scheduled.

Economic Internal Rate of Return (EIRR)

	At the time of project appraisal (2005)	At the time of ex-post evaluation (2013)
EIRR	11.5%	13.8%

Conditions:

- Cost: Project cost (excluding tax), operation and maintenance expense
- Benefit: Reduction of vehicle operating cost, reduction of travel time, and reduction of traffic accidents
- Project Life: 35 years

Financial Internal Rate of Return (FIRR)

	At the time of project appraisal (2005)	At the time of ex-post evaluation (2013)
FIRR	3.9%	4.4%

Conditions:
- Cost: Project cost, operation and maintenance expense
- Benefit: Income from toll fees
- Project Life: 35 years

In line with this, although the project cost was within the plan, the project period slightly exceeded the plan. Therefore, efficiency of the project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

The Operation and maintenance (O&M) after the completion of the project is appropriately implemented as planned on the initiative of ADM.

While the motorway network of which ADM is in charge of the O&M has been expanding, its workforce remains more or less the same as shown in Table 15. This is because ADM aims to improve the work efficiency and reduce the labor cost by outsourcing on-site maintenance, inspection, construction work and other works to outside private companies as much as possible, and establishing a system whereby ADM officials focus on the quality control of works commissioned out to outside parties.

Table 15 Workforce of ADM

(Unit: person)

Category	2007	2008	2009	2010	2011	2012
Total No. of officers	597	568	590	569	564	548
Of whom Managing officers	137	149	171	172	169	161

Source: ADM data

For the O&M of the motorway route constructed under the project, ADM established administration centers in Marrakech and Agadir, and the center in Agadir is in charge of the segment financed by the ODA loan.

Table 16 shows the workforce composition of the two centers, where personnel with skills and experience in the O&M are stationed. The Marrakech center is headed by an engineer, who is a specialist of civil engineering and has worked for ADM for 20 years. The motorway administration centers are staffed by engineers who are regular staff members of ADM and equipped with video systems processing and analyzing data from surveillance cameras installed along the motorway. Incidentally, regular staff members of ADM are all managing officers or system engineers, the remaining staff members are outsourcing workers or temporary staff members. Thus, ADM hires a larger number of temporary patrolmen and toll-keepers on days when traffic is expected to be heavy on the motorway (when, for example, the dates

that events are held on new soccer ground in Agadir).

ADM also outsources services such as routine patrolling for road maintenance, repair work and emergency call center, but has guidelines and manuals for all the motorway sections under its management and thus has established an integrated management system. It decides outsourcing contractors not under negotiated contracts but by bidding, and normally concludes outsourcing contracts for a contract term of three years.

Table 16 Workforce Composition at the Marrakech and Agadir Administration Centers

(Unit: person)

Section	Marrakech	Agadir
Head of the center	1	1
Chief in charge of maintenance	1	1
Chief in charge of toll collection	1	1
Clerical workers	3	2
Engineers	10	9
Messenger	1	1
Outsourcing and temporary workers	48 toll collectors; 12 central toll collectors; 4 workers responsible for toll collection; 4 telephone receptionists; 17 patrolmen; and 3 group leaders	47 toll collectors and workers in charge of customer services; 30 wireless radio operators, assistants and tunnel inspectors; 38 workmen and group leaders; and 3 engineers
Total	135 persons	134 persons

Source: ADM data

3.5.2 Technical Aspects of Operation and Maintenance

The Marrakech and Agadir administration centers undertake: (1) site patrolling and accident response; (2) 24-hour information gathering with surveillance cameras and exchanges of information with the Royal Moroccan Gendarmerie and fire departments; (3) repair work of auxiliary facilities including road surfaces and road signs; and (4) toll collection. These tasks are carried out in accordance with guidelines and manuals common to all the administration centers located on the entire motorway network administered by ADM. The guidelines and manuals, when updated, are shared by all the administration centers across the country.

The administration centers are also equipped with surveillance cameras and vehicles for road surface surveys. Data on road infrastructure collected with these tools are analyzed by a motorway road asset operation and maintenance system at the ADM headquarters. The system is also used as a support tool to determine policies for civil work taking budgets into consideration. Apart from these, ADM is working to provide more quality services by introducing an electric toll collection system, a call center “5050” for motorway users and a driving assisting system that provides drivers with traffic information in a text format.

While ADM outsources all the site patrolling, tool collection, road surface repair, and repair of auxiliary facilities regardless of the size of repair work, it strictly stipulates uniform guidelines and manuals, requiring administrators at all the administration centers to comply with them and maintain the quality of tasks outsourced. Moreover, there are quite a few contractors that are capable of undertaking large civil

work in Morocco, and thus there is no particular technical problem. ADM is reportedly committed to not just the technical quality control but also labor conditions and other aspects when necessary, so that no technical problems arise on site.

In line with these, no particular technical problem has been observed in relation to the operation and maintenance.

3.5.3 Financial Aspects of Operation and Maintenance

Table 17 lists motorway tolls on the route constructed under the project. The toll fees on the segment financed by the ODA loan are 17 MAD for light vehicles and 29 MAD for heavy vehicles. Table 18, on the other hand, lists the income from toll fees on the entire motorway route under the project. The table suggests that the income have been increasing in proportion to an increase in the number of cars using the motorway.

Table 17 Toll Fees on the Motorway Route as of February 2014

(Unit: MAD)

Segment on the motorway	Light vehicle: Class 1	Heavy vehicle: Classes 2 & 3
Marrakech - Chichaoua	35	57
Chichaoua - Imintanoute	11	19
Imintanoute - Argana	19	32
Argana - Ameskroud	17	29
Ameskroud - Agadir	4	7

Source: ADM toll fee table

Note: Class 1: passenger cars, Class 2: 8t or lighter busses and trucks
Class 3: 8t or heavier busses and trucks

Table 18 Toll Income by Segment

(Unit: million MAD)

Segment	Vehicle type	2009	2010	2011	2012	2013
Marrakech - Chichaoua	Light vehicle	21.216	28.093	39.906	37.559	34.726
	Heavy vehicle	9.292	15.806	22.392	15.945	12.957
	Total	30.508	43.899	62.298	53.504	47.683
Chichaoua - Agadir	Light vehicle		27.940	58.282	65.814	74.137
	Heavy vehicle		11.976	24.978	28.206	31.773
	Total		39.916	83.260	94.020	105.910
Marrakech - Agadir Total	Light vehicle	21.216	56.033	98.188	103.373	108.863
	Heavy vehicle	9.292	27.782	47.370	44.151	44.730
	Total	30.508	83.815	145.558	147.524	153.593

Source: ADM data

Table 19 shows the financial standing of ADM, according to which toll sales were increasing over the years, particularly from 1,762 million MAD to 1,936 million MAD, or some 10%, from 2011 to 2012. This was attributable to the opening of new motorway sections and an increase in the traffic volume. The

motorway tolls are determined by the governmental policy and thus ADM has no authority to raise tolls, but no particular problem was seen in the current toll level.

Table 20 shows the financial standing of ADM, indicating that the operating income has been in surplus since 2012, but that ADM recorded a net deficit of 437 million MAD in FY2013, though the margin of the net deficit decreased from the previous fiscal year. ADM was reportedly obliged to post the deficit in 2013 because it overestimated revenue and underestimated expenditures at the time of budget formulation, and needed to earmark an additional budget but was unable to do so within the accounting period in 2013. According to ADM, for example, the relatively large deficits in 2010 and 2011 were attributable to a decrease in toll income due to a delay in the completion of the Marrakech-Fez motorway construction; and a delay in posting revenues arising from additional investment because an increase in expenditures of a large-scale operation and maintenance plan (eight-year plan) for existing motorways was not reflected in the budget plan.

Table 21 shows increases in capital of ADM invested by the government. The increased capital is invested in not just new projects but also the operation and maintenance, repayments of loans and other purposes. ADM states that its income sources include revenue, capital increase, corporate bonds (governmental compensation) and project-based borrowings, and spends these funds, except project-based borrowings, on road construction, the operation and maintenance and repayments of loans without specifying purposes of the spending in advance. ADM claims itself as an organization to undertake projects in compliance with policy and implementation plans of the Government of Morocco. In addition, the Government of Morocco approved that ADM raises necessary operating funds by capital increases. Thus, it is considered that no financial problem will arise in connection with the operation and maintenance. Even so, ADM seems to be required to operate projects efficiently so as to restrain spending in future.

Table 19 Operating Income and Expenditure of ADM

(Unit: million MAD)

Category	2009	2010	2011	2012	2013
Income					
- Toll income	1,310	1,525	1,762	1,936	2,051
- Other operating income	93	143	136	109	85
Total	1,403	1,668	1,898	2,045	2,136
Expenditure					
- Consumable goods	82	103	129	130	157
- Tax	1.7	2	2	1	2
- Labor cost	133.5	141	151.1	159	169
- Other operating cost	0.8	10	0.9	1	1
- Other external cost	379	373	718	322	217
- Allowance for operation	710	852	978	1,027	1,164
Total	1,307	1,481	1,979	1,640	1,710

Source: ADM data

Table 20 Financial Standing of ADM

(Unit: million MAD)

Category	2009	2010	2011	2012	2013
1) Income	1,404	1,668	1,898	2,045	2,155
2) Expenditure	1,307	1,481	1,979	1,640	1,710
3) Operating income (1-2)	97	187	-81	405	445
4) Financial balance	-403	-1,263	-1,503	-639	-875
5) Current profit (3+4)	-306	-1,076	-1,584	-234	-430
6) Non-operating profit	3	28	192	66	4
7) Pretax profit (5+6)	-303	-1,048	-1,392	-168	-426
8) Profit tax	7	8	10	11	11
9) Net profit (7-8)	**-310**	**-1,056**	**-1,402**	**- 179**	**-437**

Source: ADM data

Table 21 Capital of ADM and Capital Increase Financed by the Government

(Unit: MAD)

Category	2009	2010	2011	2012	2013
Capital	8,866	10,016	11,156	12,295	13,435
Capital increase	1,150	1,150	1,140	1,140	1,140

Source: ADM data

In line with these, no major financial problems has been observed in the operation and maintenance of the motorway road facilities.

3.5.4 Current Status of Operation and Maintenance

In this field survey, the study team confirmed the road surface and facilities on the entire motorway route between Marrakech and Agadir with officers of the ADM headquarters. It paid particular attention to the state of maintenance of auxiliary structures in the segment financed by the ODA loan, and found that these structures were appropriately maintained and that no places needed any repair work. Other than these, the study team found that ADM was working to install rock fall protection nets and pockets on the mountainous zones with steep hills on the segment financed by the ODA loan[13].

The administration centers in Marrakech and Agadir were working on the operation and maintenance work in accordance with a maintenance plan for electric equipment, tollgate facilities, road sign equipment and road facilities. These on-site works are carried out not just on the motorway route under the project but on the entire motorway network by all the administration centers across the country in compliance with uniformed guidelines and manuals. Moreover, because the road surface of motorways is designed to last for 8-10 years, ADM prepares regular maintenance programs over several years for the entire route between Marrakech and Agadir in accordance with regular road surface surveys. ADM commissions out repair works on asphalt pavements that need to be repaired to outside contractors.

[13] Repair work was in progress in a segment next to the segment financed by the ODA loan because there was damage to joints of asphalt pavement (as of February 2014). The segment has many steep slopes as the segment financed by the ODA loan, which also needs regular surveillance.

In line with these, no major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore, sustainability of the project effect is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of this project was to respond to the increasing demand for transportation by constructing a motorway linking Marrakech and Agadir, which are centers of economic activities and tourism in Morocco, thereby contributing to the promotion of trade both domestically and with Europe, etc., and to the revitalization of Morocco's economy by promoting tourism. With respect to this objective, the Government of Morocco regarded transportation and trade, and tourism as key sectors to boost the domestic economic growth both at the times of project appraisal and the ex-post evaluation of the project, and thus has been systematically committed to development of infrastructures including motorways. Japan has also focused on assistance to promotion of sustainable economic growth through development of economic and social infrastructures. Therefore, this project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

The implementation of the project more or less achieved the expected targets of effectiveness: the annual average daily traffic increased as planned in all the sections including the Argana-Ameskroud section subject to the project. In addition, the section concerned plays a crucial role while the domestic logistics network has been expanding. As for the tourism sector, the project helped shorten the traveling time in the section, giving positive impacts on enhancing the attraction to not just foreign tourists but also tourists within the country. In line with these, this project has largely achieved its objectives. Therefore, its effectiveness and impact is high.

The project cost was within the original cost, but the project was period slightly extended, so the efficiency of the project proved to be fair. About the perspective of sustainability, ADM, the executing agency of the project, has established an appropriate operation and maintenance system, so it is concluded that the motorway and auxiliary facilities are operated and maintained basically in a sound manner. Therefore sustainability of the project effect is high.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- The segment financed by the ODA loan is in a mountainous area with continuous steep slopes, so ADM takes measures rock fall prevention measures. ADM is still required to continue regular monitoring and rock fall prevention measures.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

- Setting of indicators in the case where Japanese ODA loan is provided to part of a project for development of large infrastructure

  This project aimed to develop a motorway between Marrakech and Agadir (234km) by dividing the entire route into four subprojects, each of which was financed and constructed by Japan, the African Development Bank and Arab donors (the Kuwait Fund for Arab Economic Development (KFAED), Arab Fund for Economic and Social Development (AFESD) and Islamic Development Bank (IDB)). When Japan offers an ODA loan to part of a project for development of large infrastructure as in this project, it will be desirable in principle for all donors involved to set out shared targets (standard and target values) to confirm the entire project effect, and make arrangements to enable them to see the entire project effect through joint monitoring and other activities. In reality, however, Japan has no particular framework or other setting for cooperative assistance with any donors other than OECD/DAC member countries and thus has difficulty in setting common indicators for the entire project. Even in such a case, it is important to use standard and target values of the entire project of the executing agency as supplementary indicators, and monitor and evaluate the projects in accordance with these supplementary indicators.

Comparison of the Original and Actual Scopes of the Project

Item	Original	Actual
1.Project outputs	1. Civil work, procurement of equipment, etc. (1) Construction of motorway Argana-Ameskroud Section (46km), 2 lanes each way (total of 4 lanes) (2) Construction of service areas: 1 service area each way (3) Construction of bridges: 2 places (4) Passages a) Superior passage: 6 b) Inferior passage: 4 c) Passage for vehicle: 2 d) Passage for pedestrian: 1 2. Consulting services for the segment financed by the ODA loan	1. Civil work, procurement of equipment, etc. (1) Construction of motorway Argana-Ameskroud Section (46km), 2 lanes each way (total of 4 lanes) (2) Construction of service areas: Not implemented (3) Construction of bridges: 3 places (4) Passages a) Superior passage: 5 b) Inferior passage: 5 c) Passage for vehicle: 9 d) Passage for pedestrian: 5 2. Consulting services for the segment financed by the ODA loan
2.Project period	March 2006 – November 2009 (45 months)	March 2006 – March 2010 (49 months)
3.Project cost Amount paid in foreign currency	17,714 million yen	6,388 million yen
Amount paid in local currency	12,383 million yen	18,555million yen
	(1,015 million DH)	(1,509million DH)
Total	30,097 million yen	24,943 million yen
Japanese ODA loan portion	17,726 million yen	17,725 million yen
Exchange rate	1 DH = 12.2 yen (As of October 2003)	1 DH = 12.3 yen (Average between Marc 2006 – July 2011)