Islamic Republic of Pakistan

FY2021 Ex-post Evaluation Report of

Japanese ODA Loan Project

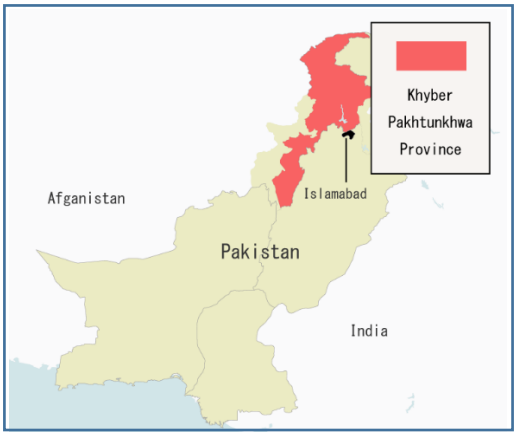
"Khyber Pakhtunkhwa Emergency Rural Road Rehabilitation Project"

External Evaluator: Hajime Sonoda, Global Group 21 Japan, Inc.

0. Summary

"Khyber Pakhtunkhwa Emergency Rural Road Rehabilitation Project" (hereinafter referred to as "the Project") was implemented to rehabilitate and restore transportation in flood-damaged areas of Khyber Pakhtunkhwa Province (hereinafter referred to as "KP Province"), located in northwest Pakistan, by rehabilitating flood-damaged roads and bridges in rural areas, thereby contributing to the early recovery of economic and social activities, alleviation of poverty in rural areas, and correction of regional disparities. The Project is consistent with Pakistan's development plans and needs both at the times of planning and ex-post evaluation. The Project was consistent with Japan's development cooperation policy at the time of planning, and therefore, its relevance and coherence are high. The outputs were appropriately selected and completed in accordance with the selection criteria at the time of planning. Although the project period slightly exceeded the plan, the project cost was within the plan, and the efficiency of the Project is high. The conditions of the targeted roads and bridges have improved compared to the pre-disaster conditions. The purpose of the Project was fully achieved as it has become possible for all types of vehicles to use the roads throughout the year and the travel speeds have increased. The increase in public transportation has made it more convenient for residents to travel outside the village, and various positive socioeconomic impacts were realized. Therefore, the effectiveness and impacts of the Project are high. There are no particular issues regarding the operation and maintenance of the Project in terms of policy/systems, institutional/organizational, technical, environmental and social aspects, and the preventative measures to risks. However, budget constraints have not allowed for adequate maintenance work. Therefore, the sustainability of the Project is moderately low. Based on the above, the Project is evaluated to be satisfactory.

1. Project Description



Project Location

District road after rehabilitation (Mardan District)

1.1 Background

From July to September 2010, Pakistan experienced heavy rains mainly in the northern part of the country, resulting in the worst flooding in the country's history, flooding the entire Indus River basin from the northwest to the south. More than 20 million people were affected, 1.9 million houses were destroyed, roads, irrigation facilities, and various other infrastructures were damaged, extensive areas of farmland were inundated, and livestock were killed. According to the flood damage and needs assessment led by the World Bank and Asian Development Bank, with the participation of JICA, the total damage was estimated at over US$10 billion.

In KP Province located in the upper reaches of the Indus River, where heavy rains were concentrated, the downpour and floods caused landslides and collapses along river shoulders, isolating rural communities and preventing residents from rebuilding their lives and carrying out economic activities such as agriculture. In response, Japan provided assistance for early recovery, including the dispatch of Japan Disaster Relief Team and medical teams and emergency humanitarian assistance. At the Pakistan Development Forum held in Islamabad in November 2010, Japan announced its policy to provide $500 million in assistance, including the Project.[1] Against this background, the Loan Agreement for the Project was signed in February 2011.

1.2 Project Outline

The objective of the Project is to rehabilitate and restore transportation in flood-damaged areas of KP Province, located in northwest Pakistan, by rehabilitating flood-damaged roads and bridges in rural areas, thereby contributing to the early recovery of economic and social activities, alleviation of poverty in rural areas, and correction of regional disparities.

[1] https://www.mofa.go.jp/mofaj/press/enzetsu/22/ekkt_1115.html

Loan Approved Amount/ Disbursed Amount	14,700 million yen / 14,554 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	January 2011 / February 2011
Terms and Conditions	Interest Rate: 0.01% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: General Untied
Borrower / Executing Agency	President, Islamic Republic of Pakistan / Communication and Works Department, KP Province
Project Completion	February 2016
Target Area	KP Province
Main Contractor (Over 1 billion yen)	No contracts over 1 billion yen
Main Consultant (Over 100 million yen)	National Engineering Services Pakistan Limited (Pakistan)
Related Studies (Feasibility Studies, etc.)	None
Related Projects	"Rural Roads Construction Project" (1993), "Rural Roads Construction Project (II) (Sindh)" (2008)

2. Outline of the Evaluation Study

2.1 External Evaluator

Hajime Sonoda, 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: January 2022 – February 2023

Duration of the Field Study: May – July 2022 (conducted through field survey assistants)

2.3 Constraints during the Evaluation Study

Due to the pandemic of COVID-19, the field survey was conducted through local consultants. The information collected through interviews with the executing agency, interviews with local population, and field inspection was examined by the external evaluator for evaluation analysis and judgment.

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

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

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Pakistan

As described in "1.1 Background," the 2010 floods caused extensive damage throughout Pakistan. In response, the Government of Pakistan mobilized the military to provide relief to the victims, and the National Disaster Management Authority and Provincial Disaster Management Authorities took the lead in planning and coordinating emergency humanitarian assistance and rehabilitation projects. At the time of the planning, the KP Province Communication and Works Department (hereinafter referred to as "CWD") had set up a specialized unit for flood disaster response and rapid recovery and was preparing emergency restoration and medium- to long-term rehabilitation plans based on an assessment of the damage.

At the time of the ex-post evaluation, Pakistan's national development plan, *Pakistan Vision 2025* (prepared by the Ministry of Planning, Development and Reform in 2014), declared the country to join the ranks of upper middle-income countries by 2025 and identified "modernizing transportation infrastructure and greater regional connectivity" as one of seven development pillars.[4] In addition, KP Province's mid-term development plan, *Sustainable Development Strategy 2019-2023*, aims to leverage the competitiveness of its fruit and vegetable, tourism, and mining (marble) industries to address challenges such as poverty and malnutrition, inequality within the province, and population growth. The plan points out that poor road infrastructure is behind intra-provincial disparities and low health indicators, while in the transportation sector, the investment plan aims to strengthen interregional connectivity through efficient mobility and improved mass transit.

As a result of the above, the Project is highly consistent with Pakistan's development policy at the times of planning and ex-post evaluation.

3.1.1.2 Consistency with Development Needs of Pakistan

According to the Damage and Needs Assessment released in 2011, medium- to long-term rehabilitation and reconstruction needs across Pakistan after the 2010 floods totaled $8.9 billion. By sector, particularly large financing needs were identified in transportation and communications ($2.4 billion, including $2.1 billion for roads), followed by housing ($2.2 billion) and agriculture ($1 billion). In KP Province, 404 km of national roads, 259 km of provincial roads, and 7,690 km of district roads were damaged. This is equivalent to one-third of all roads damaged across

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

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

[4] Other development pillars are: "putting people first – developing human and social capital," "achieving sustained, indigenous and inclusive growth," "democratic governance, institutional reform and modernization of the public sector," "water, energy and food security," "private sector and entrepreneurship led growth," and "developing a competitive knowledge economy through value addition."

Pakistan due to the 2010 floods. The reconstruction cost was estimated at $690 million. According to CWD, all the road sections covered by the Project were selected considering their severe post-flood damage and large beneficiary population of the road/ bridge, and thus the need and urgency for rehabilitation were high. In addition, as discussed in the effectiveness and impact section, the target roads are all considered to be fully utilized after restoration.

Based on the above, the Project is highly consistent with Pakistan's development needs at the times of planning and post-evaluation.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

Since disasters cause enormous damage to the lives and property of the victims and can be a major obstacle to social and economic development and poverty alleviation in rural areas, this round of disaster assistance is consistent with the focus areas of Japan's ODA policy for Pakistan at the time of planning, "ensuring human security and human development" and "achievement of balanced regional socio-economic development." In addition, JICA identified infrastructure development in the road sector as a priority issue that would contribute to improving the living conditions of the poor, increasing access to public services and markets. Therefore, the Project is consistent with Japan's ODA policy at the time of planning.

3.1.2.2 Internal Coherence

In response to the flood damage in 2010, JICA provided Emergency Grant Aid, participated in the damage and needs assessment for rehabilitation and reconstruction, and coordinated with other donors to formulate a medium- to long-term reconstruction assistance plan. Although there are a number of projects targeting transportation infrastructure in rural areas, such as the two phases of "Rural Road Construction Project" (ODA loan), which preceded the Project, no specific linkages or synergies with the Project could be confirmed. On the other hand, CWD did not point out any lack of coordination with other JICA projects.

3.1.2.3 External Coherence

JICA participated with other donors in conducting the damage and needs assessment and in developing a medium- to long-term reconstruction assistance plan, and the Project was formed based on coordination among donors. According to CWD, JICA was the only donor that conducted reconstruction projects in the road sector in the province. As for projects in other sectors, most of them were implemented through NGOs, but specific information was not available. Although specific linkages between the Project and other donor projects could not be confirmed, CWD did not indicate that there was insufficient linkage with other donors. According to CWD, the Asian Development Bank's "Road Development Sector and Sub Regional

Connectivity Project" in KP Province was completed in 2011. Subsequently, as was envisaged when the Project was planned, the staff of CWD who were involved in its implementation were engaged in the implementation of the Project to ensure smooth implementation of the Project.

Based on the above, the Project was consistent with Pakistan's development plans and development needs both at the time of planning and at the time of ex-post evaluation, and was consistent with Japan's ODA policy at the time of planning, and therefore, its relevance and coherence are high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

In the Project, a list of candidate roads and bridges to be rehabilitated was prepared at the time of planning. During the implementation phase, it was planned that specific target roads and bridges would be selected from that list using the selection criteria shown in Table 1, and that rehabilitation works would be carried out within the budget. The planned and actual outputs of the Project are shown in Table 2. The planned extensions of road and bridge rehabilitation were the sum of all possible candidate roads and bridges, and in reality, about one-third of them were supposed to be rehabilitated within the budget of the Project.

Table 1 Selection Criteria for Target Roads and Bridges

- Technical feasibility is confirmed.
- High priority in terms of urgency and scale of benefits.
- National and provincial highways connected by the targeted district roads are available or scheduled for rehabilitation.
- No resettlement is involved.
- Low environmental impact.
- No safety issues in implementation.
- It has not been the subject of other rehabilitation projects.

Source: Materials provided by JICA

Table 2: Planned and Actual Outputs

Planned Outputs	Actual Outputs
Road and bridge rehabilitation (note) Provincial roads: 3 sections (171 km) District roads : 134 sections (1,476 km) Bridges: 21 bridges (2,060 m)	Road and bridge rehabilitation Provincial roads: 3 sections (101 km) District roads: 77 sections (427 km) Bridges: 10 bridges (670 m)
Supporting activities for project implementation	Supporting activities for project implementation (as planned)
Consulting Services Bidding assistance, detailed design, environmental monitoring, socioeconomic studies, capacity building for maintenance and management, etc.	Consulting Services Bidding assistance, detailed design, environmental monitoring, socioeconomic studies, capacity building for maintenance and management, etc. (as planned)

Source: Materials provided by JICA and CWD
Note: The planned value of the road and bridge rehabilitation extension is the sum of all possible candidate roads and bridges, a portion of which were planned to be rehabilitated under the Project's budget.

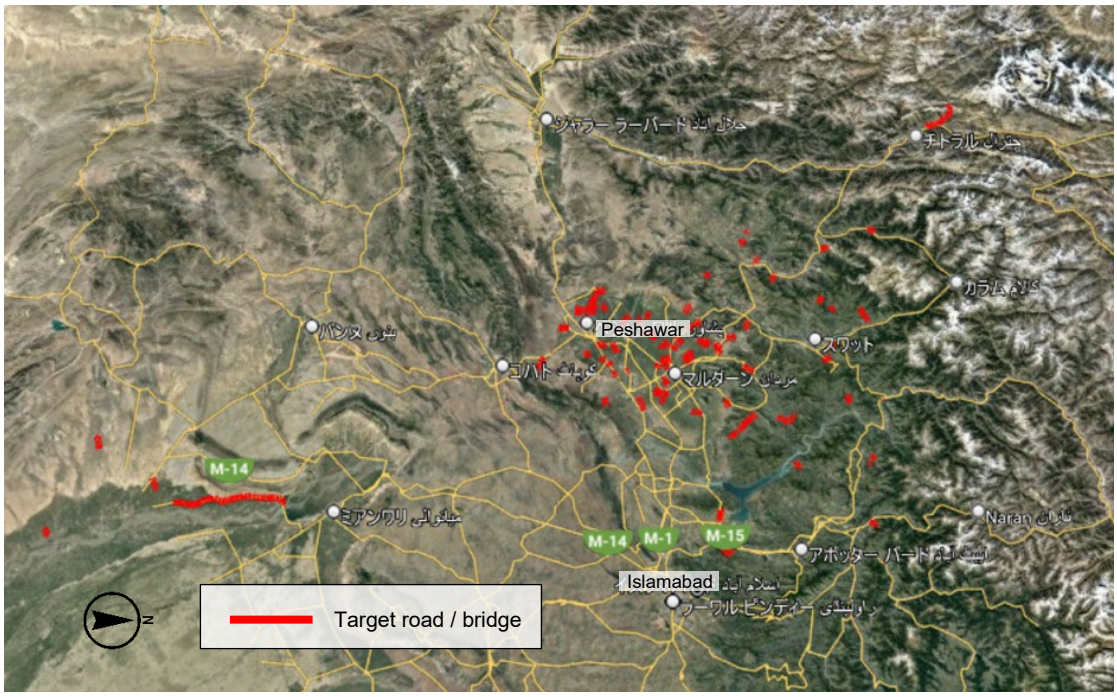


Figure 1 Location of Target Roads and Bridges

Source: Compiled from information provided by CWD

According to CWD, all target road sections and bridges were selected by CWD from the list of candidates at the time of the planning in accordance with the agreed selection criteria. The

selection results were notified to JICA after approval by the provincial government. Initial bidding was conducted for 60 road sections and 21 bridges, but competitive bidding resulted in a compressed contract amount and surplus funds. Therefore, after the change of provincial government administration in 2013, 17 new road sections were added using the surplus funds. A total of 82 contracts were awarded for civil works for the Project, but since the contract amounts were all less than 500 million yen, no contract consent process was conducted by JICA. JICA held monthly meetings with CWD from 2012 to 2015 to confirm that there were no environmental or social impacts of concern for the target roads and bridges and to resolve implementation issues.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The cost for the Project was planned at 16,981 million yen (including 14,700 million yen by ODA loan). As a result of the selection and implementation of target roads and bridges within the planned project cost, the actual project cost was 15,378 million yen (91% of the plan, including 14,554 million yen by ODA loan), which was within the plan (Table 3). Since the surplus funds generated by the competition results were used to add the target roads and bridges, and the unit construction cost (construction cost per extension) for provincial and district roads and bridges was within 90% of the estimation at the time of planning, it is judged that the civil works for the Project were carried out efficiently. Expenditures for supporting activities for project implementation exceeded the plan due to the delay in implementation and the addition of a defect warranty period (one year), settlement of civil works and transfer of the works to CWD, preparation for subsequent projects, etc., which increased the workload. Land acquisition did not occur, and land acquisition costs were zero.

Table 3: Planned and Actual Project Cost

	Planned Cost		Actual Cost	
	Total	ODA loan	Total	ODA loan
Civil works (including contingency and price escalation)	13,637	13,637	13,342	13,342
Supporting activities for project implementation	139	139	264	264
Consulting services	816	816	900	900
Land acquisition	112	0	0	0
Tax and Duties	2,168	0	824	0
Interest during construction and commitment charges	108	108	48	48
Total amount	16,981	14,700	15,378	14,554

Source: Materials provided by JICA and CWD
Note: Exchange rate at the time of planning 1 Rs. = 0.98 yen (October 2010)
At the time of ex-post evaluation 1 Rs. = 1.08 yen (average rate of 2011 – 2016)

3.2.2.2 Project Period

The project period was planned to be 56 months, from the loan agreement in February 2011 to the completion of all civil works in December 2015. In fact, all civil works were completed in February 2016, resulting in a project period of 61 months from February 2011 to February 2016 (105% of the planned cost), slightly exceeding the plan.

The consultant for the Project was planned to be procured through a single-source selection considering the urgent nature of the rehabilitation after the disaster. However, the consultant's work was general in nature, and there was little basis for appointing a specific company to perform the work under a single-source selection, so the procurement method was revised, and a general competitive bidding process was used. Because of the time required for this change, the consultant contract was concluded eight months later than planned.

In bidding for civil works, bidding was once suspended because the company that planned to bid on the Project requested an update of the old official price list (Composite Schedule of Rates). A new official price list was then prepared for bidding. This delayed civil works contracts by more than six months from the planned date. However, this did not delay the opening of roads for traffic after the disaster.[5]

Construction was disrupted by flooding and earthquakes in 2015, negotiations with local residents,[6] and the deteriorating security situation due to the Taliban threat affected the progress of construction. All quarries in KP Province were temporarily closed due to rampant mining of construction materials (stones) with explosives and illegal mining; some quarries outside KP Province were also closed, which affected the progress of the construction. Although it was sometimes necessary to address the above issues individually, the detailed design and civil works for many of the target roads and bridges included in the Project were carried out in an intermittent manner, and the civil works for each target section generally took 1 to 1.5 years. Thus, the civil works of the Project was completed in a shorter period of time (43 months) than planned (46 months).

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

Since the Project was emergency assistance, the internal rate of return was not calculated.

Although the project period slightly exceeded the plan, the project cost was within the plan, and the outputs were properly selected and completed according to the selection criteria at the time of planning. Based on the above, the efficiency of the Project is high.

[5] After roads were damaged by the flood, residents first attempted to secure road access by hand. Next, CWD and local governments used heavy machinery to clear sections that were difficult for residents to access, and the minimum level of traffic was secured. Full-scale rehabilitation work by the Project was carried out after that.

[6] In some cases, residents along the target road sections demanded that the contractor construct irrigation canals, drainage channels, etc. in conjunction with the work in exchange for allowing the work to be done, which required time-consuming negotiations.

3.3 Effectiveness and Impacts[7] (Rating:③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The Project was implemented to restore and improve traffic in flood-damaged areas of KP Province by rehabilitating flood-damaged roads and bridges. Specifically, the goal was to restore the target roads and bridges to their pre-flood condition, but no quantitative targets were set at the time of planning.

According to CWD, the design principle of the facilities at the time of planning was maintained, and roads were made more durable against flood disasters by installing slope protection and drainage facilities as necessary and strengthening pavements and shoulders compared to before the disaster while considering traffic volume and cost. In designing the bridges, the height under the girders was secured to withstand larger precipitation than the previous setting.

In Pakistan, heavy monsoon rains that began in June 2022 have caused the country's worst floods since 2010, when one-third of the country was submerged, and a state of emergency was declared throughout the country in August. According to CWD, about one-fifth of the road sections of the Project were damaged by the floods, but with emergency repairs, all roads in KP Province, including these road sections, were open to traffic by September 2022. Detailed information on the damage on the road sections was not obtained. In addition, since the extent of flooding in KP Province in 2010 and that in 2022 is considered to be different, this ex-post evaluation could not analyze the extent to which disaster resilience has increased after the Project. There are no reports of damage to road sections or bridges of the Project due to rainfall or flooding before the 2022 flood.

According to CWD, the Project improved the roads and bridges beyond their pre-disaster condition and enhanced their function as roads. Specifically, the following changes were reported to have occurred before and after the Project.

- Pavement: Prior to the Project, the target road sections were asphalt pavements or with asphalt surface treatment.[8] Most of the district roads just had asphalt treatment on the surface. After the Project, most of the roads are asphalt pavements (not with asphalt surface treatment), and some slopes are concrete pavements.

- Roadway width and number of lanes: The roadway width of the target road sections increased from an average of 3.9 m before the Project to an average of 5.3 m after the Project. The roadway width increased in all target road sections. The number of lanes increased from one lane (roadway width of 3.7 m or less) to two lanes (roadway width of

[7] Sub-rating for Effectiveness is to be put with consideration of Impacts.
[8] A simple paving method in which asphalt is sprayed on gravel spread on the road surface without creating base or sub-base.

5.5 m or more) on 70% of the target roads. Some sections of provincial road were widened from two to four lanes.

- Road surface condition: According to the report of CWD, the road surface conditions of the target road sections were "good" in 30% of all sections, "needs maintenance" in 40%, and "needs rehabilitation" in 30% before the disaster. In particular, pavement surfaces on many of the district roads had deteriorated and were already heavily damaged before the disaster. All are in "good" condition at the time of the completion of the Project and ex-post evaluation.

- Ancillary facilities: Roadside ditches, culverts, and slope protection works were located on some sections of state roads before the disaster. They were installed as needed on all sections of state and local roads after the Project. However, no information was available to quantitatively compare the conditions before and after the Project.

- Bridges: 9 bridges increased in width from 5.5m to 7.3m and 1 bridge increased in width from 7.3m to 8.5m, facilitating two-way traffic. Before the disaster, 9 bridges were in "need of maintenance" and 1 bridge was in "need of rehabilitation," but all are in good condition at the time of post-project and ex-post evaluation.[9]

- Travel time and traffic volume: The time required to travel the entire road sections (total time required for each section) was reduced to 46% of the pre-project level, according to a study commissioned by CWD to the consultant.[10] This means that travel speeds increased by approximately 2.2 times from the pre-project level. In addition, the average traffic volume after the project (2018) on the target road sections increased to 153% of the pre-project (2012) level.

3.3.1.2 Qualitative Effects (Other Effects)

The following findings were obtained from the field inspection of 10 selected subprojects and interviews with local residents conducted by the local consultants for the ex-post evaluation.[11]

- Most of the district roads targeted by the Project were damaged by flooding, erosion, and landslides caused by the 2010 floods. Moreover, many of the pavements had already been lost and the road surfaces had already been in poor condition even before the flooding, which made it almost impossible for small vehicles to pass through. In particular, during

[9] However, as discussed below, some of the bridges are scouring and may need repair.
[10] The consultant, commissioned by CWD, conducted traffic counts on each road section in 2012 and 2018, along with interviews with drivers to determine the time required for each section.
[11] Two provincial roads and eight district roads were visited. Group interviews were conducted with a total of 60 people, including community-based organizations (20 people in 2 locations, both organized for other village infrastructure projects) and roadside residents (40 people in 8 locations). Although all the interviewees were men, information about women was obtained by explicitly including questions about women.

the rainy season, the road surface became muddy, which made it difficult for even large vehicles to pass. After the Project, the road is accessible to all types of vehicles throughout the year.

- There were no instances where smooth traffic through the target road section was not possible due to the lack of connecting roads. However, on one provincial road, the road width of a bridge that was not covered by the Project remains narrow, leaving a bottleneck that does not allow two-way traffic.[12]

- Since no land acquisition was made for the Project and rehabilitation work was conducted on the existing road sites, there are sections where the width of the shoulder and roadway changes according to the width of the road sites. In addition, because the existing road alignment was maintained as is, some sharp curves and short sight distance sections remain.

Based on the above, it is judged that the objective of the Project, which is to rehabilitate and improve traffic in flood-affected areas in KP Province, has been fully achieved.

District roads before (left) and after (right) restoration (Buner District, provided by JICA)

District road culvert after rehabilitation
(Haripur District)

Bridge after rehabilitation
(Battagram District)

[12] The bridge is planned to be replaced by the State Department of Public Works.

District road after rehabilitation
(Mardan District)

Provincial road after rehabilitation
(Peshawar District)

District road after rehabilitation (Haripur District)
Public transportation for school (left), new stores (right)

3.3.2 Impacts

3.3.2.1 Intended Impacts

According to the explanations of CWD and interviews with residents conducted by local consultants, most of the district roads targeted by the Project are roads connecting villages to provincial roads, which are used by villagers for general purposes, such as commerce, agriculture, medical care, education, and administration services. Provincial roads connect KP Province to other provinces, which are relatively large in size and used for medium- and long-distance freight and passenger transportation. As for the district roads, in particular, a variety of impacts of the Project were reported, as they are now passable by all types of vehicles throughout the year. The impact of the district roads, the provincial roads, and an analysis based on statistical data are described below.

(1) Impacts of district roads

Changes in road traffic, public transport, and residents' mobility

Before the disaster, there was no public transportation or only large buses because small

vehicles could not pass. After the Project, many small buses began to operate throughout the year, and rickshaws and motorcycle cabs became able to pass through. In addition, the cost of using public transportation has decreased due to the increase in small busses and the decrease in travel time.

Some villagers have purchased new automobiles, rickshaws, or motorcycles. It was reported that more than 10% of all households have purchased a car in some villages and that most households now have a motorcycle in other villages. The number of means of transportation has increased, the cost of transportation (time and money) has decreased, and in general, the number of villagers traveling to town has increased.

Social Impacts

- Education: The number of children attending junior high and high school outside the village has increased as school vehicles (vans) have been put into service. Previously, most girls only went to elementary school in the village, but now they can go to middle school located outside the village as well.
- Health: Pregnant women and emergency patients can now be transported immediately to medical facilities in town. In villages where delivery used to be conducted in the traditional way in the village, after the Project, pregnant women can now be transported quickly and deliver their babies in the hospital. New clinics and pharmacies were opened in some villages.
- Security: Police patrols have increased, which allows police officers to come to the scene quickly. Villagers believe this has led to improved security.

Economic Impacts

- Agriculture: Accessibility by small trucks and tractor wagons has expanded the means of transporting farm products to market. Many farmers transport their crops themselves or with the help of transporters. They are able to ship more quickly, and transportation costs have decreased. Some said that it has become easier to use rental services for tillers and to procure fertilizer. On the other hand, some noted that it is becoming increasingly difficult to farm for the purpose of selling their produce because of the steep rise in prices of agricultural inputs.
- Commerce: New stores (e.g., food and commodity stores) were established in the village, and the selection of goods in existing stores was enriched. As a greater variety of food and daily necessities became available in the village, trips to the town for shopping became

less frequent. In villages with few stores, the frequency of shopping trips to the town increased as it became easier to get to the town.

- Others: It became easier to work in town or go to migrant work. Land prices along the road increased.

(2) Impacts of provincial roads

The provincial roads targeted by the Project had already been paved before the Project and accessible by all types of vehicles throughout the year. After the Project, an increase in traffic volume and the number of stores, gas stations, etc. along the roads were reported. It was noted that one provincial road would be used as a raw material transportation route to the marble industry area planned by the KP Province.

(3) Analysis based on statistical data

Based on existing statistical data, the poverty rate in rural areas of KP decreased from 25% in 2010 to 9% in 2019.[13] During the same period, there has been a slight improvement in the net enrollment rate at the middle school and a significant improvement in the percentage of pregnant women who received prenatal consultation at hospitals (Table 4). There has been a significant increase in household satisfaction with social facilities and social services, among which satisfaction with schools has increased significantly compared to the rest of the country (Table 5). It is likely that the Project contributed in part to these changes by facilitating access to facilities and services through increased mobility of residents, but quantitative verification of the contribution is difficult.

Table 4: Percentage of pregnant women who received prenatal consultation at hospitals

	Urban Area (National)	Rural Area (National)	Urban Area (KP Province)	Rural Area (KP Province)
2010	70%	50%	61%	38%
2019	76%	62%	75%	59%

Source: Pakistan Social And Living Standards Measurement, Pakistan Bureau of Statistics.

[13] According to Pakistan Institute of Development Economy. In rural areas across the country, the percentage decreased from 27% in 2010 to 10% in 2019.

Table 5: Satisfaction with social facilities and social services

		Urban Area (National)	Rural Area (National)	Urban Area (KP Province)	Rural Area (KP Province)
Health	2010	17%	38%	13%	40%
	2019	77%	65%	78%	64%
School	2010	67%	58%	5%	14%
	2019	97%	95%	98%	97%
Police	2010	11%	10%	19%	14%
	2019	56%	58%	75%	70%

Source: Pakistan Social And Living Standards Measurement, Pakistan Bureau of Statistics.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

The Project was considered to fall under Category FI in the *JICA Guidelines for Environmental and Social Considerations* (2010). According to CWD, only those subprojects that fell under Category B or C were selected for the Project. During construction, great care was taken to address air and water pollution, noise, waste, and dust. There was no particular environmental impact as it was a rehabilitation project.

(2) Resettlement and Land Acquisition

According to CWD, there was no resettlement or land acquisition. No complaints in this relation were specifically identified.

(3) Gender Equality, Marginalized People, Social Systems and Norms, Human Well-being, Human Rights, etc.

In KP Province, it is not common for women to travel outside of the village, and since it is mostly men who use the roads, most of the benefits from the Project are enjoyed by men. However, the fact that the Project has made it possible to transport pregnant women and emergency patients to hospitals and girls to secondary schools outside the village is a particularly important impact for women, which is welcomed by the villagers.

The fact that the Project has made public transportation easier to use is an important impact for poor households that do not have private cars, motorcycles, or other means of transportation.

The objective of the Project, which was to rehabilitate and improve traffic in flood-damaged areas in KP Province, was fully achieved, as the condition of the target roads and bridges was improved from that before the disaster, all types of vehicles became able to travel on these roads

and bridges throughout the year, and the travel speed increased. The increase in public transportation enhanced the convenience of residents to travel outside the village, and various positive socioeconomic impacts were manifested. No unfavorable environmental and social impacts were observed. Based on the above, the Project has achieved its objectives, and its effectiveness and impacts are high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

As discussed in Section 3.1.1 Relevance, the Government of Pakistan and the KP Provincial Government consider road infrastructure maintenance to be important and have a commitment to maintaining the road network. As described in the next section, institutions and procedures for road maintenance in KP Province are well established. Therefore, there are no issues with policy and system.

3.4.2 Institutional/Organizational Aspect

Provincial roads are operated and maintained by Pakhtunkhwa Highways Authority (hereinafter referred to as "PKHA") under CWD through four local offices, and district roads are operated and maintained by CWD through four local offices. For the maintenance and management of district roads, personnel from the public works bureaus of each district are also assigned to carry out on-site work. CWD's local engineering units in charge of district roads share information and perform field work in cooperation with the district public works bureaus. Contracts for road construction and rehabilitation projects usually include a warranty period of one to three years. The construction contract for the Project included a one-year warranty period. During this period, the contractor who undertook the construction was responsible for maintenance.

For both provincial and district roads, maintenance services are outsourced. PKHA and CWD use a list of qualified registered contractors, procure contractors according to the procedures established by the Provincial Public Procurement Regulatory Authority, and enter into contracts with them. Usually, the contract is for a single year, and the engineer in charge of the site (one person is responsible for 100 to 150 km of road) checks the contractor's work and performs quality control. The contractors are paid a fee based on the volume of work performed.

There is no standardized maintenance schedule for PKHA and CWD according to the type and age of roads. Instead, the current mechanism is that, each year, the respective local office receives reports on road damage and maintenance needs from the site engineers and plans maintenance work that can be performed within the allocated annual budget.

Based on the above, there are no particular issues in terms of institutional/organizational aspect. However, it can be pointed out that, as maintenance and management work is carried out within

budgetary constraints, appropriateness of the system depends on the amount of budget available.

3.4.3 Technical Aspect

The roads and bridges of the Project were constructed using common technology in Pakistan, and no special techniques are required for their maintenance. According to the maintenance staff of CWD and PKHA, there are no particular technical problems with the maintenance work performed by outsourced contractors. In addition, as part of the consulting services for the Project, training on contract management, road design, and quality control was provided to 32 employees of CWD and PKHA. Based on the above, there are no particular issues in the technical aspects of the operation and maintenance of the Project.

3.4.4 Financial Aspect

The budget for road maintenance by PKHA and CWD is allocated from the provincial government budget. Each local office is allocated an annual budget in a lump sum. The budget amount for PKHA and CWD has generally been increasing (Table 6). In 2020-21, the budget amount was significantly reduced due to the pandemic of COVID-19 but was eventually restored to the same level as in previous years with additional subsequent allocations. According to interviews with local offices,[14] the budget amount allocated has not changed for the past three years. According to CWD, allocations are expected to increase by 10-15% annually unless there is a specific reason.

Table 6: Budget for PKHA and CWD

(Unit: million rupees)

	PKHA	CWD
2013-14	600.00	451.00
2014-15	600.00	895.00
2015-16	650.00	1140.00
2016-17	715.00	1254.00
2017-18	786.50	1379.50
2018-19	865.15	1503.88
2019-20	1200.00	2091.00
2020-21*	425.14 (1,426.00)	741.50 (2,175.00)
2021-22	1200.00	2204.00

Source: Materials provided by CWD

Note: Although the initial budget was small for 2020-21, the amounts in parentheses were eventually allocated.

[14] Interviews were conducted through local consultants at one local office of PKHA and two local offices of CWD.

According to CWD (Headquarters) and its local offices, the budgeted amount is small compared to the amount needed and is not sufficient to maintain all the target roads.[15] In particular, there is a significant shortfall when urgent repairs are required due to disasters or other reasons. From the above, although the budgeted amount for maintenance and management is generally maintained at the same level, it is not sufficient, and there are some financial challenges.

3.4.5 Environmental and Social Aspect

There are no specific environmental and social issues regarding the maintenance of the road network. If an environmental or social situation arises that requires action, the engineer in charge of the site will assess the situation, report it to the local office, and take action. If necessary, the relevant departments within PKHA and CWD will respond to the situation. Therefore, there are no particular concerns regarding environmental and social aspects.

3.4.6 Preventative Measures to Risks

As described in Section 3.3.1 Effectiveness, the Project has improved the disaster prevention performance of the target road and reduced the risk of damage due to natural disasters. If urgent repairs are required, the budget of each local office will be used to carry out the repair work. In fact, during the 2022 flood, traffic was reopened throughout KP Province in a short period of time after emergency repairs. Therefore, there are no particular issues regarding preventative measures to risk.

3.4.7 Status of Operation and Maintenance

According to CWD, both the road surface condition and bridge condition of the target roads are good. On the other hand, field inspections conducted on eight road sections and two bridges during the post-evaluation revealed the following conditions.

- The pavement surfaces were all in good condition, and the structures were generally in good condition for roads that were six to seven years old after completion. However, one section with poor shoulder conditions was observed, as well as several areas of minor damage to concrete such as causeways (low-water bridges) and culverts.
- Broken road signs and faded road markings were seen throughout the area. In addition, road ditches were blocked with dirt and debris, and the sides of the roads were not mowed, both of which indicated that necessary maintenance work was not carried out in a timely manner.

[15] No specific information on the budget required for road maintenance was obtained from CDW within the study period.

- The bridge structures are in good condition, but one of the two bridges inspected was experiencing scour. It is considered that the time for a thorough examination of the need for full-scale repair of all bridges of the Project is approaching.

From the above, the operation and maintenance status is generally good. However, there remain some areas where necessary maintenance work is not carried out in a timely manner, and there are some issues to be addressed.

From the above, no major issues have been observed in the policy and system, institutional/ organizational, technical, environmental and social aspects, and preventative measures to risks. However, as maintenance work has not been fully implemented due to budget constraints and other reasons, there are some issues in the financial aspect including the current status of operation and maintenance of the Project, which are unlikely to be improved or resolved through the efforts of CWD. Therefore, sustainability of the project effects is moderately low.

4. Conclusions, Lessons Learned and Recommendations

4.1 Conclusion

The Project was implemented to rehabilitate and restore transportation in flood-damaged areas of KP Province, located in northwest Pakistan, by rehabilitating flood-damaged roads and bridges in rural areas, thereby contributing to the early recovery of economic and social activities, alleviation of poverty in rural areas, and correction of regional disparities. The Project is consistent with Pakistan's development plans and needs both at the times of planning and ex-post evaluation. The Project was consistent with Japan's development cooperation policy at the time of planning, and therefore, its relevance and coherence are high. The outputs were appropriately selected and completed in accordance with the selection criteria at the time of planning. Although the project period slightly exceeded the plan, the project cost was within the plan, and the efficiency of the Project is high. The conditions of the targeted roads and bridges have improved compared to the pre-disaster conditions. The purpose of the Project was fully achieved as it has become possible for all types of vehicles to use the roads throughout the year and the travel speeds have increased. The increase in public transportation has made it more convenient for residents to travel outside the village, and various positive socioeconomic impacts were realized. Therefore, the effectiveness and impacts of the Project are high. There are no particular issues regarding the operation and maintenance of the Project in terms of policy/systems, institutional/organizational, technical, environmental and social aspects, and the preventative measures to risks. However, budget constraints have not allowed for adequate maintenance work. Therefore, the sustainability of the Project is moderately low. Based on the above, the Project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Field inspections conducted during the ex-post evaluation showed that side drainage on district roads was not adequately cleaned and vegetation was not adequately managed. In addition, some road signs and surface markings, as well as some concrete structures, are considered in need of repair. CWD should inspect the road sections covered by the Project and implement maintenance work.

In addition, it was observed that some of the bridges had advanced scour. It is important to inspect all the 10 bridges targeted in the Project and plan and implement necessary maintenance, including addressing the scour.

In order to be able to properly maintain provincial and district roads, KP provincial government needs to make every effort to secure the necessary budget for road maintenance. As a prerequisite for this, CWD should fully examine the maintenance needs of the roads under its jurisdiction and prepare an appropriate annual plan for maintenance.

4.2.2 Recommendations to JICA

The implementation of the above recommendations should be monitored and promoted.

4.3 Lessons Learned

Rehabilitation projects of infrastructure facilities damaged by a natural disaster provide good opportunities for development

In the Project, efforts were made to increase durability against future flood disasters by installing slope protection and drainage facilities on the damaged roads and strengthening the pavement and shoulders from the pre-disaster level. It can be said that the Project was in line with the "build-back-better" concept of creating a more resilient community in the post-disaster reconstruction phase in preparation for the next disaster.[16]

The roads and bridges targeted by the Project were in poor condition prior to the disaster, and many of the district roads were difficult to pass through all year around. However, after the rehabilitation, the roads were made more functional, with all types of vehicles being able to use them throughout the year, the roadway width and number of lanes increased, and the time required for travel shortened. This has made public transportation more convenient, facilitated residents' travel outside the village, and had a variety of other desirable socioeconomic impacts.

In other words, the Project did not merely improve the roads' durability against disasters, but also improved their very function as roads, which led to various desirable impacts that promoted

[16] The concept proposed in the Sendai Framework for Disaster Risk Reduction 2015-2030, a UN document adopted at the 3rd UN Conference on Disaster Reduction held in Sendai in 2015.

the socioeconomic development of the region. This indicates that a project to rehabilitate damaged infrastructure facilities can, at the same time, be a good opportunity to promote regional development by improving infrastructure facilities to a state better than their pre-disaster condition.

Consideration of the consultant procurement method in light of the recipient country's procurement system and the scope of works

The consultant for the Project was planned to be procured through single source selection, taking into account the urgent nature of the restoration after the disaster. However, since the consultants' scope of works was general in nature and there was little basis under Pakistan's public procurement system for appointing a specific company to perform the work through single source selection, the procurement method was reviewed, and a general competitive bidding process was used. Because of the time required for this change, the consultant contract was concluded eight months later than planned.

Therefore, when a consultant is to be procured through single source selection, its appropriateness should be thoroughly discussed with the government of the recipient country from the planning stage, taking into consideration the procurement system of the recipient country and whether there are any special characteristics of the consultant's work.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

In formulating the Project, JICA, along with other donors, played an active role by participating in the damage and needs assessment. After the start of the Project, JICA Pakistan Office continued monthly meetings with CWD for four years to contribute to the smooth implementation of the Project by reviewing the results of the selection of the target road sections and bridges, confirming that the environmental impact was minimal, monitoring the progress of procurement and construction, and discussing ways to solve problems.

5.2 Additionality (none)

(end)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	Road and bridge rehabilitation (note) Provincial roads: 3 sections (171 km) District roads: 134 sections (1,476 km) Bridges: 21 bridges (2,060 m) Supporting activities for project implementation Consulting Services Bidding assistance, detailed design, environmental monitoring, socioeconomic studies, capacity building for maintenance and management, etc.	Road and bridge rehabilitation Provincial roads: 3 sections (101 km) District roads: 77 sections (427 km) Bridges: 10 bridges (670 m) (as planned) (as planned)
2. Project Period	February 2011 – December 2015 (56 months)	February 2011 – February 2016 (61 months)
3. Project Cost ODA loan Pakistan side Total exchange rate	 14,700 million yen 2,281 million yen 16,981 million yen 1 rupee = 0.98 yen (October 2010)	 14,554 million yen 824 million yen 15,378 million yen 1 rupee = 1.08 yen (Average rate for 2011-2016)
4. Final Disbursement	March 2020	

Note: The planned value of the road and bridge rehabilitation extension is the sum of all possible candidate roads and bridges, a portion of which were planned to be rehabilitated under the Project's bud