

Republic of Kiribati

FY2023 Ex-Post Evaluation Report of Japanese Grant Aid Project

“The Project for Reconstruction of the Nippon Causeway”

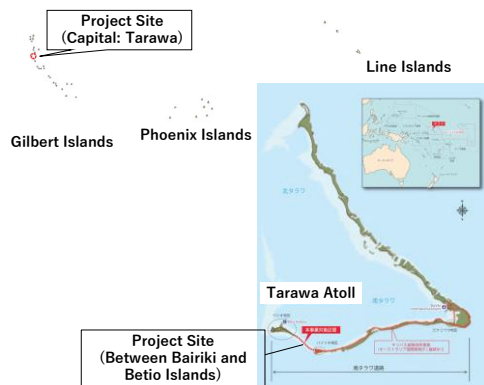
External Evaluator: Keisuke Nishikawa, QUNIE CORPORATION

## **0. Summary**

This project aimed to secure a stable lifeline in South Tarawa, Kiribati, by completely rehabilitating and strengthening the Nippon Causeway connecting Bairiki Island and Betio Island. Although no specific linkages or synergies with other JICA projects were identified during the planning and implementation period of the project, the project was consistent with the development policy and development needs of Kiribati at the time of planning and ex-post evaluation, and the consistency with the Japan's ODA Policy at the time of planning and the specific outcomes through linkages with other donor projects were also confirmed. Therefore, the relevance and coherence of this project are high. Regarding the project implementation, although safety-related facilities were added, the project period was as planned and the project cost was within the plan. Therefore, the efficiency of the project is very high. Regarding the effectiveness of the project, it was confirmed that all quantitative indicators had achieved the figures for the target year, and that qualitative effects such as securing a stable lifeline on the only road connecting Betio Island with the international port and other areas, and improving the safety of passing vehicles and pedestrians, were also confirmed to have been achieved. Regarding the impacts, no direct economic revitalisation at the macro level was observed as a result of the project, but smooth transportation throughout the year has been realised, and the transportation of goods and movement of people in South Tarawa has been stable, thereby fully fulfilling its role as a backbone infrastructure that supports various economic and social activities. Therefore, the effectiveness and impact of the project are high. Although there were no specific problems in terms of policies and systems, institutional and organisational aspects, or finances, and no issues were found in terms of environmental and social considerations or risk response, some technical issues were found in the management of road maintenance equipment, and certain issues were found in the pavement condition of the road surface. Therefore, the sustainability of the project is moderately low.

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

## 1. Project Description



Project Location  
(Source: Prepared from materials provided by JICA)



The Nippon Causeway reconstructed in this project (Source: External Evaluator)

### 1.1 Background

The Nippon Causeway is the only road that connects Betio Island, where Kiribati's only international port is located, and Bairiki Island, where a number of administrative offices and commercial stores are located, and was constructed as a lifeline under the Japanese grant aid “Betio-Bairiki Causeway-Fisheries Channel Project” in 1986. However, as many years had passed since its construction, in addition to its aging, it had been frequently collapsing due to erosion caused by tidal currents and storm surges, which are considered to be the effects of climate change. Specifically, in 2015, revetment collapsed at about 15 locations, impeding smooth traffic, such as one-lane traffic and speed restrictions. Resolving these issues and ensuring the stable functioning of the only trunk road, which is the lifeline of the area, was essential for Kiribati to maintain the livelihood of its citizens and economic activities.

### 1.2 Project Outline

The objective of this project was to ensure a stable lifeline in South Tarawa, Kiribati, by fully rehabilitating and strengthening the Nippon Causeway, thereby contributing to the facilitation of flows of people and goods in the country.

#### <Grant Aid Project>

Grant Limit / Actual Grant Amount	3,805 million yen / 3,575 million yen
Exchange of Notes Date / Grant Agreement Date	July 2016 / July 2016
Executing Agency	Ministry of Infrastructure and Sustainable Energy (MISE)

Project Completion	April 2019
Target Area	Tarawa Atoll (between Betio Island and Bairiki Island)
Main Contractor	Dai Nippon Construction
Main Consultant(s)	The Joint venture of CTI Engineering International Co., Ltd. and Ides Inc.
Preparatory Survey	May 2015 – May 2016
Related Projects	<p>[Grant Aid Project]</p> <p>Betio-Bairiki Causeway-Fisheries Channel Project (1986)</p> <p>The Project for Improvement of Fisheries-related Roads in South Tarawa (2008)</p> <p>The Project for Expansion of Betio Port (2013)</p> <p>[Other International Organization, Aid Agency, etc.] (World Bank, Asian Development Bank, Australia)</p> <p>Kiribati Road Rehabilitation Project (2012 – 2016)</p>

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Keisuke Nishikawa, QUNIE CORPORATION

### 2.2 Duration of Evaluation Study

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

Duration of the Study: September 2023 – September 2024

Duration of the Field Study: 13 November – 23 November 2023, 8 April – 11 April 2024

## 3. Results of the Evaluation (Overall Rating: B<sup>1</sup>)

### 3.1 Relevance / Coherence (Rating: ③<sup>2</sup>)

#### 3.1.1 Relevance (Rating: ③)

##### 3.1.1.1 Consistency with the Development Plan of Kiribati

At the time of planning this project, development policy in Kiribati was “*Kiribati Development Plan*” (hereinafter referred to as “KDP”), which positioned infrastructure development as one of the key areas and prioritised the redevelopment of aging roads and

<sup>1</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>2</sup> ④: Very High, ③: High, ②: Moderately Low, ①: Low

other infrastructure.

At the time of ex-post evaluation, the document “*Kiribati 20-Year Vision*” (hereinafter referred to as “*KV20*”, covering the period from 2016 to 2036) is a long-term development vision for Kiribati until 2036. One of the four pillars of *KV20* is “infrastructure”, of which the improvement of road infrastructure forms a part. Under this long-term vision, “*KDP 2020 – 2023*” is positioned as a medium-term national development plan, and infrastructure development is listed as one of the six priority areas. This “infrastructure development” includes the construction, rehabilitation, and maintenance of roads and causeways as key issues. Furthermore, in 2022, “*Kiribati National Infrastructure Investment Plan*” (hereafter referred to as “*KNIIP*”) was developed specifically for the infrastructure sector, and the plan continues to place a high priority on the rehabilitation of roads in South Tarawa.

Thus, in the development plans (*KV20* and both *KDPs*) at the time of planning and ex-post evaluation, infrastructure development, including roads and causeways, is positioned as a major pillar of development, and the *KNIIP* also confirms that road rehabilitation is an important issue. Therefore, this project is in line with these directions both at the time of planning and at the time of ex-post evaluation.

#### 3.1.1.2 Consistency with the Development Needs of Kiribati

As mentioned above, the Nippon Causeway (3.2 km-long and 11 m-wide), which was constructed under the Grant Aid Project “Betio-Bairiki Causeway-Fisheries Channel Project” (1986), was the only road as a lifeline connecting Betio Island, where the only international port in Kiribati is located, and Bairiki Island, where many administrative offices and commercial stores are located. However, the Causeway was frequently collapsing due to erosion caused by tidal currents and storm surges, which are assumed to be the effects of climate change, in addition to its deterioration since its construction. In particular, revetment collapses occurred in 15 locations in 2015, impeding smooth traffic by imposing single-lane traffic and speed restrictions.

According to the executing agency, the Causeway remains the only road segment connecting Betio and Bairiki Islands at the time of ex-post evaluation, and is an essential infrastructure facility as a lifeline. In South Tarawa, vehicle registrations are on the rise, as shown in Table 1, and the number of vehicles passing through the Nippon Causeway has reached 1.44 million per year (one-way, 2023) as shown in Table 2. Thus, the need for smooth traffic continues to be high.

Table 1: Trends in Vehicle Registrations in South Tarawa

(Unit: number of vehicles)

	2021	2022	2023
Cars	3,617	4,899	5,550
Motorcycles	630	1,478	1,615
Total	4,247	6,377	7,165

Source: Data provided by Kiribati Land Transport Authority

Table 2: Annual Volume of Vehicle Traffic on the Nippon Causeway

(Unit: number of vehicles)

	2021	2022	2023
Motorcycles	429,400	279,200	460,600
Small Vehicles	622,000	727,000	782,200
Medium Vehicles	64,400	52,800	71,800
Large Vehicles / Minibus	145,400	129,200	127,800
Total	1,261,200	1,188,200	1,442,400

Note 1: The first positive COVID-19 case in the country was confirmed in Kiribati in January 2022, which is considered to have resulted in a decrease in annual traffic volume.

Note 2: Regular passenger cars are classified as “small vehicles”, pickup trucks and double cab vehicles as “medium vehicles”, and trucks and trailers as “large vehicles”.

Source: Estimated by the external evaluator based on the number of receipts printed at the Nippon Causeway toll booth

The Nippon Causeway, which was rehabilitated in this project, is located on the main road that serves as the main land transportation link between Betio Island, which has an international port, and the rest of South Tarawa, and remains a very significant facility for socioeconomic activities in Tarawa, the capital of Kiribati. This project, which improved the road section, is consistent with the development needs of Kiribati both at the time of planning and at the time of ex-post evaluation.

### 3.1.1.3 Appropriateness of the Project Plan and Approach

As described below, there were no major differences between the planned and actual implementation of the project, and there were no issues in the achievement of the effects of the project. Therefore, the project plan and approach are considered to have been appropriate.

At the time of the planning of this project, it was assumed that it would be safe for those with disabilities and the elderly people to pass through as a result of the rehabilitation with widening of the Nippon Causeway. In this regard, the Nippon Causeway was actually widened more than before the rehabilitation, and the steps on the shoulder of the bridge section were eliminated. In addition, for easy maintenance of the lifeline facilities, the top of the utility box (common tunnel) installed on the lagoon side is effectively used as a sidewalk, and safety has been improved in this sense. However, pedestrian paths were not provided from the design

phase of the project, and the area positioned as a sidewalk actually functioned only as a shoulder rather than a sidewalk. In addition, the utility box was installed at a higher level than the road surface, which was linked to safe passage for the elderly who have no difficulty in walking, but did not necessarily ensure a safe sidewalk for the persons with disabilities, as no handrails or step-over ramps were provided.

The results of ex-post evaluations of similar projects in the past have revealed the need for enhanced training for engineers to improve repair skills and other maintenance capabilities of the Causeway, as well as the need for detailed procurement methods, transportation plans, cost estimates, and additional maintenance costs that take into account of local conditions when procuring materials and equipment from third countries for construction projects. Based on these lessons learned, the soft component of the project was planned and implemented such as workshops on pavement and revetment and practical repair guidance. In addition, it was confirmed that necessary measures were taken to procure the aggregate required for asphalt pavement, such as confirming the quality of the aggregate in Kiribati in advance and procuring it from a third country due to its insufficient abrasion resistance.

From the above, it can be said that the project plan and approach of the project were adequate in general, although improving access for a part of the persons with disabilities was not sufficiently addressed.

### 3.1.2 Coherence (Rating: ③)

#### 3.1.2.1 Consistency with Japan's ODA Policy

At the time of the planning of this project, in the “*Fukushima Iwaki Declaration*” adopted at the 7th Pacific Islands Leaders Meeting held in 2015, Japan expressed its intention to provide assistance for the development of disaster-resilient economic and social infrastructure toward the development of resilience to climate change and natural disasters in the Pacific region. For Kiribati, “Overcoming vulnerability” was set out as a priority area in the “Country Assistance Policy for the Republic of Kiribati”. JICA also identified “strengthening the infrastructure for economic activities / maintaining lifelines” as a priority area in the “*JICA Country Analysis Paper for the Pacific Region*.” This project, which aims to secure stable lifelines, is in line with these development cooperation policies.

#### 3.1.2.2 Internal Coherence

This project rehabilitated the Nippon Causeway section that was not included in the Grant Aid “The Project for Improvement of Fisheries-related Roads in South Tarawa” implemented from 2008. However, the project was not expected to be linked with other JICA projects at the time of planning and implementation, and there was no particular effect of collaboration. Therefore, no internal coherence was identified.

### 3.1.2.3 External Coherence

At the time of planning of this project, World Bank, Asian Development Bank, and Australia were implementing the Kiribati Road Rehabilitation Project (KRRP, 2012 – 2016), which included the rehabilitation of 21.5 km of road from Bonriki Airport located in the eastern part of South Tarawa to Bairiki Island, the rehabilitation of 6 km of feeder and access roads, and the rehabilitation of 2.8 km of roads in the Temaiku area near the airport. The original plan for the project included the rehabilitation of 3.2 km of the Nippon Causeway, but this was dropped from the project scope during the project and only the burying works were carried out in this section instead.

At the time of planning of this project, the executing agency coordinated with KRRP to ensure that there was no overlap between the two projects. As a result, both KRRP and this project were implemented, and the effect was observed in terms of smoother and safer movement throughout South Tarawa. Therefore, it can be said that specific external coherence was confirmed in this project.

This project is in line with the development policy of the Government of Kiribati, which emphasises the importance of infrastructure development, both at the time of planning and at the time of ex-post evaluation, and also meets the development needs of Kiribati, as the project supports the only road segment connecting Betio Island and Bairiki Island. In addition, the project plan and approach were considered to have been appropriate. As for coherence, although coordination and collaboration with other JICA projects were not confirmed, this project was consistent with the ODA policy of the Government of Japan for the Pacific region and Kiribati at the time of planning, and external coherence in achieving smooth and safe movement in South Tarawa was confirmed as a result of coordination with the project supported by other donors.

Therefore, relevance and coherence of this project are high.

## 3.2 Efficiency (Rating: ④)

### 3.2.1 Project Outputs

In this project, the Nippon Causeway connecting Bairiki Island and Betio Island in Tarawa Atoll was comprehensively rehabilitated. The specific planned and actual outputs were as follows.

Table 3: The Planed and the Actual Outputs of the Project

Items	Plan	Actual
1. Revetment strengthening and pavement rehabilitation of the Nippon Causeway	L=3,220 m, W=11.0 m, including asphalt pavement, revetment, and utility box	L=3,220 m, W=11.0 m, including asphalt pavement, revetment, and utility box
2. Widening and Repair of Bridge	L=10 m, W=11.0 m, Box culvert, asphalt pavement	L=10 m, W=11.0 m, Box culvert, asphalt pavement
3. Safety Facilities	-	Speedhump: 2, Signboard: 9, Solar Streetlight: 42, Cat Eye: 1,295
4. Consulting Services	Detailed Design, Tender Assistance, Construction Supervision	Detailed design, tender assistance, construction supervision
5. Soft Component	Technical guidance on revetment and pavement, creation of maintenance manuals, on-site training for repair	Technical guidance on revetment and pavement, creation of maintenance manuals, on-site training for repair

Source: The Preparatory Survey Report, documents provided by JICA

As shown in the table above, “3. Safety Facilities” were additionally installed to the plan. As for the streetlights, it was planned to use the existing ones as they were, but it was revealed after the commencement of construction that many of them had been damaged and could not be reused. Therefore, it was decided to use the reserve fund of the project to add new streetlights, along with other safety facilities. The additional installation of these safety facilities is considered to have resulted in safer road traffic.

Regarding the Kiribati side, in addition to obtaining various permits and tax exemptions from the Government of Kiribati, it was planned to install utilities (communication cables, power cables, and water pipes) and street lights<sup>3</sup>, and to secure a temporary yard<sup>4</sup>. As for the actual state of implementation, many of the streetlights were damaged and could not be reused, as mentioned above, and new ones were installed at the expense of the Japanese side through the use of the reserve fund. As for utilities, at the time of ex-post evaluation, communication cables and water pipes were placed in the utility box installed on the lagoon side in this project. However, the power cable remained installed in a pipe on the ocean side and had not been relocated to the utility box.

<sup>3</sup> The Japanese side was to provide the foundation work for the streetlights, while the Kiribati side was to bear the cost of the streetlights themselves by using existing ones.

<sup>4</sup> In this project, the asphalt plant used in the Kiribati Road Rehabilitation Project supported by World Bank, Asian Development Bank, and Australia was continued to be utilized.



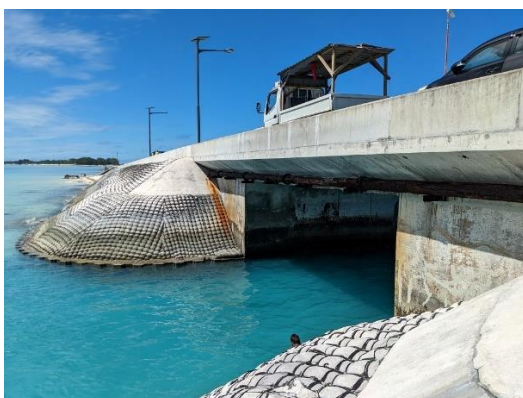


Photo 1: Bridge and waterway  
(Source: Photo taken by the external evaluator)



Photo 2: Utility box, speedhump and streetlight (Source: Photo taken by the external evaluator)

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

The project cost was planned to be 3,863 million yen, with 3,805 million yen on the Japanese side and 58 million yen on the Kiribati side.

The actual project cost for the Japanese side was 3,575 million yen (construction cost: 3,383 million yen, design and management cost: 192 million yen). The main factor that kept the project cost on the Japanese side within the planned amount was that the bid by the contractor for the main works was much lower than the planned cost. As a result, additional safety facilities were installed to further enhance the safety of the Causeway as mentioned above. The actual amount on the Kiribati side was 36 million yen<sup>5</sup>.

Therefore, the actual project cost was within the plan (93% of the plan).

#### 3.2.2.2 Project Period

The project period was planned to be 34 months, including the detailed design and tender period. The actual project period was 34 months, from July 2016 to April 2019, as shown in Table 4.

Table 4: Planed and Actual Project period of the Project

	Plan	Actual
Grant Agreement	July 2016	July 2016
Detailed Design (including tender period)	7 months	6 months (August 2016 – January 2017)
Construction works	27 months	27 months (February 2017 – April 2019)
Total	34 months	34 months

Note: The definition of project completion was “completion of construction of the grant aid project”.

Source: The Preparatory Survey Report, documents provided by JICA

<sup>5</sup> The project costs in Australian dollars were converted to yen for the project period, July 2016 to April 2019, using the International Financial Statistics (IMF) average conversion rate (JPY 81.18=AUD 1).

Therefore, this project was implemented as planned with no particular delays, and it can be considered that the project period was within the plan.

From the above, although there was an increase in outputs which aimed at improving safety in this project, the project cost was within the plan, and the project period was also within the plan.

Therefore, efficiency of this project is very high.

### 3.3 Effectiveness and Impacts<sup>6</sup> (Rating: ③)

#### 3.3.1 Effectiveness

##### 3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

At the time of planning of this project, it was assumed as effect indicators that the project would reduce the number of days of traffic restriction per year due to road damage caused by natural disasters, reduce the number of areas where the revetments had collapsed, increase the average travel speed, and reduce the cost of repairing the Nippon Causeway. The actual results of these indicators were confirmed in the ex-post evaluation, and are shown in Table 5.

Table 5: Values of the Baseline and the Target of the Effect Indicators of the Project

	Baseline	Target	Actual		
	2015	2022	2021	2022	2023
		3 years after completion	2 years after completion	3 years after completion	4 years after completion
1) Reduction in the number of days for road traffic control due to natural disaster (day) <sup>7</sup>	20	0	0	0	0
2) Reduction in the number of revetment collapses (number / year)	15	0	0	0	0
3) Improvement in average travel speed <sup>note 1</sup> (km/h)	20	40	40 and over	40 and over	40 and over
4) Reduction in maintenance / repair cost <sup>note 2</sup> for revetment (AUD)	381,408	28,599	20,000	22,000	89,000

Note 1: The maximum speed (speed limit) was set at 60 km/h. It was confirmed that the vehicle could run at 60 km/h without any problem when measured by actual driving during the ex-post evaluation.

Note 2: Although the Ex-ante Evaluation Report indicated “repair costs for the revetment”, this table refers to “Nippon Causeway repair cost” because the breakdown of the repair costs was confirmed to be for the entire Nippon Causeway.

Source: The Ex-ante Evaluation Report, information provided by the executing agency

<sup>6</sup> When providing the sub-rating, Effectiveness and Impacts are to be considered together.

<sup>7</sup> One-way alternating restrictions due to repair work caused by the collapse of revetment.

There have been no traffic restrictions or revetment collapses due to road damage since the completion of the project, and the average travel speed has always been above the target, showing that Indicators 1) to 3) have been achieved. As for the repair cost of the Nippon Causeway in Indicator 4), it was below the target value in 2022, which was three years after completion (target year), and the indicators can be considered to have been achieved. However, as mentioned later, potholes and cracks have been observed on the pavement surface since then, and the repair cost increased significantly in 2023. While the condition of the road surface pavement is analysed once again in Section “3.4 Sustainability”, it is considered that the quantitative effects of “Effectiveness” have been achieved.

### 3.3.1.2 Qualitative Effects (Other Effects)

At the time of project planning, two qualitative effects of this project were expected: (1) a stable lifeline will be secured throughout the year, and (2) safety of passing vehicles and pedestrians fishing in the Causeway area will be improved<sup>8</sup>. The following is a summary of these effects as confirmed at the time of ex-post evaluation.

#### (1) Securing stable lifelines

The Nippon Causeway constructed under the project has never been closed to traffic due to road damage since the completion of the project, and has always functioned as a stable lifeline in terms of achieving smooth distribution and provision of social infrastructure (electricity, telecommunications, and water supply).

#### (2) Improvement in safety for vehicles and pedestrians

In this project, there was an overall raising of the Nippon Causeway and rehabilitation of the pavement surface, widening of the bridge section, and elimination of the difference in height between the sidewalk and the roadway section. Interviews with different users<sup>9</sup> of the Causeway confirmed that the Causeway has become smoother as a result of these improvements. As for vehicular traffic, although travel speeds have increased, there has been no corresponding increase in traffic accidents<sup>10</sup>. Since there are no intersections, crosswalks, or obstructions on the Nippon Causeway, and the shoulders have been adequately cleared, it can be said that there is no dangerous situation for vehicle traffic.

<sup>8</sup> Although the qualitative effect of “safe and smooth movement of people and goods between Betio and Bairiki Islands throughout the year” was assumed at the time of planning, it was analysed in “3.3.2 Impacts” in the ex-post evaluation because it is considered as an indirect effect of the project.

<sup>9</sup> In this ex-post evaluation, individual interviews were conducted with a total of 16 organisations and individuals (logistics / wholesale / retailers: 4, minibus operators: 2, chamber of commerce: 1, local government: 2, hospital: 1, pedestrians: 2, bicycle users: 2, fishermen: 2) in addition to Kiribati government agencies including the executing agency to identify changes in safety, transportation of people and goods, economic activity, and environmental and social impacts associated with the improvement of the Causeway.

<sup>10</sup> Although data were not available to enable comparisons before and after the project was implemented, the number of traffic accidents on the Nippon Causeway other than those caused by alcohol consumption was 5 in 2019, 8 in 2020, 8 in 2021, 9 in 2022, and 4 in 2023, according to information provided by the Kiribati Police.

According to the Kiribati Police, traffic accidents were mainly caused by drunk drivers and not by road improvements resulting from this project. Regarding the improvement of pedestrian safety, the utility box on the lagoon side parallel to the Causeway functions practically as a sidewalk, ensuring a certain level of safety for pedestrians.

Based on the above, it can be considered that the qualitative effects assumed in (1) and (2) at the time of planning have been achieved as expected.

### 3.3.2 Impacts

#### 3.3.2.1 Intended Impacts

At the time of project planning, it was expected that the improved road condition of the Nippon Causeway would stimulate economic activities and create new jobs, and that the safe and smooth movement of people and goods between the islands of Betio and Bairiki throughout the year would be a major impact of the project.

Interviews with the executing agency and Nippon Causeway users indicated that the Nippon Causeway is the only road segment connecting Betio Island to other areas and that it is an indispensable infrastructure for the movement of people and the transportation of goods. Respondents who were familiar with the situation prior to the 1980s emphasised the importance of the improved overall convenience of life that the Causeway has provided by connecting the islands compared to the days when people had to travel to and from the islands by boat, and the importance of this being maintained in a stable manner. In terms of economic activities, the Nippon Causeway has gained importance as a place for recreation for people, and three new cafes and bars were observed to have opened in the area on the Betio Island side after the completion of the project. As for employment, interviews with logistics companies, wholesale / retailers, and minibuses operators indicated that some companies increased employment while others decreased it, and no specific changes induced by the Nippon Causeway improvements were identified. On the other hand, logistics providers and minibuses operators alike commented that the significant improvement in road conditions has reduced the cost of maintaining the vehicles used to transport people and goods.



Photo 3: Cafes and bars that opened after the completion of the project (1)  
(Source: Photo taken by the external evaluator)



Photo 4: Cafes and bars that opened after the completion of the project (2)  
(Source: Photo taken by the external evaluator)

Thus, although major revitalisation of economic activities directly triggered by the improvement of the Nippon Causeway was not observed, there were examples of cafes and bars opening in the area on the Betio side of the Causeway, and the safe and smooth movement of people and goods between Betio Island, where the international port is located, and the other areas. As a whole, it can be said that the Causeway underpins a variety of economic activities that are essential to the Kiribati economy.

### 3.3.2.2 Other Positive and Negative Impacts

#### 1) Impacts on the Environment

At the time of project planning, the project was considered to be in Category B based on “*JICA Guidelines for the Confirmation of Environmental and Social Consideration*” (April 2010), as it was judged to have no significant negative environmental impacts in light of the sector, project, and regional characteristics of the project.

A Basic Environmental Impact Assessment Report was prepared in advance of the project implementation, and the report was approved by the Environment and Conservation Division, Ministry of Environment, Lands and Agricultural Development prior to the commencement of the project. There were no special conditions imposed on the project. Regarding dust during construction, two complaints were received from nearby residents concerning dust from the concrete plant installed on Betio Island, but the complaints did not lead to any major problems, as appropriate anti-scattering measures were taken in accordance with the guidance of the Environment and Conservation Division. In addition, as originally planned, environmental impact mitigation measures were properly implemented by the project consultants and contractors, and the Environment and Conservation Division monitored compliance at the construction site on a monthly basis during the project period. As a result, no major problems occurred.

In the ex-post evaluation, as mentioned above, interviews were conducted with users, during which questions were also asked about the occurrence of environmental impacts, and the results showed that there were no particular negative impacts on the environment even after the project was completed, and no particular findings were confirmed by the Environment and Conservation Division.

Therefore, it can be considered that no particular negative impact on the environment occurred during and after the completion of the project.

## 2) Resettlement and Land Acquisition

In this project, a pavement rehabilitation and revetment strengthening of the existing causeway was implemented, and no land acquisition or resettlement was anticipated from the time of planning. In reality, neither resettlement nor land acquisition occurred.

## 3) Gender Equality, Marginalized People, Social Systems and Norms, People's Well-being and Human Rights

The project was designed to benefit all users of the Nippon Causeway regardless of gender, age, or other reasons. The Causeway was a muddy and hazardous road with collapsed revetments and numerous potholes before the project was implemented, but the shoulders (sidewalks) have been improved and the available road width has been widened, making the road smoother and easier to pass through. In addition, more people started walking, especially in the morning and evening, and it was observed that a women's group began to walk, exercise, and clean up the Causeway area on the Bairiki Island side.

In the healthcare sector, some respondents said that the Causeway has made it easier to transport patients from Betio Hospital to the top referral hospital, Tungaru Hospital (located in Bikenibeu, east of Bairiki) by vehicle. Furthermore, as mentioned above, the passage has been smoother and safer for pedestrians although it has not been smooth and safe for persons with disabilities.

It was confirmed that the quantitative indicators of the project were achieved and qualitative effects were also achieved as expected. As for the impacts, no direct economic revitalisation was observed as a result of the project, but smooth traffic throughout the year has been achieved, and the transportation of goods and people between the island of Betio, which has an international port, and other areas is stable. In this respect, the project is fully fulfilling its role as an infrastructure facility that supports the stable activities of the Kiribati economy. No negative environmental or social impacts were observed, and the impact of the project was confirmed in that it has become a place of recreation and relaxation for a variety of people, including a women's group. Safety was also confirmed to be generally ensured.

Therefore, the implementation of this project has achieved the planned effects, and effectiveness and impact of the project are high.

### 3.4 Sustainability (Rating: ②)

#### 3.4.1 Policy and System

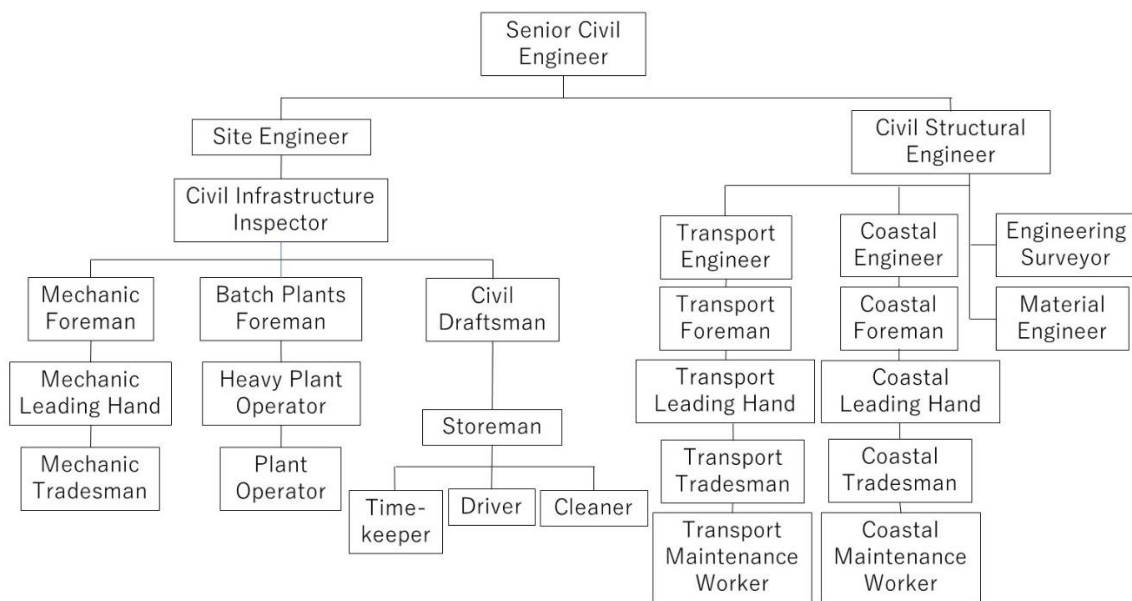
As verified in Section “3.1.1 Relevance”, “*Kiribati 20 Year Vision (KV20)*”, “*Kiribati Development Plan 2020 – 2023 (KDP)*”, and “*Kiribati National Infrastructure Investment Plan 2022 – 2032 (KNIIP)*” are considered valid policy documents at the time of ex-post evaluation, and the development and maintenance of roads and causeways are prioritised as the infrastructure to support economic and social activities. In addition, the Ministry of Infrastructure and Sustainable Energy (hereafter referred to as “MISE”) is the organisation responsible for the development and maintenance of road infrastructure and has clear jurisdiction within the government.

Therefore, sustainability for policy and system of the project is high.

#### 3.4.2 Institutional / Organisational Aspect

MISE is a government agency with 237 employees and is mainly responsible for the building and civil infrastructure and energy sectors. The Civil Engineering Section (CES), which is responsible for the operation and maintenance of roads, has 45 employees, including 8 engineers (engineers, civil infrastructure surveyors, civil surveyors, and material engineers), 4 maintenance workers, and 4 equipment operators under the management of a Director. CES is responsible for the operation and maintenance of roads, bridges, and heavy equipment, including the Nippon Causeway.

It was confirmed that cleaning staff at the Nippon Causeway are directly employed by MISE and that they clean the Causeway every day. When trees along the roadside fell, they responded quickly and removed them. The Nippon Causeway is also the only section of road in Kiribati where tolls are collected, and the collectors are also directly employed by MISE.



Source: Information provided by the executing agency

Figure 1: Organisation Chart of Civil Engineering Section, MISE

Since the necessary personnel for road maintenance and upkeep have been secured and no particular issues were observed in institutional and organisational aspects, the sustainability of the effects in terms of institution and organisation is considered to be high.

### 3.4.3 Technical Aspect

This project planned to improve the capacity of MISE engineers in revetment and pavement repair skills through the implementation of the soft component of the project. As a result, MISE-CES engineers have sufficient technical skills in revetment and pavement repair, and are carrying out necessary repairs as needed. Since there is no asphalt plant in Kiribati, the repairs are carried out using cold mix asphalt (asphalt that hardens at room temperature) that MISE purchases from overseas.

However, although the engineers have a certain level of technical knowledge, the road maintenance equipment owned by MISE for road repair is generally damaged and spare parts are not always procured in a timely manner, which means that the knowledge they possess is not always fully utilised. JICA plans to implement a technical cooperation project to improve the asset management capacity of roads, bridges, and heavy equipment, and the situation is expected to improve in the future<sup>11</sup>.

MISE does not have its own training programme, but rather, it is mainly improving its capacity through participation in training programmes provided by donor agencies.

<sup>11</sup> Technical Cooperation “Project for Asset Management of Roads, Bridges and Heavy Machineries in Small Island Developing States” is scheduled to be started in 2024.



Thus, it is expected that more systematic and extensive maintenance will be required in the future, and there are some issues of sustainability for the technical aspect that need to be addressed in order to sustain the effectiveness of the project.

#### 3.4.4 Financial Aspect

The amount of the budget for CES and MISE for 2020 – 2024 is as shown in Table 6.

Table 6: Trend of the Recurrent Budget of MISE and CES

(Unit: Australian Dollars)

	2020	2021	2022	2023	2024
Budget for CES	988,170	764,175	735,915	722,397	1,010,466
<i>Salaries</i>	<i>415,510</i>	<i>425,238</i>	<i>426,624</i>	<i>427,232</i>	<i>696,348</i>
<i>operation-related expenses</i>	<i>464,996</i>	<i>162,284</i>	<i>129,167</i>	<i>116,787</i>	<i>115,556</i>
(Overall Budget for MISE)	3,965,660	4,355,162	4,376,408	4,398,352	5,906,684

Source: Prepared based on the Recurrent Budget of the Government (each year)

The budget for MISE has increased significantly from AUD 3.97 million in 2020 to AUD 5.91 million in 2024, with particularly strong growth between 2023 and 2024. This trend is similar for other ministries, mainly due to substantial wage increases for government employees. Although the budget for CES has also increased significantly due to the growth in personnel costs, the maintenance budget, which is directed toward the maintenance of roads, including the Nippon Causeway, has been declining. It needs to be noted that AUD 400,000 has been specifically allocated for the maintenance of buildings and infrastructure facilities in 2020, resulting in a large amount of operation-related expenses.

On the other hand, the Nippon Causeway is the only road in Kiribati where tolls<sup>12</sup> are collected under Nippon Causeway Tolls Act 1987, and the revenues are transferred to the Dai Nippon Causeway Fund (see Table 7). From that fund, some maintenance costs specific to the Nippon Causeway are also disbursed. Unlike other years, the amount in 2022 is larger due to the expense of dredging the waterway and printing receipts to be issued to passing vehicles. The balance of the fund at the end of the year is steadily increasing and should be able to continue to make certain expenditures even as the maintenance costs of the Nippon Causeway increase in the future.

Therefore, although the recurrent budget for the maintenance of the Nippon Causeway is not necessarily sufficient, as the budget is also allocated to the maintenance of other road sections, no major budgetary problems are expected to arise in the immediate future through the use of the specific fund, and therefore the financial sustainability of the effects generated by this project is high.

<sup>12</sup> Tolls are collected only when entering Betio Island (one-way). Fees are AUD 0.6 for large vehicles (including minibuses), AUD 0.4 for medium vehicles, AUD 0.2 for small vehicles, and AUD 0.1 for motorcycles.

Table 7: Dai Nippon Causeway Fund Income and Expenses

(Unit: Australian Dollars)

	2018	2019	2020	2021	2022	2023
Balance at the beginning of the year	2,240,259	2,368,950	2,530,276	2,703,172	2,910,179	3,013,388
Income	204,508	249,292	232,475	313,894	358,783	209,636
Expenses	75,817	87,966	59,579	106,887	255,574	73,167
Balance at the end of the year	2,368,950	2,530,276	2,703,172	2,910,179	3,013,388	3,149,857

Note: Data for 2023 is for 7 months from January to July.

Source: Prepared based on the Recurrent Budget of the Government (each year)

### 3.4.5 Environmental and Social Aspect

Monitoring of air quality, water quality, and noise was conducted on a monthly basis during the project implementation, but no further monitoring as such has been conducted since the completion of the project. However, there have not been any environmental and social problems at the time of ex-post evaluation, and particular concerns are not anticipated in the future, thus it is considered that there will be no problems in the future.

### 3.4.6 Preventative Measures to Risks

Issues related to the quality of the pavement surface are mentioned in the next section, but no other specific risks have appeared or are anticipated.

### 3.4.7 Status of Operation and Maintenance

All sections of the Nippon Causeway constructed under this project are in use, and the condition of the roads in South Tarawa, including the Nippon Causeway, is inspected twice a week by the CES staff. In addition, the Causeway section is cleaned daily by the cleaners employed by MISE, and the drainage outlets are not clogged and the road surface drainage is generally maintained.

With regard to repair, the executing agency indicated that the maintenance manual on pavement repair prepared under the soft component of the project is referred to by the CES staff as needed<sup>13</sup>. Although the materials needed for rehabilitation (e.g., cold mix asphalt) are purchased from overseas, as mentioned above, there are challenges in maintaining road maintenance equipment in an environment where pavement surfaces are prone to deterioration and damage due to high temperatures and salt damage, and road surface repairs are not always performed at a satisfactory level. In addition, as noted above, spare parts for road maintenance equipment were not procured in a timely manner, and in the ex-post evaluation, some areas were found to have potholes and cracks in the same areas again after repairs.

<sup>13</sup> Since no revetment collapses have occurred since the completion of the project, it is expected that the manual will be referenced in the future when the need for repairs arises.

Potholes and cracks began to appear on the surface of the Nippon Causeway within one year after completion of the project. Although they were generally repaired at the time of the defect inspection, they were found in more than 10 locations at the time of the first field visit in November 2023, including recurrence in the same locations. As a result of repairs by CES, the number of potholes was reduced to a few at the time of the second field visit in April 2024, but frequent repair work will likely need to be continued in the future. According to the follow-up status survey in 2023 by the project consultant, although the road base was not damaged and there were no problems with its function as a road, the cause of such frequent potholes was mainly due to the breakdown of the asphalt plant during the project implementation, and the homogeneity of the asphalt mixture quality was not sufficient, and this was due to the fact that the asphalt content was low in some parts.

Therefore, at the time of ex-post evaluation, although cleaning, inspection, and necessary repairs have been carried out, issues in terms of road pavement damage caused by asphalt quality have become apparent, and there is a concern that the situation could deteriorate in the future.



Photo 5: Pothole on the Nippon Causeway  
(Source: Photo taken by the external evaluator)



Photo 6: Road surface repaired by MISE  
(Source: Photo taken by the external evaluator)

From the above, there were no problems in terms of policy and system, institutional and organisational aspects, or finance related to the operation and maintenance of the project, and no issues were found in terms of environmental and social considerations or risk response. However, in terms of technical aspect, issues were observed in the maintenance of equipment necessary for adequate road repair, and road surface damage due to asphalt quality of the pavement surface was also observed in some cases. The prospect for drastic improvement and resolution at the time of ex-post evaluation is uncertain.

Therefore, sustainability of the project effects is moderately low.

## **4. Conclusion, Lessons Learned and Recommendations**

### **4.1 Conclusion**

This project aimed to secure a stable lifeline in South Tarawa, Kiribati, by completely rehabilitating and strengthening the Nippon Causeway connecting Bairiki Island and Betio Island. Although no specific linkages or synergies with other JICA projects were identified during the planning and implementation period of the project, the project was consistent with the development policy and development needs of Kiribati at the time of planning and ex-post evaluation, and the consistency with the Japan's ODA Policy at the time of planning and the specific outcomes through linkages with other donor projects were also confirmed. Therefore, the relevance and coherence of this project are high. Regarding the project implementation, although safety-related facilities were added, the project period was as planned and the project cost was within the plan. Therefore, the efficiency of the project is very high. Regarding the effectiveness of the project, it was confirmed that all quantitative indicators had achieved the figures for the target year, and that qualitative effects such as securing a stable lifeline on the only road connecting Betio Island with the international port and other areas, and improving the safety of passing vehicles and pedestrians, were also confirmed to have been achieved. Regarding the impacts, no direct economic revitalisation at the macro level was observed as a result of the project, but smooth transportation throughout the year has been realised, and the transportation of goods and movement of people in South Tarawa has been stable, thereby fully fulfilling its role as a backbone infrastructure that supports various economic and social activities. Therefore, the effectiveness and impact of the project are high. Although there were no specific problems in terms of policies and systems, institutional and organisational aspects, or finances, and no issues were found in terms of environmental and social considerations or risk response, some technical issues were found in the management of road maintenance equipment, and certain issues were found in the pavement condition of the road surface. Therefore, the sustainability of the project 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**

In order to ensure smooth and safe traffic between Betio and Bairiki Islands continuously, it is important for MISE to repair potholes and cracks on the Nippon Causeway as soon as they are identified, before they widen. In order to ensure its implementation, it is necessary to have road repair equipment that is properly maintained, and it is important to work on improving the capacity for equipment management as well.

#### 4.2.2 Recommendations to JICA

It was revealed in the ex-post evaluation that the pavement quality of some sections of the Nippon Causeway is likely to be low and prone to potholes and cracks, mainly due to the failure of the asphalt plant. Since it remains possible that those potholes and cracks may spread to a scale that cannot be handled by the repair capabilities of the executing agency, it is critical to frequently monitor the status of the situation and provide necessary cooperation, including support for improving the inspection and maintenance capabilities of road maintenance equipment, as necessary.

#### 4.3 Lessons Learned

##### Enhancement of supervision of construction quality

This project was a rehabilitation of the Nippon Causeway, which had been constructed by Japan in the past and subsequently deteriorated. It was important to develop high-quality, long-life infrastructure facilities because maintenance is not always carried out to an adequate level in small island countries, which face difficulties in procuring materials and equipment. However, in this project, the pavement surface deteriorated faster than expected. This is believed to be due to the fact that the asphalt plant used in the project broke down during the implementation of the project and when it was restored, the homogeneity of the asphalt was not sufficiently ensured. In Grant Aid projects, consultants are stationed to supervise the construction, but they do not necessarily have expertise in asphalt pavement. Therefore, when implementing road improvement projects in small island countries, especially when asphalt is manufactured locally, it is recommended that JICA establish a system for thorough quality control by adding to the work specifications for consultants that they conduct extraction tests during asphalt manufacturing and core removal inspections<sup>14</sup> after pavement is laid.

##### Strengthening support for improving the durability of infrastructure facilities

Although technical guidance on repair methods for revetments and road pavements was provided through the implementation of the soft component of the project, and periodic inspections and necessary road repairs were conducted by the executing agency, it was found that the road maintenance equipment was not always maintained to an adequate level, as there were issues with the equipment maintenance. Since the environment is that the temperature and humidity are high all year round and the roads are constantly exposed to salt damage, it is essential to develop durable roads more suitable for the local natural environment, as well as to constantly monitor the condition of roads and bridges, including causeways, develop and implement

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<sup>14</sup> Inspection of asphalt thickness and density by hollowing out the pavement in the shape of a cylinder during road construction.

necessary maintenance plans, and properly manage the equipment required for these activities<sup>15</sup>. From the viewpoint of long-term utilisation of infrastructure, when implementing projects in the field of roads and bridges in small island countries in the future, it is necessary to develop quality facilities that do not require large-scale maintenance, and to provide necessary equipment and components to enable the executing agency to independently carry out appropriate maintenance, and to improve their maintenance capacity.

## **5. Non-Score Criteria**

### **5.1 Performance**

#### **5.1.1 Objective Perspective**

None.

### **5.2 Additionality**

None.

(End)

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<sup>15</sup> Although road conditions are inspected twice a week and necessary repairs are made, it would be preferable to develop and implement a more comprehensive maintenance plan, especially including the best way to manage and utilise road maintenance equipment.