Kingdom of Morocco

FY2022 Ex-Post Evaluation Report of Japanese ODA Loan

"Rural Road Improvement Project (II)"

External Evaluator: Hisae Takahashi, Global Group 21 Japan, Inc.

0. Summary

This project was implemented to improve the road access of residents along the target roads by improving the rural roads in the five provinces in northern, central, and inland Morocco, thereby contributing to the improvement of rural residents' standard of living and remedying the regional disparities. This project has been relevant to Morocco's development policy and needs. The project, along with "Rural Road Improvement Project" (Phase I of the project), which was supported by JICA, and other development partners, facilitated the implementation of the Moroccan government's rural road improvement program, and the outputs have been confirmed to a certain extent. Therefore, the relevance and coherence are high. By utilizing the unused funds generated due to exchange rate fluctuations and bids lower than anticipated, the output increased; however, the project cost was within the plan. Meanwhile, the project period largely exceeded the plan, therefore the efficiency is moderately low. After the road improvement, the increase in traffic volume and the reduction in the number of days of impassability due to natural disasters in the target sections mostly achieved the target values, and the travel time and road access rate in the area have been also improved. Although the impact on the local economy is considered limited, impacts such as improved convenience for local residents, improved school enrolment (especially for girls), and access to medical services have been confirmed in the target section. Therefore, the effectiveness and impact are high. While the operation and maintenance of regional and provincial roads in the project do not face major concerns in terms of policy and system, technical aspects, and operation and maintenance status, there are minor concerns related to financial aspects and personnel shortages in institutional/organizational aspects. On the other hand, concerning the Non-classified Roads (NC roads), there are concerns regarding the policy and system, institutional/organizational structure, technology, and financial aspects including risk management, and its specific actions for the future are also undecided. Therefore, sustainability of the project effects is moderately low. In light of the above, this project is evaluated to be satisfactory.

1. Project Description

Improved Rural Road (Left: The Safi Province) (Right: The Essaouira Province)
(Source: taken by the evaluator)

1.1 Background

Morocco's transportation sector accounted for approximately 6% of the GDP and 10% of the urban employment population. Furthermore, taxes related to transportation comprised around 15% of the national income, highlighting the sector's vital role in Morocco's economic and social activities. The country's public road network, managed by the Directorate of Roads in the Ministry of Equipment and Water (Direction Générale des Routes, Ministère de l'Equipement et de l'Eau (DGR)), includes, national, regional, and provincial roads[1]. Additionally, there are NC roads under the jurisdiction of individual communes[2], playing a crucial role in rural transportation. At the time of the appraisal, while more than 80% of Morocco's major roads, including national roads and regional roads, were paved, the development of rural roads was comparatively delayed as the rate of paving for provincial roads remained at 62% (2009) and the rate of road access[3] for rural populations at 54% (2005). The Moroccan Government formulated the *First National Program of Rural Road (PNRR) (1995)* and developed 11,200 km of rural roads (regional road, provincial road, and NC road) in 10 years. To further increase road access for residents in rural areas to 80%, the *Second National Program of Rural Road (PNRR2)* was developed in 2005 as a goal. This project is a yen loan project that supported the target section of a portion of the rural roads in the *PNRR2*.

1.2 Project Outline

The objective of this project is to improve the road access of residents along the target roads by improving the rural roads in the five provinces in northern, central, and inland Morocco, thereby contributing to improvement of rural residents' standard of living and remedying the regional disparities.

Loan Approved Amount /Disbursed Amount	5,981 million yen / 5,789 million yen
Exchange of Notes Date /Loan Agreement Signing Date	July 2011 / July 2011

[1] Highways are managed by the Autoroutes du Maroc (ADM).
[2] It is a municipality equivalent to a city, town, or village and is under the jurisdiction of the Ministry of the Interior.
[3] The rate of road access is defined as "the number of residents of villages with 50 or more households located within 1 km of a road / the number of local residents".

Terms and Conditions	Interest Rate Repayment Period (Grace Period Conditions for Procurement	1.4% 25 years 7 years) General untied
Borrower / Executing Agency	Road Finance Agency/ Directorate of Road, the Ministry of Equipment and Water	
Project Completion	-	
Target Area	Al Haouz, Chefchaouen, Essaouira, Safi, and Settat Provinces	
Main Contractor (Over 1 billion yen)	-	
Main Consultant (Over 100 million yen)	-	
Related Studies	"Special Assistance for the Project Formulation" (2008)	
Related Projects	[ODA Loan Projects] - Rural Road Improvement Project (2008) [Grant Aid Projects] - The project for construction of Institut de Formation aux Engins et á l'Entretien Routier (IFEER) (1991, 1992) - The Project for the improvement of equipment of IFEER in Morocco (2005) [Other Organizations] - European Investment Bank, World Bank, French Development Agency, African Development Bank, OPEC Fund for International Development, Arab Fund for Economic & Social Development, Kuwait Arab Economic Development Fund: Financing for PNRR2.	

2. Outline of the Evaluation Study

2.1 External Evaluator

Hisae Takahashi (Global Group 21 Japan, Inc.)

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: December 2022-January 2024

Duration of the Field Study: May 7-27, September 2-7, 2023

3. Results of the Evaluation (Overall Rating: B[4])

3.1 Relevance/Coherence (Rating: ③[5])

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Morocco

In the *Economic and Social Development Plan (2000-2004)*, development plan as of the

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

[5] ④: Very High, ③: High, ②: Moderately Low, ①: Low

appraisal, the Moroccan government at the time of the appraisal had identified the reduction of disparities between urban and rural areas, economic development of rural areas, and ensuring road access for residents in remote and isolated areas through the development of rural roads as important issues. The goal was also to improve 15,500 km of rural roads through the implementation of the *PNRR2* and to increase the access rate of rural residents to all-weather roads[6] to 80%.

The *New Development Model (2021)*, the development plan in Morocco at the time of the ex-post evaluation, has five goals: prosperity, empowerment, inclusiveness, sustainability, and regional leadership, among the four areas of strategy presented for achieving these goals, "local government and sustainability" states the importance of facilitating mobility within and between regions through the improvement of transportation infrastructure. The *Road Plan 2035 (2013)*, a comprehensive plan for road infrastructure for the year 2035, also indicates that one of its strategic axes is to accelerate the completion of the *PNRR2* and address road development in rural areas to support isolated populations.

Based on the above, the project is consistent with Morocco's development policy both at the time of the appraisal and ex-post evaluation.

3.1.1.2 Consistency with the Development Needs of Morocco

At the time of the appraisal, 57,334 km of public roads (2010) were classified as highways (1.6%), national roads (18.3%), regional roads (17.6%), and provincial roads (62.5%) in Morocco. Moreover, NC roads accounted for 38.5% of all roads and played an important role in traffic in rural areas. While the pavement rate for major roads (highways, national and regional roads) exceeded 80%, the pavement rate for provincial roads was 62% (2009), and the road access rate for rural residents was only 54% (2005), showing a marked disparity between urban and rural areas. At the time of the ex-post evaluation, rural roads have continued to play an important role in the country's transportation, accounting for 73% of the total road network. Improvements have been made since the time of the appraisal, however, the pavement rate of rural roads remains at 72% for provincial roads and 51% for NC roads, and there is still room for improvement[7]. The high utilization of the target section (see "3.4.7 Status of Operation and Maintenance") also indicates that the need for the improvement of rural roads is maintained at the time of the ex-post evaluation.

3.1.1.3 Appropriateness of the Project Plan and Approach

The project output, the total length of the target road, exceeded the plan by 1.6 times. This increase resulted from utilizing the unused funds and adding sections to the project, and it can be said that this change contributed to the improvement of transportation access for the residents

[6] Roads that allow smooth traffic throughout the year, including the rainy season.
[7] Source: Questionnaire answers

along the road, which is the purpose of both this project and the *PNRR2*, of which this project is a part. Therefore, it was an appropriate change. In the *PNRR2* agreements, it was stipulated that communes were responsible for maintaining the NC roads. Additionally, based on the past experiences in the "Rural Road Development Project", phase 1 of this project, the importance of establishing a maintenance system, especially for NC roads, after the project completion was emphasized. Following these circumstances, at the time of the appraisal, it was expected that the Road Finance Agency[8] (Caisse pour le Financement Routier (CFR)) and DGR would coordinate with other aid agencies to support efforts to establish a maintenance system for Communes in charge of NC road maintenance and to follow up on operations after establishment[9]. However, the above efforts were not implemented during the implementation of this project. Therefore, the maintenance system of NC roads by Communes remains as unestablished as it was at the time of the appraisal.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

At the time of the appraisal, the *Overseas Economic Cooperation Operations (2005)* had identified "support for poverty reduction" and "infrastructure development for sustainable growth" as priority areas. For Morocco, "reducing regional disparities" was prioritized and the need to improve economic and social infrastructure, including transportation, was raised. This project is consistent with Japan's aid policy, as it aimed to contribute to improving local residents' road access, living standards, and reducing regional disparities through the improvement of rural roads in provinces with a high poverty rate.

3.1.2.2 Internal Coherence

Rural Road Improvement Project was a project that supported a part of the sections covered by the *PNRR2* as well as this project, and the implementation of both projects contributed to the improvement of road access rates through the improvement of rural roads. As for "the project for the construction of IFEER" and "the project for the improvement of equipment of IFEER" (Grant aid projects), no collaboration and others were planned at the time of the appraisal, and collaboration was not made during implementation. On the other hand, the staff of the executing agency regularly participate in the training programs conducted by the IFEER, and IFEER has provided opportunities for the staff involved in maintenance to maintain and update their maintenance and management skills.

3.1.2.3 External Coherence

The *PNRR2*, implemented by the Government of Morocco, was financed by several donors,

[8] The organization was established in 2004 and plays a treasury-like role in financing and managing funds for rural road development.

[9] Source: Documents provided by JICA and ex-post evaluation report of "Rural Road Improvement Project".

including JICA, with the goal of developing 15,500 km of rural roads and improving the road access rate to 80%. During the implementation, the management unit set up in the DGR coordinated to avoid duplication, and it is reported that the road access rate in the country has reached 79.3% as a result of the *PNRR2*. Of the 15,500 km covered by the *PNRR2*, phase I of "Rural Road Improvement Project" and this project together supported approximately 1,717 km, which means that they contributed approximately 11% of the *PNRR2*. In relation to the international framework, from the perspective of ensuring residents' access to markets and promoting and facilitating logistics by improving rural roads, this project is considered to be consistent with the SDG's several goals, including "1. End poverty in all its forms everywhere," "9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation," and "11. Make cities and human settlements inclusive, safe, resilient and sustainable."

In light of the above, it was confirmed that the project was consistent with Morocco's development plans and needs both at the time of appraisal and post-evaluation, as well as with Japan's development aid policy, support by JICA and other development partners, and international frameworks. Therefore, its relevance and coherence are high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

This project was planned to improve approximately 530 km of rural roads in 30 sections in the five target provinces. The actual outputs are as shown in the table below, with the improvement of 57 sections, totalling approximately 840 km.

Table1 Planned and Actual Outputs

Provinces	Plan		Actual	
	Sections	Km	Sections [Note]	Km
Al Haouz	9	117	10	99
Chefchaouen	2	102	2 (1)	156
Essaouira	2	25	13	154
Safi	3	43	16 (1)	187
Settat	14	243	14 (1)	245
Total	30	530	55 (3)	840

Source: Documents provided by JICA, questionnaire answers

Note: The number in parentheses is the number of sections not yet completed at the time of the ex-post evaluation. The status of those sections is described below. Although there was a slight discrepancy between the information provided in the PCR and the information obtained during the site survey at the sites regarding the actual number of sections (4 sections for Chefchaouen and 15 sections for Settat in the PCR), the number of sections in the table is presented based on the information obtained at the sites.

In this project, the DGR was delegated project management from the CFR. The Direction Régionale De l'Equipement du transport et de la logistique (DRETL) and the Direction Provinciale De l'Equipement, du transport et de la logistique (DPETL), to which the DGR has delegated the authority to implement the project, were in charge of planning and management, procurement procedures and construction management for the main construction. The work

consisted of simple pavement and gravel road improvements. At the time of the appraisal, the plan was (1) simple pavement: 21 sections, totalling 391 km with a width of 6 m (including 2 x 1m shoulders) and (2) gravel road improvement: 9 sections, totalling 139 km with a width of 6 m (including 2 x 1m shoulders). However, at the time of ex-post evaluation, it was (1) simple pavement: 35 sections, totalling 474 km, and (2) gravel road improvement: 22 sections, totalling 334 (both with the same specifications as those at the time of the appraisal). Consulting services were not set in this project because the executing agency had sufficient staff, technology, experience, and past records in the design and development of rural roads.

The increase in output resulted from incorporating additional target sections and total length by utilizing the unused funds generated through competitive bidding, which was approximately 30% below the planned amount, as well as currency fluctuations[10]. The additional sections were selected from a list of sections that met the selection criteria[11], and there was no problem with the validity of the selection. The revision of the plan prepared at the time of the appraisal, which was based on the rough estimate, during the detailed design also contributed to the increase in outputs. While the change did not affect the project cost, it affected the extension of the project period (see 3.2.2.2 Project Period).

It was confirmed during the ex-post evaluation that three sections[12] remained uncompleted. However, even excluding these three sections, the project has achieved outputs that exceeded the plan set at the time of the appraisal. In all three sections, constructions were cancelled midway due to financial issues of the contractors[13]. According to the executing agency, once the prospects for budget acquisition are determined at each DPETL, they will proceed to conduct a re-bidding process and resume construction. However, as of now, no clear timeline is known, and the completion date has not yet been determined.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total project cost was planned at 7,740 million yen (5,981 million yen in yen loans)[14]. The actual project cost was 7,621 million yen (5,789 million yen in yen loans)[15], which was within the plan (98% of the plan). The reason the project cost was lower than planned was due to contracted amounts being lower than anticipated and currency fluctuations. Furthermore, as for the additional section's expenses, the unused portion of the yen loan was utilized as mentioned above.

[10] At the time of the appraisal: 1 euro=112.4 yen; 1 euro=106.3 yen in April 2012, when the utilization of the outstanding balance was examined.
[11] The list is a document that contains a summary of the agreements reached with the executing agency of the partner country during the planning stage regarding the content of cooperation. Source: Documents provided by JICA
[12] RN2-Bni Mansour-RN16 section in Chefchaouen, Ain Saerni a la RP 3606 section in Settat, Douar Lamsaadia-P2323 section in Safi.
[13] According to the executing agency, it is not uncommon in Morocco for construction to be halted due to the financial problems of contractors. In many cases, due to the highly competitive bidding process, a bidder wins the contract at a low price and is forced to suspend the construction work due to financial difficulties during the implementation phase.
[14] Source: Documents provided by JICA
[15] Source: Documents provided by JICA, questionnaire answers

However, any construction costs exceeding the yen loan repayment amount were covered by the Moroccan side. As a result of the increased outputs, the value-added tax also increased, which led to a slight excess over the planned Moroccan portion.

3.2.2.2 Project Period

The project was planned to be implemented in 27 months, from March 2011 to May 2013. In fact, as stated in 3.1.1 Outputs, as the construction of three sections remains incomplete, it cannot be said that the project has ended at the time of the ex-post evaluation. Therefore, the project period cannot be accurately ascertained, however, as of the second field survey of the ex-post evaluation (September 2023), 147 months have already passed, which significantly exceeded the plan (544% of the plan).

Table 2 Plan and Actual of the Project Period

	Plan	Actual
L/A signing	March 2011	July 2011
Bidding and contracts	March – May 2011	May 2011- December 2015
Construction	May 2011 – May 2013	September 2011- uncompleted Note
Project completion	December 2013	Uncompleted as some sections remain incomplete

Source: Documents provided by JICA, questionnaire answers

Note: The sections, excluding the three uncompleted sections, were completed in August 2018.

The other factors contributing to delays were as follows:

1) Increase in output: As explained in "3.2.1 Output", the target sections and total length were increased by utilizing the unused funds generated through competitive bidding and currency fluctuations. This expansion also led to an extension of the project period.
2) Change in construction method: Due to landslide-prone soil conditions, a two-stage paving method was adopted, extending the construction period by approximately 34 months. (Chefchaouen Province)
3) Adverse weather conditions: Due to adverse weather conditions in 2012 and 2013, there was an approximately 5-month delay. (Chefchaouen Province)
4) Additional survey before the two-stage pavement: Damages to the road surface caused by heavy rain in 2015 necessitated a re-examination of the second-stage construction method, requiring approximately 11 months for the additional survey. (Chefchaouen Province)
5) Delays due to re-biddings and changes of the contracted contractors, resulting in re-procurement. (Approximately 49 months in Essaouira Province and 52 months in Settat Province[16])

[16] In the Settat Province, construction was cancelled due to financial issues with the contractor, leading to a lengthy process of contract termination, re-bidding, and the resumption of construction. As for the Essaouira Province, although confirmation was sought from the DPETL (Essaouira), detailed information could not be obtained.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

- Financial Internal Rate of Return (FIRR)

FIRR was not calculated at the time of the appraisal as this project was not designed to increase profitability. For this reason, a recalculation was not carried out at the time of the ex-post evaluation.

- Economic Internal Rate of Return (EIRR)

At the time of the appraisal, the EIRR was calculated to be 12.5%, assuming that the reduction of total travel time for car users was considered benefit, and the project cost and operation and maintenance cost were regarded as the cost with a project life of 10 years. Under the same conditions as the period of the appraisal, recalculation was attempted at the time of the ex-post evaluation. The result was 27.8%, which was higher than what was assumed at the time of appraisal. The reason for this was that the project cost per unit of road length was lower than planned. Additionally, it can be noted that the extended project period has reduced the negative impact of the initial cash flow, resulting in a higher EIRR[17].

In light of the above, the project cost was within the plan, however, the project period largely exceeded the plan. Therefore, efficiency of the project is moderately low.

3.3 Effectiveness and Impacts[18] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In this project, the indicators including increased traffic volume, shortened travel time, and reduced impassability days due to natural disasters of the target sections, were set at the time of the appraisal. The table below shows a summary of the achievement status of the selected sections as representative routes during the appraisal among all the target sections (see Appendix for the results for all target sections).

[17] Generally, the IRR decreases as benefits are delayed due to the extended project period. However, in this project, the benefits were realized even before the entire project was completed because each section was completed. Therefore, the delay in benefits has not been a factor in lowering the IRR.

[18] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Table 3 Planned and Actual Operation and Effect Indicators (Representative Sections)

	Baseline value	Target value	Actual value		
	2010	2 Years After Completion	2020	2021	2022
1) Annual average daily traffic volume (vehicle/day) Note1					
- NR2 Bni Mansour-RN16 (a)	50	64	40	62	66
- HAD HARARA-RR204 (b)	200	255	865	900	935
- Mediouna a la RP3305 (b)	120	153	209	250	283
- Settat-Rasain (b)	250	319	375	416	449
- Smimou Barrage-Imin Elhad	0	60	65	68	70
2) Travel time (minutes) (necessary time for passing) Note3					
- NR2 Bni Mansour-RN16 (a)	170	85	100	100	100
- HAD HARARA-RR204 (b)	N.A.	15	15	15	15
- Mediouna a la RP3305 (b)	35	-	24	24	24
- Settat-Rasain (b)	44	-	29	29	29
- Smimou Barrage-Imin Elhad	120	10	15	15	20
3) Impassability days due to natural disasters (day/year)					
- NR2 Bni Mansour-RN16 (a)	120		0	0	0
- HAD HARARA-RR204 (b)	0		0	0	0
- Mediouna a la RP3305 (b)	30	All sections	0	0	0
- Settat-Rasain (b)	30	0	0	0	0
- Smimou Barrage-Imin Elhad	365Note4		5	5	5

Source: Documents provided by JICA, documents provided by DPETL

Note 1: The actual values for (a) are estimated values based on observations during inspections conducted by the DPETL, and the actual values for (b) are counted.

Note 2: Although two years after completion should be the target year for each section, the year of completion for the 57 sections varied from section to section, some sections remain incomplete, and although some sections were completed in 2013, traffic volume data as of 2015 was not available. Therefore, the achievement status of traffic volume increase was analyzed based on the most recent year's information.

Note 3: Travel time for the target sections (in minutes)

Note 4: The road was impassable at the time of the appraisal, therefore the baseline value was set as 365 days.

1) Annual average daily traffic volume

The annual average traffic volumes in all representative sections met the target goals. Additionally, all but two non-representative sections also achieved their target values. (see Attachment 1). Although the data includes information for sections that are not actually counted, all respondents in the interviews with residents and drivers[19] along the target sections indicated that traffic volume increased after the road improvement, indicating that traffic volume increased in the target section as a result of the road improvement.

2) Reduction of travel time

Initially, travel time was defined as the cumulative travel time of all vehicle users on each section during the appraisal. However, maintenance staff in each province found this definition to

[19] Through the first field survey and follow-up survey conducted by the local assistant, group interviews were conducted with a total of 197 drivers and local residents along the target route (66 in the Settat province, 26 in the Al Haouz province, 42 in the Essaouira province, 50 in the Safi province, and 13 in the Chefchaouen province).

be complex and challenging for obtaining accurate results. Consequently, in this ex-post evaluation, it was focused on assessing the changes in travel time for each section before and after the project's implementation. As a result, it was confirmed that the travel time was shortened in each section as shown in the table (see Attachment 2 for the actual value of all targeted sections). This was attributed to the fact that many sections are now accessible to vehicles, which was difficult before the project was implemented. In interviews with residents and drivers, all respondents also indicated that the time required for travel had been reduced after the road was improved. Due to the use of alternative indicators, determining the exact status of target achievement is challenging. Hence, this indicator is considered as a reference.

3) Reduction in the number of impassable numbers of days due to natural disasters

The implementation of this project has solved the situation where the unpaved road was blocked by floods and the road was muddy and impassable due to heavy rain, the number of days when the road was impassable was reduced to 0 for all but one section, meeting the target objective. However, it has been observed that some parts of all target sections still experience up to three days of impassability annually, primarily due to floods and similar factors (refer to Attachment 3).

3.3.1.2 Qualitative Effects (Other Effects)

As a qualitative effect, it was expected that road access for residents along the road would be improved through the development of the targeted sections. The *PNRR2*, of which the project was a part of the implementation, also had the goal of achieving a road access rate of 80%. Although the project did not set a target value for each area, the same value after the project was implemented was improved in all areas compared to before the project was implemented, thus, it is considered that the road improvement through the project contributed to the improvement of road access rate.

Table 4 Rate of Road Access

	Before implementation (2012)	After implementation (2022)
Al Haouz	62%	70%
Chefchaouen	53%	69%
Essaouira	65%	74%
Safi	65%	85%
Settat	56%	70%

Source: Questionnaire answers

3.3.2 Impacts

3.3.2.1 Intended Impacts

As for the impact of the project, it was expected to contribute to the "revitalization of the local economy" and "improvement of the living environment for local residents". Through interviews with the executing agency and residents living along the target roads mentioned above (see

footnote 19), the following effects were confirmed.

(1) Revitalization of the local economy

In interviews with local residents, about 60% of respondents reported a change in local economic activity. Specific examples include the opening of stores and coffee shops due to the increased traffic and the construction of new factories and houses due to the easier and cheaper transportation of materials. In areas where agriculture is a major industry, it was also reported that the transportation of agricultural products has become easier. However, a large increase in harvest volumes has not been confirmed in recent years due to weather changes, and the economic impact of the project was considered limited[20].

(2) Improvement of the living environment for local residents

- Reduced travel time and improved accessibility

All interviewed respondents reported a reduction in travel time to their destinations (such as markets, government offices, hospitals, etc.) after the road improvements. Before the project's implementation, the majority of the target sections was not in a condition suitable for vehicle traffic, and the fact that vehicles, buses, and carriages became accessible significantly improved access for local residents to their destinations.

【BOX】Case 1: Shortened travel time and improved accessibility

Target section: Smimou Barrage-Imin Elhad section (Gravel road improvement), the Essaouira Province

Before the road was improved by the project, this section was an unpaved road. Because vehicles could not travel on the road, the major agricultural products in the area, such as argan, olives, gas used daily, and daily necessities, were mainly transported on foot or by horseback. Residents of Edhraouine, a community along the section, used to take half a day to go to the main nearby market to buy and sell goods and return to Edhraouine, but now that vehicles and horse-drawn carriages can travel, the time required for the above tasks has been reduced to about one hour.

Rural road improved by the project
(Source: taken by the evaluator)

- Increase in the school enrolment rate of girls[21]

In interviews with the local residents in the target sections, all respondents indicated that girls' access to education improved after the road was improved. In some areas of Morocco, families are more likely to avoid having girls walk long distances to schools or send them to boarding

[20] The impact evaluation of this project conducted in 2019 reported that while employment and income in the agricultural and self-employment sectors were declining overall, it was smaller in areas where the roads were improved. (Source: Impact Evaluation of Rural Road Improvement Project in Morocco (2019))

[21] The impact evaluation mentioned above also explained that the effect on girls' secondary education was particularly pronounced. While there was no change in girls' secondary school enrollment in 2011 and 2017 in the Control Group (without intervention), there was an improvement in the same enrollment rate in the Treatment Group (with intervention). (However, the rate remained very low and the degree of improvement was modest.) (Source: Impact Evaluation of Rural Road Improvement Project in Morocco (2019))

schools. Through road improvement, roads have become accessible to vehicles, and communities in many areas have purchased school buses to transport children to and from schools. This has contributed to an increase in enrolment in secondary schools and colleges, especially for girls, as they can now attend schools by bus, whereas previously they had to stay in boarding schools when attending secondary schools and colleges[22].

【BOX】Case 2: Improvement in enrolment

Target section: P3034: Médiouna - RP3305 section (Simple pavement) in the Settat Province

Before the implementation of the project, the town of Ouled Zidane had only a primary school, and it was difficult for the children to go to secondary schools in a neighboring town (Médiouna), therefore they had to live in a boarding house and return home on weekends to study at the secondary schools. After the road was improved, the secondary school was constructed in Ouled Zidane, and the community also purchased 6 school buses. In some areas, there is often a tendency to discourage girls from walking long distance to school. Therefore, in these areas, the introduction of school bus services has improved girls' enrolment rates by providing transportation for students. Furthermore, the improved road has facilitated vehicle travel, allowing teachers who previously faced commuting challenges to be assigned, thereby enhancing the educational environment in the area.

Community bus travelling on improved rural road (Source: taken by the evaluator)

- Improved access to health services

96% of the respondents interviewed answered that access to health services has improved compared to before the project was implemented. Some of the contributing factors include improved road, which has made it easier and faster to access hospitals and clinics. Additionally, the availability of ambulances to reach the community has enabled the transportation of critically ill patients.

[22]While primary schools are often located in local communities, secondary schools and colleges in many areas require students to commute to nearby cities. In areas where students were forced to live in boarding schools to attend secondary schools and colleges, school bus transportation makes it possible for students to commute from their homes.

【BOX】Case 3: Improved access to health services and others

Target section: NC road, Douar Agaiouar-Amerzouart section (Gravel road improvement), the Al Haouz Province

The Douar Agaiouar-Amerzouart section was unpaved before the project was implemented, and the community had no residents who owned cars. Therefore, walking and domestic animals were the primary means of transportation, and access to Ourika, where the market and hospital are located, required 4-5 hours. Pregnant women who were about to give birth also used to travel by horseback or other means, and it was not uncommon for the delivery to be timed before they reached the hospital. After the implementation of this project, two vehicles started being used for transportation between the community and Ourika. This significantly improved residents' access to essential services. The improved roads also allow ambulances to access the village.

Vehicles connecting the community with neighboring cities
(Source: taken by the evaluator)

- Improved logistics and people networking

Although only 62% of respondents reported that the roads have increased economic activity in the area, residents reported that they have facilitated the transportation of building materials and increased the number of homes in the region. Furthermore, families and residents who had left the town for employment or further education have been utilizing taxis and other means of transportation to return to the town, especially during Eid (Islamic holiday) and other occasions, leading to an increase in opportunities for family reunions.

【BOX】Case 4: Promotion of family reunions and enhancement of logistics networks

Target section: Tighdouine - Ait Anzal jbel section (Simple pavement), the Al Haouz Province

The village of Ait Oughdine is located approximately 10 km from an area where gas and other daily necessities can be purchased. Before the road was improved, the main means of transportation were horses, which made it difficult to transport construction materials. It was also not easy for families who left for higher education or work to return home frequently. After the road improvement, it became possible for trucks and taxis to travel, facilitating the transportation of construction materials. Consequently, transportation costs have also decreased, leading to an increase in the construction of buildings in the area. Furthermore, Former residents from the same area who had moved to the city have also increased opportunities to return to their hometown by utilizing taxis and other means of transportation. In addition, it has become easier to transport onions and other agricultural products grown in the same area to the market, leading to an increase in cultivated land.

Vehicles traveling with equipped local roads (Source: taken by the evaluator)

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

This project was judged to fall into Category B under the *JBIC Guidelines for Confirmation*

of Environmental and Social Considerations (established in April 2002) as it did not fall under the category of large-scale road projects, and it has been judged that the adverse environmental impacts are not significant, and it does not correspond to the characteristics and regions susceptible to the impacts as outlined in the guidelines. The preparation of an Environmental Impact Assessment report was not mandated under domestic law, and it was not prepared in this project. However, simplified environmental management plans have been created by the DRETLs and DPETLs. Measures identified in the simplified environmental management plan, such as dust control (water sprinkling), noise control (limitation of construction hours), transport and disposal of waste to approved locations, and restoration of the construction site to its original condition, were complied with by the contractor during project implementation. Although monitoring records could not be verified on-site, interviews with the executing agency and local residents answered that there were no negative impacts, and it was confirmed that there were no complaints from the residents.

2) Resettlement and Land Acquisition

Resettlement and land acquisition were not assumed in this project from the outset and did not actually occur[23].

3) Gender Equality

The project expected impacts such as the improvement of the enrolment rate of girls in primary schools and a reduction in female labor associated with firewood collection (due to increased access to distribution vehicles for gas and water), among others. According to interviews with the executing agency and residents, it was found that prior to the implementation of this project, the target area was already using gas, and firewood collection by women was not a common practice. On the other hand, the improvement of roads has led to an increase in the enrolment rate of girls who had limited access to educational opportunities due to travel constraints (refer to the "Increase in the school enrolment rate of girls" mentioned above).

4) Marginalized People

Through the road improvement of the project, the project contributed to the improvement of the environment for people who had limited access to medical services, education, and markets along the targeted section, as described in "3.3.2.1 Intended Impacts." Furthermore, when determining the target sections, the selection criteria included "population with no access to rural roads,"[24] and the development of the project's target section is considered to have provided an equitable opportunity for social participation to people who previously had no access to roads or faced restrictions in this regard.

[23] Source: Questionnaire answers, interviews with the executing agency
[24] Source: Documents provided by JICA, questionnaire answers

5) Social Systems and Norms, Human Well-being and Human Rights

No specific or direct initiatives from the perspective of social systems, norms, human well-being, or human rights were articulated at the time of the appraisal, and no related impacts occurred during or after implementation or completion.

6) Unintended Positive / Negative Impacts

- Shortening the time involved in gas purchases

In the target area, the time required to purchase household goods, especially gas, has been reduced after the road improvements, contributing to a decrease in the amount of workload. Interviews with the residents revealed that all respondents reported a reduction in workload due to the road improvements. One of the contributing factors was the reduction in the time spent for purchasing various goods, especially gas in all the areas. Previously, most communities transported gas on foot or by domestic animals from areas where it could be purchased. After the road improvements, it has been observed that various goods could be transported by vehicles, leading to the opening of shops in the area that deal with gas, making the purchase of gas more convenient.

Vehicle transporting gas (Chefchaouen province) (Source: taken by evaluator)

In the target sections, an increase in traffic volume and a reduction in the number of impassable days due to natural disasters generally met the target values. Travel times for travel were shortened, and the road access rates in the target areas also improved. After the road improvements, the availability of vehicles and horse-drawn carriages has made it easier for local residents to travel to markets and other destinations, and to obtain daily necessities. Moreover, girls' school enrolment and access to health services have also improved. While the impact on the revitalization of the local economy was considered limited, impacts such as an increase in the construction of buildings due to the decrease in transportation costs of materials and the opportunities for families to gather more frequently due to the improved environment for easy travel back from urban areas have also been observed.

In light of the above, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

The maintenance of regional and provincial roads in Morocco is carried out in accordance with the *Road Maintenance Program*. The program is a common maintenance plan formulated by the

DGR that includes 1 year, 3 years, and 5 years action plans. On the other hand, the maintenance of NC roads is handled by Communes and is not included in this plan. Furthermore, no plan that corresponds to the Plan has been prepared for NC roads, and the institutional structure is not fully developed.

3.4.2 Institutional/Organizational Aspect

The operation and maintenance (O&M) of regional and provincial roads are carried out by the DRETLs and DPETLs. Communes are responsible for the maintenance of NC roads. The number of O&M staff and their adequacy or shortage of the DPETLs, which is mainly responsible for the target of this project, are as follows. According to the DPETLs, which is experiencing a shortage of staff, the workload on each person in charge is high and delays occur due to the inability to allocate the necessary staff to carry out required maintenance activities. DPETLs directly manage simple repair work, while complex repairs and those requiring equipment not owned by DPETLs are outsourced. In cases where issues arise that cannot be addressed through common responses, it is also possible with the DRETLs, and support can be obtained from the DGR as needed.

Table 5 Number of O&M Staff in the Target Area

Provinces	Engineers [Note]	Technicians	Staff shortage
Al Haouz	4	12	
Chefchaouen	3	7	✓
Essaouira	1	4	✓
Safi	2	3	
Settat	2	5	

Source: Questionnaire answers, hearing to each DPETL
Note: University graduate, national qualification

While each commune responsible for the O&M of NC roads basically has one engineer in place, the maintenance of NC roads is solely entrusted to communes. According to the DPETLs and local residents, in many cases, the O&M system is not adequately established. Moreover, specific actions planned at the time of the appraisal to establish and strengthen the O&M system for NC roads have not yet been addressed.

As mentioned above, a shortage of staff has become a minor issue for some DPETLs, and a challenge lies in the lack of established O&M systems for NC roads under the jurisdiction of communes since the time of the appraisal.

3.4.3 Technical Aspect

DPETLs responsible for O&M of national, regional and provincial roads have engineers and technicians in place, and there are no technical issues. In addition to training at the regional level, staff have regular opportunities to participate in training at the IFEER. The training aims to maintain and update technical capabilities in maintenance and includes various aspects such as

pavement construction techniques and geotechnical engineering[25]. Manuals for road repair and reinforcement have also been developed. DPETLs have also outsourced repair work to private companies, all of which possess the necessary technical expertise, and there are no concerns. On the other hand, regarding NC roads, most communes do not have specialized departments, and the O&M manuals are not provided.

In light of the above, there are no technical competence issues for the DPETL staff, however, technical challenges remain for O&M of NC roads that the commune is responsible for.

3.4.4 Financial Aspect

The DRETLs/DPETLs are financed by the general budget and budget distributions from the Special Road Fund. The maintenance budget for each DPETL is shown in the table below. The allocation and fluctuations in budget amounts vary from one province to another based on the level of need. According to the DPETLs, the amount needed for proper maintenance of all target sections is large and beyond the financial capacity of each area. The primary reason for the lack of appropriate response to the necessary repairs in the target sections is insufficient budget allocation, as each DPETL does not receive a sufficient budget. Financial sources could not be ascertained for NC roads managed by communes.

The target sections of the project include many sections that were completed in 2013. With a decade having passed since completion, many sections now require maintenance, and budgetary insufficiency remains a significant concern for maintenance.

Table 6 Maintenance Budget of Each DPETL

(Unit: millions of Morocco Dirham(MAD))

	2020	2021	2022	2023[Note]
Al Haouz	24	69	32	80
Chefchaouen	20	25	10	5
Essaouira	26	17	31	48
Safi	71	132	152	103
Settat	104	87	92	7

Source: Questionnaire answers

Note: The budget for 2023 is the projected amount.

3.4.5 Environmental and Social Aspects

No negative environmental and social impacts were reported as described in “3.3.2.2. Other Positive and Negative Impacts 1) Impacts on Environment. However, some residents have reported concerns regarding the trend of increasing vehicle travel speeds. The need for the installation of travel speed limit signs was mentioned as a measure to prevent traffic accidents[26].

[25] According to the DGR, training budgets were decreased in FY2022 and regional-level training has not been implemented.

[26] According to the local residents and executing agency, despite the installation of an appropriate number of road signs to ensure the safety in the project, some may have been reduced due to vandalism.

3.4.6 Preventative Measures to Risks

Disaster occurrences present a notable risk to road maintenance, as outlined in each DPETL. Despite this, DPETLs have historically managed to carry out necessary repairs after disasters. The DPETLs also recognize the importance, even considering support from DRETLs for future responses. Regarding NC roads, it is expected that repair work may not be necessary for approximately 5 to 10 years after completion. On the other hand, as previously mentioned, the maintenance systems of the commune have not been established as of now, and there are no apparent activities of appropriate maintenance of NC roads. Therefore, concerns remain regarding the implementation structure for the future maintenance of NC roads[27].

3.4.7 Status of Operation and Maintenance

Among the target sections, 27 sections (50%) are in good maintenance condition, 21 sections (39%) have some damage, and 5 sections (9%) have serious damage. There are no sections that are not in use[28]. The factors leading to damage were mainly disasters such as heavy rainfall and flooding, as well as the high volume of heavy vehicle traffic. During the site inspection, it was also observed that in areas with heavy rainfall and high traffic volumes of large vehicles, uneven road surfaces were observed. For regional and provincial roads, inspections and repairs were carried out in some sections to address these issues. However, for NC roads, cleaning and repairs were insufficiently maintained.

Table 7 Maintenance Status of the Target Sections

(Unit: number of the road section)

	Good		Some damages		Serious damages		Not in used	
	Regional/ Provincial roads	NC Road	Regional/ Provincial roads	NC Road	Regional/ Provincial roads	NC Road	Regional/ Provincial roads	NC Road
Al Haouz	2	1	2	5	0	0	0	0
Chefchaouen	0	0	1	0	0	1	0	0
Essaouira	0	2	5	4	0	2	0	0
Safi	4	7	1	3	0	0	0	0
Settat	11	0	0	0	2	0	0	0
Subtotal	17	10	9	12	2	3	0	0
Total	**27 (50%)**		**21 (39%)**		**5 (9%)**		**0**	

Source: Questionnaire answers

Note: Safi and Settat do not include the uncompleted sections.

Regarding the maintenance plan, it is as explained in (1) the Policy and System. Plan has been utilized for regional and provincial roads, and the data for repair has been also recorded and managed. For regional and provincial roads, the DPETLs are expected to continue implementing

[27] While specific actions were not taken during the project implementation, it is worth noting the Ministry of Equipment and Water has initiated a priority maintenance program for NC roads in 2023, named “the Pilot Program for the Protection of Unclassified Rural Roads (Programme Pilote de Sauvegarde des Routes Non Classées).” This program aims to ensure the maintenance of approximately 500 km of roads nationwide.

[28] Source: Questionnaire answers

the necessary maintenance with communication to the DRETLs and, if necessary, the DGR. On the other hand, there is no maintenance plan for NC roads, and even for roads that currently do not require repair, there is concern about future response.

Moreover, the sections developed in this project were uniformly designed with a width of 4 m (6 m including shoulders) in line with the standard of Morocco. The project targeted rural roads, and while there is no problem on sections where small vehicles, horse-drawn carriages, and pedestrians are the main users, the width is narrow on sections where relatively heavy vehicles are traveling, and the DPETLs, drivers, and residents have expressed many requests for widening. At the time of design, it would have been an idea to examine whether different widths could be applied to areas where heavy vehicles are expected to travel, based on the conditions of the target sections[29].

As described above, at the time of the ex-post evaluation, there are no major issues on policy and systems, technical aspects, and status of operation and maintenance for regional and provincial roads. However, there are minor issues on institutional and financial aspects as staffing and budget shortfalls that were reported in a few provinces. Regarding the sustainability of NC roads, some issues have been observed in the policy/system, institutional/organizational, technical, and financial aspects. Moreover, as risk mitigation measures, efforts to establish a maintenance system by the communes with jurisdiction over NC roads have not yet been initiated, and specific measures for the future have not yet been determined. Therefore, sustainability of the project effects is moderately low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to improve the road access of residents along the target roads by improving the rural roads in the five provinces in northern, central, and inland Morocco, thereby contributing to the improvement of rural residents' standard of living and remedying the regional disparities. This project has been relevant to Morocco's development policy and needs. The project, along with "Rural Road Improvement Project" (Phase I of the project), which was supported by JICA, and other development partners, facilitated the implementation of the Moroccan government's rural road improvement program, and the outputs have been confirmed to a certain extent. Therefore, the relevance and coherence are high. By utilizing the unused funds generated due to exchange rate fluctuations and bids lower than anticipated, the output increased; however, the project cost was within the plan. Meanwhile, the project period largely exceeded the plan, therefore the efficiency is moderately low. After the road improvement, the increase in traffic volume and the reduction in the number of days of impassability due to natural disasters in the target sections mostly achieved the target values, and the travel time and road access rate in the

[29] According to the CFR, despite the standardized design of rural roads, DGR may widen or reinforce the relevant sections if the surveys reveal heavy traffic volumes and depending on the available budget.

area have been also improved. Although the impact on the local economy is considered limited, impacts such as improved convenience for local residents, improved school enrolment (especially for girls), and access to medical services have been confirmed in the target section. Therefore, the effectiveness and impact are high. While the operation and maintenance of regional and provincial roads in the project do not face major concerns in terms of policy and system, technical aspects, and operation and maintenance status, there are minor concerns related to financial aspects and personnel shortages in institutional/organizational aspects. On the other hand, concerning the NC roads, there are concerns regarding the policy and system, institutional/organizational structure, technology, and financial aspects including risk management, and its specific actions for the future are also undecided. Therefore, sustainability of the project effects is moderately low. In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Installation of traffic signs to prevent traffic accidents

In the target section where the roads have been improved, there is a noticeable trend toward increased vehicle travel speeds, which is a concern for local residents as it leads to the occurrence of traffic accidents. On the other hand, it is reported that the number of road signs installed in the target sections is limited under the current circumstances. In the future, it is recommended that the DGR formulates and executes a plan to install additional road signs indicating maximum speed limits to prevent traffic accidents. Additionally, it is advisable to encourage the National Road Safety Agency[30] to set up educational opportunities for drivers, communities, and local schools to promote adherence to traffic rules.

Reinforcement of maintenance system for NC road

(This recommendation is directed not only to the Executing Agency but also to the Ministry of Interior.)

At the time of the appraisal, it was planned that the CFR and DGR would support efforts by each commune to establish maintenance, as well as supervise and guide operations once established. However, throughout the project implementation, support or encouragement has not been provided to communes, and the maintenance system of NC roads by communes has remained the same as at the time of the appraisal. As a result, the majority of NC roads have not been properly repaired. In order to ensure that NC roads are properly maintained in the future, it is crucial that the CFR and DGR collaborate with the Ministry of Interior at the earliest to offer necessary advice on maintenance plans for NC roads. Additionally, Ministry of Interior is required to aim to strengthen the maintenance system, considering the involvement of the

[30] In Morocco, road user awareness is supported by the National Road Safety Agency (NARSA), which conducts awareness, communication, and training programs in both urban and rural areas.

DPETLs as needed.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Design at the time of planning for safe and effective road utilization

In this project, the width of the target section was initially designed to be a uniform 4 meters with an additional 1 meter on each side for road shoulders. However, feedback from the DPETLs, drivers, and residents during site surveys highlighted the road's narrowness. This width is not problematic in sections with low vehicle traffic, but it becomes hazardous when larger vehicles pass, leaving very little clearance. The need for vehicles to use the road shoulders not only endangers pedestrians but also damages the shoulders. In large scale projects involving numerous target sections like this one, during the planning stage, it is advisable for executing agencies and consultants involved in design not to uniformly apply the design. Instead, it is desirable to involve local authorities and understand the needs for each section, setting multiple design patterns. This approach allows for the application of designs that are more user-friendly and can be better utilized.

Follow-up system for projects where consulting services are not involved

At the time of the project appraisal, the importance of establishing a maintenance system, especially for NC roads, after the project completion was emphasized. Therefore, it was planned to support communes in establishing a maintenance system for NC roads, as well as supervise and guide their operations once established. However, such support was not implemented in this project, which left challenges in the O&M system of NC roads. One of the reasons for the lack of this support can be attributed to the fact that consulting services were not set in this project. In cases of projects where consulting services are not anticipated, and there is a need for certain technical support, at the appraisal stage, it is essential for JICA and executing agencies to agree on the entity responsible for providing that support and its associated responsibilities, and JICA needs to provide continuous follow-up to ensure the support is carried out and fulfilled effectively.

Setting an ongoing system with consideration for post-project maintenance

The target sections of this project consist of regional and provincial roads, as well as NC roads, which are under the jurisdiction of communes, a sub-organization of the Ministry of Interior. During the implementation of this project, the DGR was involved as an executing agency and subsequently conducted monitoring of the target sections. However, after the completion of the project, the maintenance of NC roads has been almost non-existent. The Ministry of the Interior’s low involvement in the project likely contributed to the lack of awareness of its responsibility for

the maintenance of NC roads after the completion of the project, which may have contributed to the lack of implementation of maintenance after the project completion. In cases where multiple agencies are envisioned to be responsible for the maintenance of facilities or equipment, it is necessary to have these agencies actively involved in the project during the implementation stage or clearly define the responsibility for maintenance. By doing so, a commitment to involvement can be established, ensuring the establishment of a system where maintenance is carried out effectively.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None

5.2 Additionality

None

(End)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	Target provinces: Five provinces Total length: 530 km Number of sections: 30 sections 1) Simple pavement 391 km, 21 sections 2) Gravel road improvement 139 km, 9 sections (a width of 6 m, including 2 x 1 m shoulders)	Target provinces: Five provinces Total length: 840 km Number of sections: 55 sections 1) Simple pavement 529 km, 35 sections 2) Gravel road improvement 312 km, 22 sections (a width of 6 m, including 2 x 1 m shoulders)
2. Project Period	March 2011-May 2013 (27 months)	July 2011-September 2023 (147 months)
3. Project Cost Amount Paid in Foreign Currency Amount Paid in Local Currency Total ODA Loan Portion Exchange Rate	 311 million yen 7,429 million yen (761 million MAD) 7,740 million yen 5,981 million yen 1MAD = 9.75 yen (As of October 2010)	 5,789 million yen[31] 1,882 million yen (164 million MAD) 7,621 million yen 5,789 million yen 1MAD = 11.44 yen (Average during the project period)
4. Final Disbursement	November 2018	

[31] The ratio of foreign and local currency is significantly different from that at the time of the appraisal. This is because the special account method was applied for this project. Under this method, JICA disburses the funds to the account of the executing agency in the partner country, and the executing agency pays the suppliers and contractors from this account. Since the transaction of funds is basically restricted to Japanese yen, even if the contract currency between the executing agency and the contractor in Morocco is the local currency, the loan execution is treated as foreign currency.

[Appendix 1: Annual Average Daily Traffic for the All-Target Sections (vehicles/day)]

Province	Route	Liaison	Baseline	Target	Actual		
			2010	2 years after project completion	2020	2021	2022
Al Haouz	NC	Douar Agaiouar-Amerzouart	-	100	N.A.	N.A.	20
	NC	Tidili-Tighdouine	50	64	N.A.	N.A.	87
	NC	Tighdouine-Ait Anzal jbel	50	64	N.A.	N.A.	200
	NC	Ijoukak-Ounein	50	64	N.A.	N.A.	84
	P2009	Azegour-Adassil (C)	50	64	N.A.	N.A.	145
	P2009	Azegour-Adassil (A)	50	64	N.A.	N.A.	145
	P2014	Tamesloht - SYBA	-	300	N.A.	N.A.	554
	NC	OA Type dalot Oued Agoundis	50	64	N.A.	N.A.	84
	NC	OURIKA /S.A GHIAT	100	128	N.A.	N.A.	590
	P2036	Ighil-Azgour	-	250	N.A.	N.A.	98
Chefchaouen	P	B.Berred-Jbel Azri	50	64	35	60	65
	NC	**RN2-Bni Mansour-RN16**	**50**	**64**	**40**	**62**	**66**
Safi	NC	RR301-RP2309	50	64	88	92	96
	NC	RR201 (PK42)-Ouled Bouzid	50	64	102	110	114
	P	**HAD HARARA-RR204**	**200**	**255**	**865**	**900**	**935**
	RP2302	Labkhati -RP2306	10	60	70	73	76
	NC	Ras EI Ain-Sidi Ahmed	20	70	80	84	88
	RP2325	Barakat khail - Laamamra	5	30	40	50	55
	RP2318	Tnine ghiate-khmiss oulad Lhaj	5	120	120	130	133
	RP2005	Sidi Chiker-RR201	5	30	30	32	36
	NC	RR201-Dhamna	5	20	30	32	36
	NC	Guaguen-RP2321	10	30	40	45	50
	NC	Guaguen-RP2321	10	30	40	45	50
	NC	Tlet Ighoud-Lamtahra	5	40	60	65	70
	NC	RR201-Ouled Bouzid	50	64	102	110	114
	NC	Douar Lamssaadia-P2323	5	10	15	20	20
	NC	P2321(Nga)-P2319 (laaroussiyine)	5	20	25	30	30
Settat	P3610	RR318-a Ouled fatima	120	153	209	250	283
	P3607	Sidi rahal Chatii-RP3606	150	191	247	288	321
	P3620	Ouled said a Gdana	120	153	209	250	283
	P3614	RR318 a Dar Toudi	150	191	247	288	321
	P3607	Sidi rahal Chatii-RP3606	120	153	209	250	283
	P3629	Ras EI Ain a Guisser	150	191	247	288	321
	P3014	Oulfa a sidi Abdellah Chrif	200	255	311	352	385
	P3007	RN1 a la RP3011	200	255	311	352	385
	P3305	Sidi Hajjaj a Mgarto	120	153	209	250	283
	P3034	**Mediouna a la RP3305**	**120**	**153**	**209**	**250**	**283**
	P3601	RN9 a Tnine Toualet	150	191	247	288	321
	P3609	Ain Saemi a la RP 3606	150	191	*247*	*288*	*321*
	P3628	SIDI BOUMEHDI-MESTOURA	130	166	222	263	296
	RP3616	**Settat-Ras ain**	**250**	**319**	**375**	**416**	**449**
Essaouria	**NC**	**Smimou Barrage Imin Elhad**	**-**	**60**	**65**	**68**	**70**
	NC	Ounagha-Ait Hamou	20	26	30	40	50
	P2210	Had dra -RR301	-	10	15	20	25
	NC	Had dra -Ait Elhoucine	-	10	15	20	25
	P2213	Lagdadra - Sidi Aissa Regragui	5	20	25	30	40
	NC	Takoucht - Sidi Ghanem	5	10	15	20	30
	NC	Adaghass - Adrar	-	5	15	20	30
	NC	Sidi Ishak - Sidi Ali kourati	10	20	30	35	40
	P2216	Aeroport Essaouira - Sidi Eljazouli	5	20	30	40	50
	NC	Takoucht - Aglif	-	5	10	20	30
	P2216	Sidi Eljazouli - Imintlit	5	10	20	25	30
	P2209	Ounagha - Ait Said	10	20	30	40	50
	NC	Smimou Barrage Imin Elhad	-	10	15	20	30

Source: Documents provided by DPETL

Note: The bold text indicates the representative sections.

[Appendix 2: Travel Time (Elapsed Time) for the All-Target Sections (minutes)]

Province	Route	Liaison	Baseline	Target	Actual		
			2010	2 years after project completion	2020	2021	2022
Al Haouz	NC	Douar Agaiouar-Amerzouart	—	6	7	7	7
	NC	Tidili-Tighdouine	30	12	13	13	13
	NC	Tighdouine-Ait Anzal jbel	35	12	15	15	15
	NC	Ijoukak-Ounein	35	14	15	15	15
	P2009	Azegour-Adassil (C)	25	7	10	10	10
	P2009	Azegour-Adassil (A)	30	15	17	17	15
	P2014	Tamesloht - SYBA	18	7	8	8	8
	NC	OA Type dalot Oued Agoundis	60	20	20	20	20
	NC	OURIKA /S.A GHIAT	15	8	9	9	9
	P2036	Ighil-Azgour	70	37	40	40	40
Chefchaouen	P	B.Berred-Jbel Azri	120	60	75	75	75
	NC	**RN2-Bni Mansour-RN16**	**170**	**85**	**100**	**100**	**100**
Safi	NC	RR301-RP2309	N.A.	10	10	10	10
	NC	RR201 (PK42)-Ouled Bouzid	N.A.	10	10	10	10
	P	**HAD HARARA-RR204**	**N.A.**	**15**	**15**	**15**	**15**
	RP2302	Labkhati -RP2306	N.A.	15	15	15	15
	NC	Ras EI Ain-Sidi Ahmed	N.A.	25	25	25	25
	RP2325	Barakat khail - Laamamra	N.A.	10	10	10	10
	RP2318	Tnine ghiate-khmiss oulad Lhaj	N.A.	20	20	20	20
	RP2005	Sidi Chiker-RR201	N.A.	20	20	20	20
	NC	RR201-Dhamna	N.A.	20	20	20	20
	NC	Guaguen-RP2321	N.A.	10	10	10	10
	NC	Guaguen-RP2321	N.A.	20	20	20	20
	NC	Tlet Ighoud-Lamtahra	N.A.	20	20	20	20
	NC	RR201-Ouled Bouzid	N.A.	15	15	15	15
	NC	Douar Lamssaadia-P2323	N.A.	10	10	10	10
	NC	P2321(Nga)-P2319	N.A.	30	30	30	30
Settat	P	RR318-a Ouled fatima	64	N.A.	43	43	43
	P	Sidi rahal Chatii-RP3606	35	N.A.	24	24	24
	P	Ouled said a Gdana	20	N.A.	13	13	13
	P	RR318 a Dar Toudi	20	N.A.	13	13	13
	P	Sidi rahal Chatii-RP3606	39	N.A.	26	26	26
	P	Ras EI Ain a Guisser	30	N.A.	20	20	20
	P	Oulfa a sidi Abdellah Chrif	20	N.A.	13	13	13
	P	RN1 a la RP3011	16	N.A.	11	11	11
	P	Sidi Hajjaj a Mgarto	20	N.A.	13	13	13
	P	**Mediouna a la RP3305**	**35**	**N.A.**	**24**	**24**	**24**
	P	RN9 a Tnine Toualet	22	N.A.	15	15	15
	P	Ain Saemi a la RP 3606	115	N.A.	77	77	77
	P	SIDI BOUMEHDI-MESTOURA	56	N.A.	37	37	37
	P	**Settat-Ras ain**	**44**	**N.A.**	**29**	**29**	**29**
Essaouria	**NC**	**Smimou Barrage Imin Elhad**	**120**	**10**	**15**	**15**	**20**
	NC	Ounagha-Ait Hamou	32	11	16	16	11
	P2210	Had dra -RR301	93	16	23	23	31
	NC	Had dra -Ait Elhoucine	41	7	10	10	14
	P2213	Lagdadra - Sidi Aissa Regragui	50	17	25	25	25
	NC	Takoucht - Sidi Ghanem	127	21	32	32	32
	NC	Adaghass - Adrar	156	13	20	20	20
	NC	Sidi Ishak - Sidi Ali kourati	25	8	13	13	6
	P2216	Aeroport Essaouira - Sidi Eljazouli	89	15	22	22	22
	NC	Takoucht - Aglif	-	7	11	11	7
	P2216	Sidi Eljazouli - Imintlit	121	10	15	15	10
	P2209	Ounagha - Ait Said	38	13	19	19	13
	NC	Smimou Barrage Imin Elhad	69	6	9	9	9

Source: Documents provided by DPETL

Note: The bold text indicates the representative sections.

[Appendix 3: Number of Impassable days Due to Natural Disasters for the All-Target Sections (days/year)]

Province	Route	Liaison	Baseline	Target	Actual		
			2010	2 years after project completion	2020	2021	2022
Al Haouz	NC	Douar Agaiouar-Amerzouart	360	0	3	3	3
	NC	Tidili-Tighdouine	30	0	3	3	3
	NC	Tighdouine-Ait Anzal jbel	15	0	2	2	2
	NC	Ijoukak-Ounein	20	0	0	0	0
	P2009	Azegour-Adassil (C)	20	0	0	0	0
	P2009	Azegour-Adassil (A)	20	0	0	0	0
	P2014	Tamesloht - SYBA	-	0	0	0	0
	NC	OA Type dalot Oued Agoundis	90	0	0	0	0
	NC	OURIKA /S.A GHIAT	-	0	0	0	0
	P2036	Ighil-Azgour	120	0	0	0	2
Chefchaouen	P	B.Berred-Jbel Azri	-	0	0	0	0
	NC	**RN2-Bni Mansour-RN16**	**120**	**0**	**0**	**0**	**0**
Safi	NC	RR301-RP2309	-	0	0	1	0
	NC	RR201 (PK42)-Ouled Bouzid	30	0	0	0	0
	P	**HAD HARARA-RR204**	**0**	**0**	**0**	**0**	**0**
	RP2302	Labkhati -RP2306	20	0	0	0	0
	NC	Ras EI Ain-Sidi Ahmed	15	0	2	2	2
	RP2325	Barakat khail - Laamamra	10	0	2	2	2
	RP2318	Tnine ghiate-khmiss oulad Lhaj	15	0	0	0	0
	RP2005	Sidi Chiker-RR201	30	0	2	2	2
	NC	RR201-Dhamna	20	0	0	0	0
	NC	Guaguen-RP2321	15	0	0	0	0
	NC	Guaguen-RP2321	15	0	0	0	0
	NC	Tlet Ighoud-Lamtahra	20	0	0	0	0
	NC	RR201-Ouled Bouzid	20	0	2	2	2
	NC	Douar Lamssaadia-P2323	20	0	3	3	3
	NC	P2321(Nga)-P2319 (laaroussiyine)	20	0	0	0	0
Settat	P	RR318-a Ouled fatima	30	0	0	0	0
	P	Sidi rahal Chatii-RP3606	30	0	0	0	-
	P	Ouled said a Gdana	30	0	0	0	0
	P	RR318 a Dar Toudi	30	0	0	0	0
	P	Sidi rahal Chatii-RP3606	30	0	0	0	0
	P	Ras EI Ain a Guisser	30	0	0	0	0
	P	Oulfa a sidi Abdellah Chrif	30	0	0	0	0
	P	RN1 a la RP3011	30	0	0	0	0
	P	Sidi Hajjaj a Mgarto	30	0	0	0	0
	P	**Mediouna a la RP3305**	**30**	**0**	**0**	**0**	**0**
	P	RN9 a Tnine Toualet	30	0	0	0	0
	P	Ain Saemi a la RP 3606	30	0	0	0	0
	P	SIDI BOUMEHDI-MESTOURA	30	0	0	0	0
	P	**Settat-Ras ain**	**30**	**0**	**0**	**0**	**0**
Essaouria	**NC**	**Smimou Barrage Imin Elhad**	**365**	**0**	**5**	**5**	**5**
	NC	Ounagha-Ait Hamou	30	0	3	3	3
	P2210	Had dra -RR301	30	0	3	3	3
	NC	Had dra -Ait Elhoucine	60	0	3	3	3
	P2213	Lagdadra - Sidi Aissa Regragui	20	0	5	5	5
	NC	Takoucht - Sidi Ghanem	60	0	5	5	5
	NC	Adaghass - Adrar	30	0	3	3	3
	NC	Sidi Ishak - Sidi Ali kourati	10	0	1	1	1
	P2216	Aeroport Essaouira - Sidi Eljazouli	10	0	2	2	2
	NC	Takoucht - Aglif	365	0	2	2	2
	P2216	Sidi Eljazouli - Imintlit	30	0	3	3	3
	P2209	Ounagha - Ait Said	20	0	3	3	3
	NC	Smimou Barrage Imin Elhad	60	0	3	3	3

Source: Documents provided by DPETL

Note: The bold text indicates the representative sections.